MARROW ED8

Dermatology

Comprehensive Question Bank

Contents

Anatomy & Physiology of Skin

Question 1:

Which of the following is incorrect regarding the development of skin?

a) Develops from neuroectoderm

b) Expression of bone morphogenetic proteins by cells

c) Blocking of response to fibroblast growth factors

d) Lack of Wnt signalling promotes epidermal fate

Question 2:

Which layer of the epidermis is underdeveloped in the very low birth weight infants in the initial 7 days?

a) Stratum germinativum

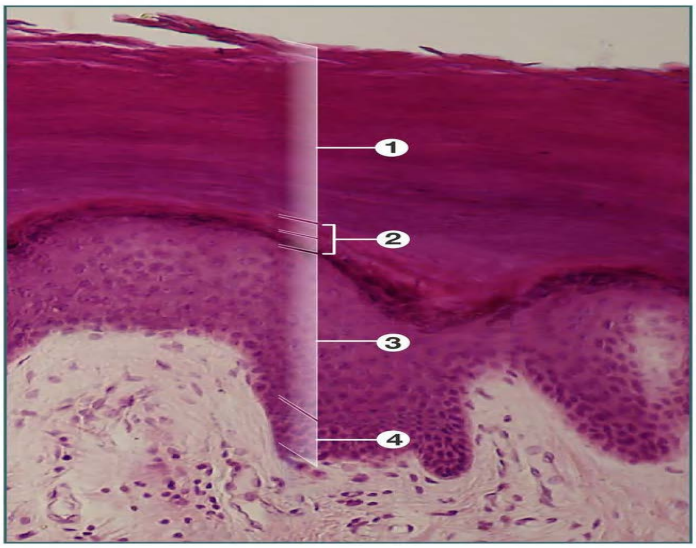
b) Stratum granulosum

c) Stratum lucidum

d) Stratum corneum

Question 3:

Choose the correctly labelled layer of the epidermis from the image given below.



a) 1 - stratum spinosum

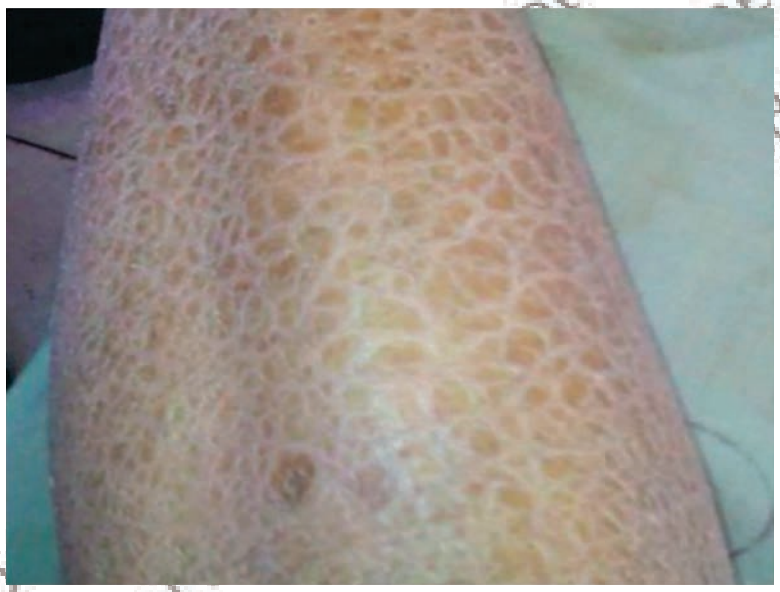
b) 2 - stratum granulosum

c) 3 - stratum basale

d) 4 - stratum corneum

Question 4:

A patient presents with complaints of dry skin and lesions as shown. The epidermal protein deficient in this patient is present in:



a) Stratum corneum

b) Stratum granulosum

c) Stratum spinosum

d) Stratum basale

Question 5:

Which of the following are included in malpighian layer of the epidermis?

a) Stratum corneum and stratum granulosum

b) Stratum granulosum and stratum spinosum

c) Stratum granulosum and stratum lucidum

d) Stratum spinosum and stratum basale

Question 6:

Which of the following terms is used to describe the skin with all its appendages?

a) Pilosebaceous unit

b) Malpighian system

c) Reactive unit

d) Integumentary system

Question 7:

Where are granules of Eleidin seen?

a) Stratum corneum

b) Stratum lucidum

c) Stratum spinosum

d) Stratum basale

Question 8:

Choose the incorrect statement regarding skin.

a) Langerhans cells are dendritic cells which originate from bone marrow.

b) Melanocytes are present in stratum basale.

c) Stratified squamous epithelium with hallmark keratin filaments.

d) Stratum lucidum is present between stratum spinosum and granulosum.

Question 9:

Which of the following layers of the skin predominantly contains non-nucleated cells?

a) Stratum lucidum

b) Stratum basale

c) Stratum granulosum

d) Stratum corneum

Question 10:

Where are Odland bodies present?

a) Stratum corneum

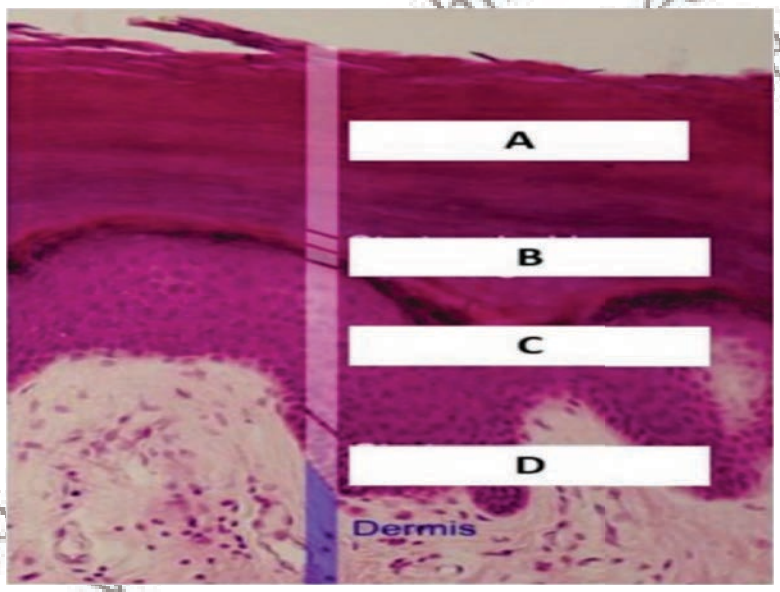
b) Stratum lucidum

c) Stratum granulosum

d) Stratum basale

Question 11:

Melanocytes are present in which layer?



a) A

b) C

c) D

d) B

Question 12:

Which of the following cells act as slow-adapting touch receptors?

a) Meissner corpuscle

b) Pacinian corpuscle

c) Langerhans cells

d) Merkel cells

Question 13:

What is the location of Meissner's corpuscle in the skin?

a) Stratum lucidum

b) Stratum basale

c) Papillary dermis

d) Reticular dermis

Question 14:

Which of the following are connected by desmosomes?

a) Keratinocytes

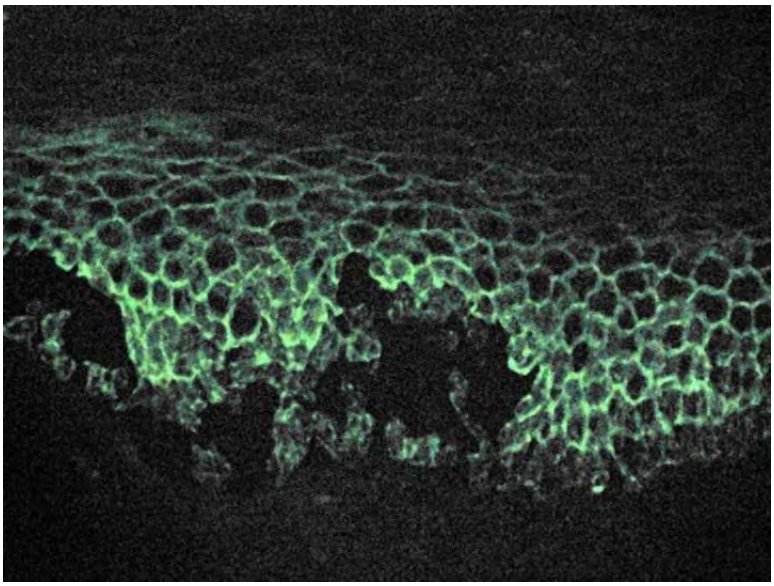
b) Melanocytes

c) Dermis and epidermis

d) Langerhans cells

Question 15:

A patient presents with multiple blisters on the skin and oral mucosa. The immunofluorescence staining for IgG shows the following characteristic pattern. Which of the following is targeted by the immune system in this condition?



a) Keratinocytes

b) Melanocytes

c) Desmosomes

d) Langerhans cells

Question 16:

Hemidesmosomal plaque components include which of the following?

a) K5/K14

b) BPAg1

c) Nidogen

d) Laminin

Question 17:

A child presents with non-hemorrhagic bullous lesions on areas of friction that heal without scarring. Nikolsky's sign is negative. Choose the correctly matched defective protein and its site involved in this condition.

a) K5/K14 - Stratum basale

b) K1/K10 - Stratum corneum

c) K4/K13 - Stratum granulosum

d) K6/K16 - Stratum spinosum

Question 18:

What is the major component of lamina densa?

a) Laminin 5

b) Laminin 322

c) Collagen IV

d) Collagen VII

Question 19:

What is the main type of collagen found in anchoring fibrils?

a) Type IV

b) Type VII

c) Type III

d) Type II

Question 20:

Where is the superficial vascular plexus of skin present?

a) Below the papillary dermis

b) Below the reticular dermis

c) At the dermo-epidermal junction

d) Epidermis

Question 21:

Which is the most abundant form of collagen in the dermis?

a) Type I

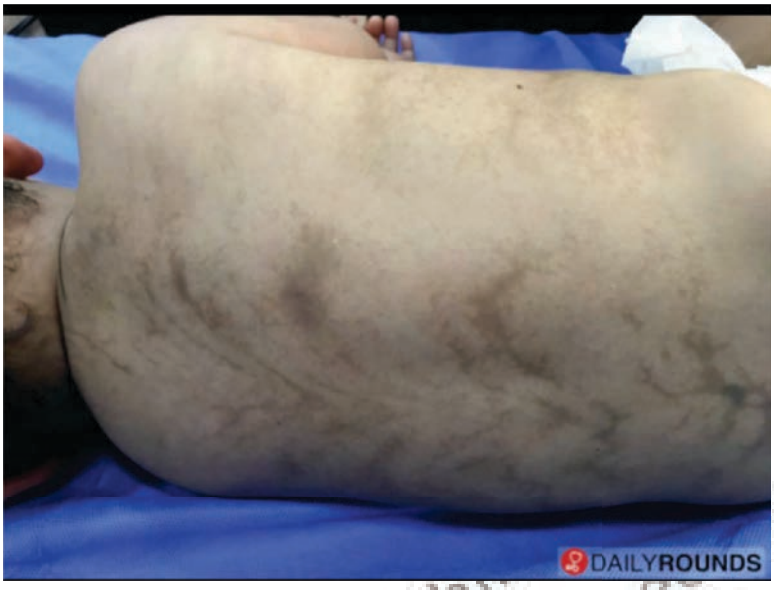
b) Type II

c) Type III

d) Type IV

Question 22:

An infant with the following finding was diagnosed with incontinentia pigmenti. What does the pattern of these lesions represent?



a) Lines along lymphatics

b) Lines along blood vessels

c) Lines along nerves

d) Lines of development

Question 23:

Stem cells involved in skin homeostasis are present in all of the following areas except _____.

a) Bulge area of hair follicle

b) Basal layer of interfollicular epidermis

c) Base of sebaceous glands

d) Base of apocrine glands

Question 24:

What is the ratio of type-I to type-III collagen in the adult human skin?

a) 1:4

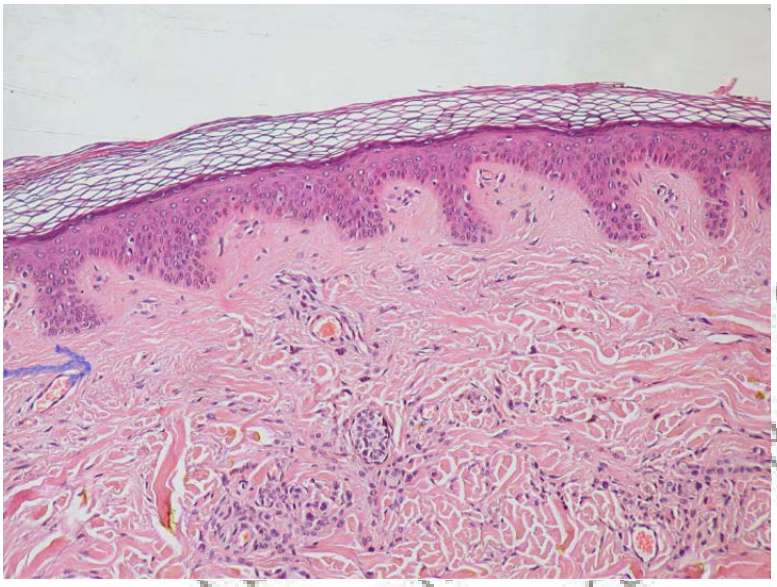
b) 8:1

c) 3:2

d) 4:1

Question 25:

What is the type of connective tissue present in the area marked by the arrow in the given image?



a) Dense regular

b) Dense irregular

c) Loose irregular

d) Specialised

Answer Key

Question No.	Correct Option
1	d
2	d
3	b
4	b
5	d
6	d
7	b
8	d
9	d
10	c

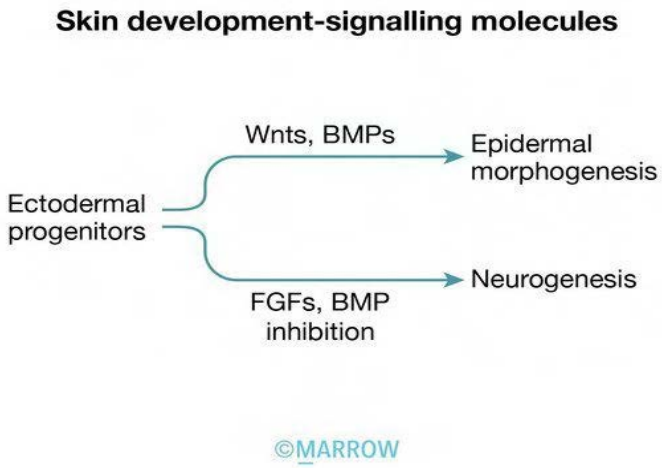
11	c
12	d
13	c
14	a
15	c
16	b
17	a
18	c
19	b
20	a
21	a
22	d
23	d
24	b
25	b

Detailed Explanations

Solution to Question 1:

Development of skin includes activation of Wnt signaling. The lack of Wnt signaling promotes the neural fate of the neuroectoderm cells.

A single layer of neuroectoderm forms the nervous system or the skin epithelium depending on the molecular signals it receives. Activation of Wnt signaling blocks the response of ectoderm to fibroblast growth factors (FGFs) and the cells express bone morphogenetic proteins (BMPs). This leads to the epidermal fate of the neuroectoderm.



Solution to Question 2:

Stratum corneum is underdeveloped in very low birth weight (VLBW) infants in the initial 7 days. In preterm infants, the stratum corneum is permeable and becomes similar to the adult and full-term infant after 2-3 weeks of postnatal maturation.

The development of the layers of the epidermis starts from below upwards. Therefore, the stratum basale is the first to form and the stratum corneum is the last layer to form.

Solution to Question 3:

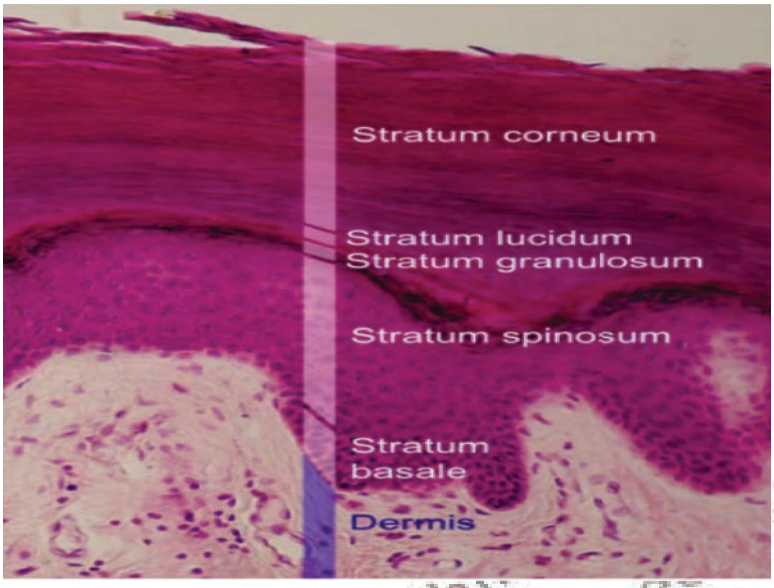
From superficial to deep, the layers of the epidermis are as marked in the image-

- Stratum corneum
- Stratum granulosum
- Stratum spinosum
- Stratum basale

The thick skin found in the palms and soles has an additional fifth layer, called the stratum lucidum, located between the stratum corneum and stratum granulosum.

The epidermis is made of superficial keratinized, stratified, squamous epithelium. The epidermis is a highly cellular layer but is avascular hence dependent on the underlying dermis for nutrition via diffusion through the dermoepidermal junction.

It is thinnest on the eyelid and thickest on the palms and soles.



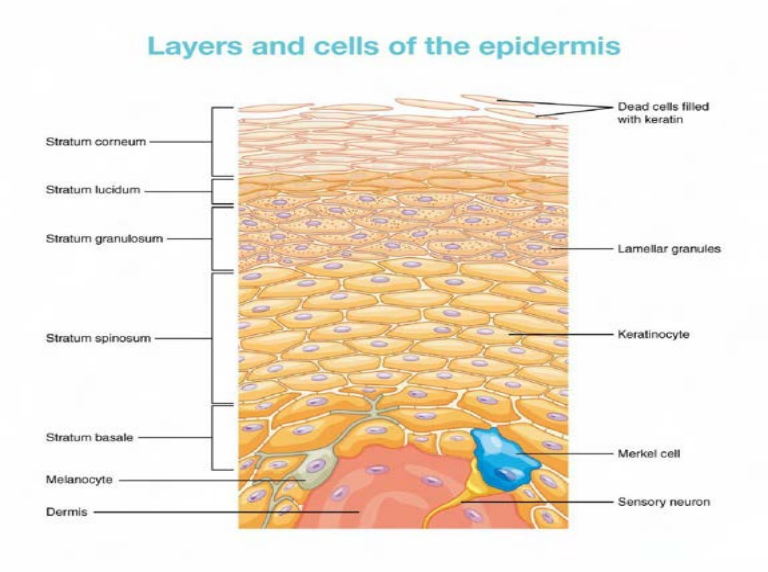
Solution to Question 4:

The above image is suggestive of ichthyosis vulgaris which is due to the deficiency of filaggrin protein. They are found in the keratohyalin granules of stratum granulosum in the form of profilaggrin (made of filaggrin monomers).

Profilaggrin undergoes proteolytic processing to yield individual filaggrin monomers that bind and aggregate keratin bundles and intermediate filaments between the stratum granulosum and corneum to form the epidermal barrier of the skin.

Solution to Question 5:

The malpighian layer of the epidermis includes both stratum basale and stratum spinosum as a unit. It is named after Marcello Malpighi.



Solution to Question 6:

Skin, hair, nails, the subcutaneous tissue below the skin, and assorted glands constitute the integumentary system. The most important function of the integumentary system is the protection against external damage.

Solution to Question 7:

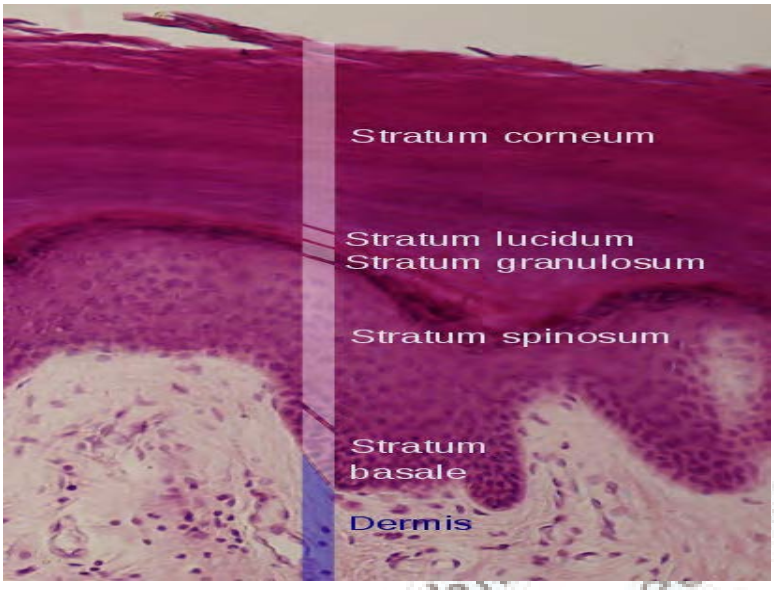
Granules of Eleidin are clear intracellular proteins present in the stratum lucidum of the thick skin of palms and soles.

The cytoplasm of this layer is packed with keratin filaments and Eleidin granules giving it a translucent appearance. It is also called the clear cell layer.

Solution to Question 8:

Stratum lucidum is the layer of the epidermis, which is present between the stratum corneum and stratum granulosum. It is present only in the thick skin of the palms and soles. It is also called the clear cell layer due to the presence of refractile granules of Eleidin.

The image below shows stratum lucidum sandwiched between stratum corneum above and stratum granulosum below.



Solution to Question 9:

The stratum corneum, also known as the horny layer, consists of cells without the nucleus and hence does not divide.

It prevents the entry of microbes from the environment into the body and prevents leakage of fluids from the body to the environment. This is called the barrier function.

As keratinocytes divide and move up to the stratum corneum from stratum basale, they undergo the following changes:

- Loss of nucleus and ability to divide
- Increase in size
- Change in shape and flattening
- Dehydration and loss of water
- Loss of metabolic activity

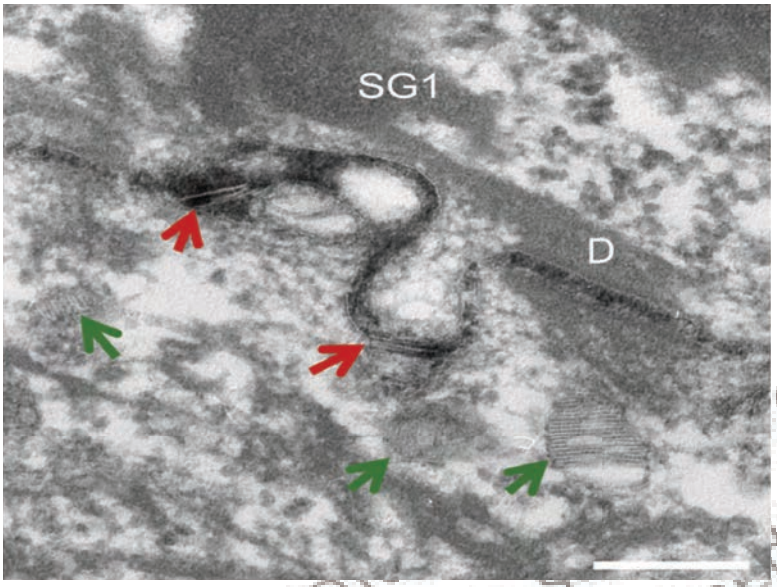
Note: In palmoplantar skin, there is an additional zone, also electron■lucent, the stratum lucidum, which lies between the granulosum and corneum. These cells are still nucleated and may be referred to as transitional cells.

Solution to Question 10:

Odland bodies, lamellar bodies, or membrane-coating granules or keratinosomes are present in the stratum granulosum and upper stratum spinosum.

They discharge lipid components into the intercellular space that plays an important role in barrier function and intercellular cohesion.

The image below shows Odland bodies in stratum granulosum. Green arrows indicate lamellar granules in the cytoplasm. Red arrows indicate secreted lamellar granules.

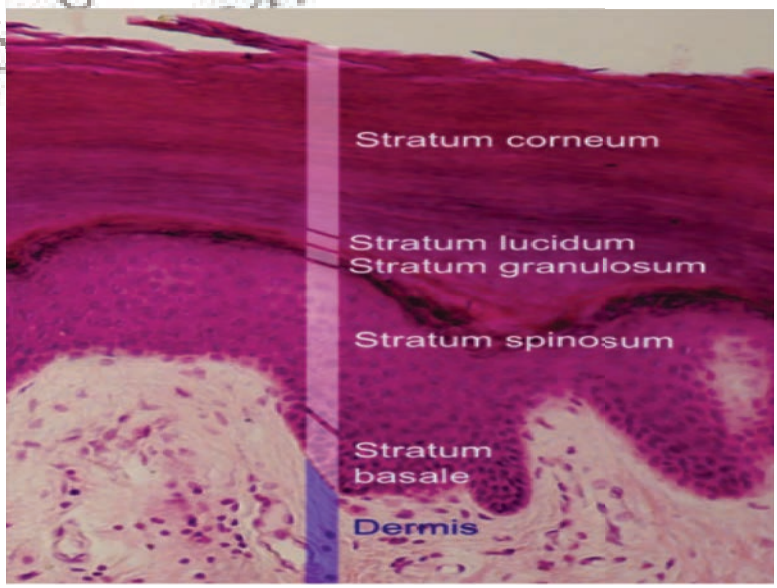


Solution to Question 11:

Melanocytes are present in the stratum basale (marking D).

These cells produce melanin which is packed into organelles called melanosomes and transferred via finger-like processes called the dendrites to keratinocytes.

Melanocytes originate from neural crest cells.

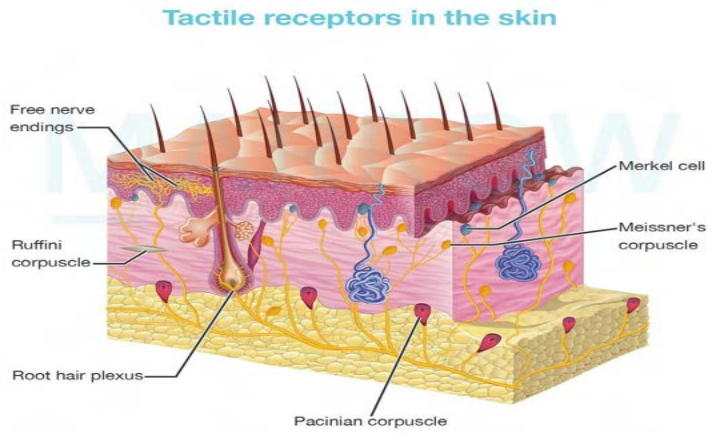


Solution to Question 12:

Merkel cells (Haascheiben cells, Merkel-Ranvier cells, or tactile epithelial cells) are oval-shaped mechanoreceptors essential for light touch sensation and found in the skin of vertebrates.

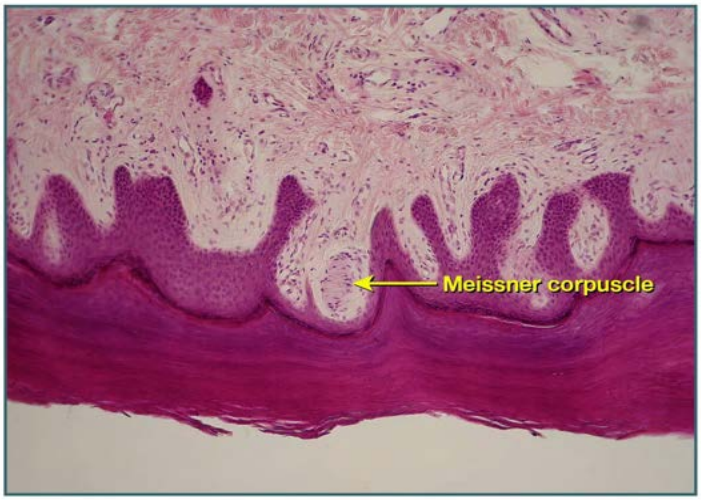
They are seen among the basal keratinocytes and contain desmosomes. They are abundant in the highly sensitive areas of the skin like fingertips and synapse with somatosensory afferent nerve fibers.

These cells may become malignant and form a Merkel cell carcinoma which is aggressive and difficult to treat.



Solution to Question 13:

Meissner's corpuscles are located in the skin just below the epidermis within the dermal papilla. They are concentrated predominantly over glabrous skin (non-hair bearing) like fingertips and lips.



Solution to Question 14:

Desmosomes connect keratinocytes in the epidermis of the skin.

Desmosome (macula adherens) is a cell structure specialized for cell-to-cell adhesion. They resist mechanical stress as they are strongly adhesive.

Desmosomes contain proteins like desmoglein (dsg), desmocollin (dsc), and desmoplakin (dp). The loss of any one protein can lead to the separation of keratinocytes leading to acantholysis.

Solution to Question 15:

The given image shows the characteristic fish-net pattern of immunofluorescence seen in pemphigus vulgaris. It is an autoimmune disease caused by antibodies directed against desmoglein present in desmosomes.

Loss of desmosomes results in loss of cohesion between keratinocytes (acantholysis) and blister formation. Desmosomes failure can result in diseases of both skin and the heart. Mutations within the desmosomes are the main cause of arrhythmogenic right ventricular cardiomyopathy (ARVC).

Solution to Question 16:

Hemidesmosomal plaque components include BPAg1/BP230 and plectin.

Hemidesmosome connects the basal cell layer to the dermo-epidermal junction or basement membrane zone.

Solution to Question 17:

The above scenario is suggestive of epidermolysis bullosa simplex. It is associated with mutations in the genes for K5/14 (keratin filaments). K5/14 keratin filaments are present in the stratum basale.

Keratin is an intermediate filament protein present in all keratinocytes. There are 2 types of keratin filaments:

Keratin filaments exist as heterodimers consisting of one acidic and one basic filament. Stratified squamous epithelia express various keratin pairs during epithelial differentiation:

Type 1	Type 2
Acidic in nature	Basic in nature

Type 1	Type 2
K9-K10, K12-K28, K31-K40	K1 to K8, K71-K86

Keratin heterodimer	Site
K5/14	Stratum basale
K1/10	Stratum spinosum
K2/K11	Stratum granulosum
K3/K12	Cornea
K4/K13	Buccal mucosa
K6/K16	Nails
K8/18	Simple epitheliu m

Solution to Question 18:

The lamina densa is an electron-dense layer present in the dermo-epidermal junction and it is composed mainly of type IV collagen.

Components of lamina densa:

- Collagen type IV
- Laminin 1/111
- BM-40
- SPARC
- Perlecan

Solution to Question 19:

Type VII collagen is the major component of anchoring fibrils of the dermo-epidermal junction.

Solution to Question 20:

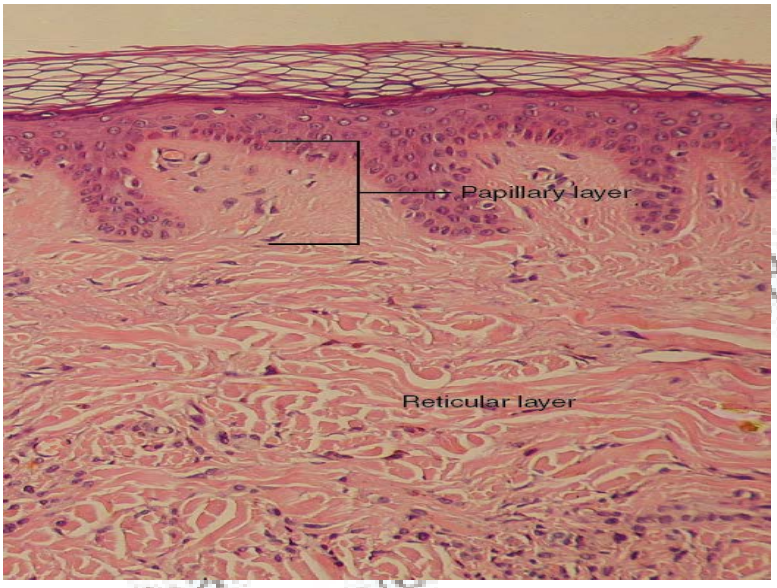
The superficial vascular plexus of the skin is present below the papillary dermis.

The dermis is rich in vascular supply (unlike the epidermis, which is avascular). It can be divided into the papillary dermis (upper 1/10) and reticular dermis (lower 9/10).

The superficial vascular plexus is present between the papillary and reticular dermis (subpapillary plexus) and the deep vascular plexus is present below the reticular dermis.

The main functions are providing nutrients and oxygen. It also regulates body temperature by controlling blood flow through capillaries in the upper dermis such that the opening of blood vessels allows dissipation of excess heat while constriction conserves heat.

The image below shows the location of the papillary and reticular layers of the dermis.



Solution to Question 21:

Type-I collagen is the predominant type of collagen present in the dermis accounting for approximately 80% of the collagen in the dermis.

Dermis forms the major part of human skin and extends from lamina densa above to the subcutis below. It is highly vascular, largely acellular, and primarily consists of the extracellular matrix of connective tissue.

The four main classes of extracellular components present in the dermis are as follows:

• Collagen fibers to provide tensile strength (most abundant)

• Elastic structures to provide resilience like elastin

• Non-collagenous glycoproteins like fibrillins that facilitate cell-matrix interactions

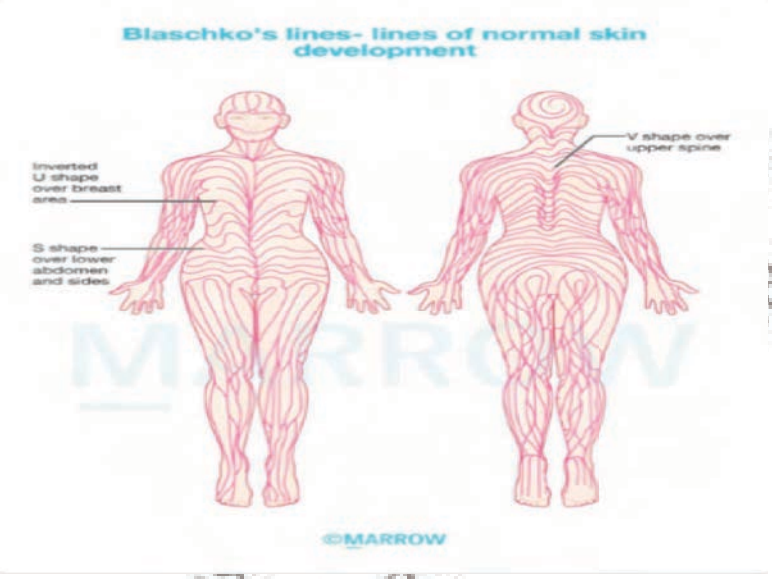
• Proteoglycan molecules like hyaluronic acid, dermatan sulfate, and chondroitin sulfate

Solution to Question 22:

Incontinentia pigmenti is a rare X-linked dominant disorder in which the lesions are present along Blaschko's lines. Blaschko's lines are lines of normal cell development in the skin.

The lines are believed to trace the migration of embryonic cells and are invisible under normal conditions, becoming apparent only when some diseases of the skin or mucosa manifest themselves according to these patterns.

They follow a "V" shape over the upper spine, 'S-shaped' whirls over the lower abdomen and sides, inverted U-shape from the breast area onto the upper arm, and wavy shapes on the head. The stripes are a type of genetic mosaicism.



Several other dermatological disorders are known to follow the lines of Blaschko as given in the table:

Disorder	Examples
Genodermatoses	Melanotic macules of McCune-Albright syndromeFocal dermal hypoplasia
Congenital/Nevoid conditions	Hypomelanosis of ItoNevus depigmentosusLinear Darier's diseaseEpidermal Naevus
Acquired dermatoses	Segmental vitiligoLichen striatusLinear scleroderma

Solution to Question 23:

Stem cells are not known to occur at the base of apocrine sweat glands.

The stem cells are present in:

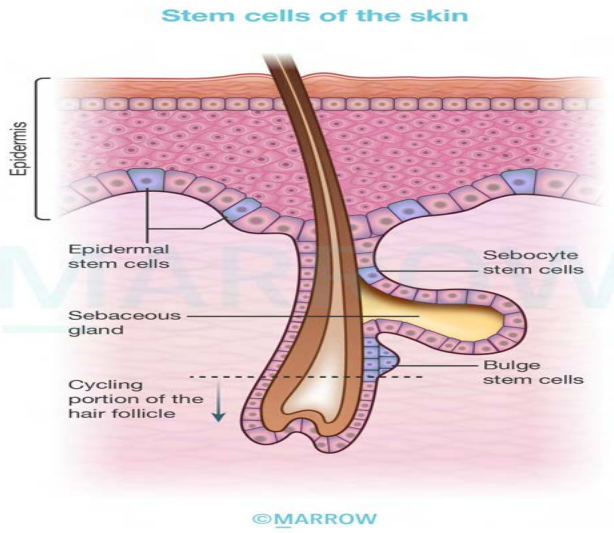
• Bulge area of hair follicles

• Basal layer of the interfollicular epidermis

• Base of sebaceous glands.

Their function is to maintain skin homeostasis, regenerate skin appendages and repair itself after injury.

The image below shows the location of stem cells of the skin.



Solution to Question 24:

The ratio of type-I to type-III collagen in the adult human skin is 8:1.

Type-I collagen is the predominant collagen in the human dermis. Type-III collagen is known to predominate in the human skin during embryonic development, but during the early postnatal period, type-I collagen synthesis accelerates. This results in the ratio of type-I to type-III collagen in the adult human skin being approximately 8:1.

Solution to Question 25:

The area marked is the reticular dermis. It is made up of dense irregular connective tissue.

It is found in the regions that are under considerable mechanical stress and where protection is given to ensheathed organs. It is usually present in:

• Reticular dermis

• Superficial connective tissue sheaths of the muscle and nerves

• Adventitia of large vessels

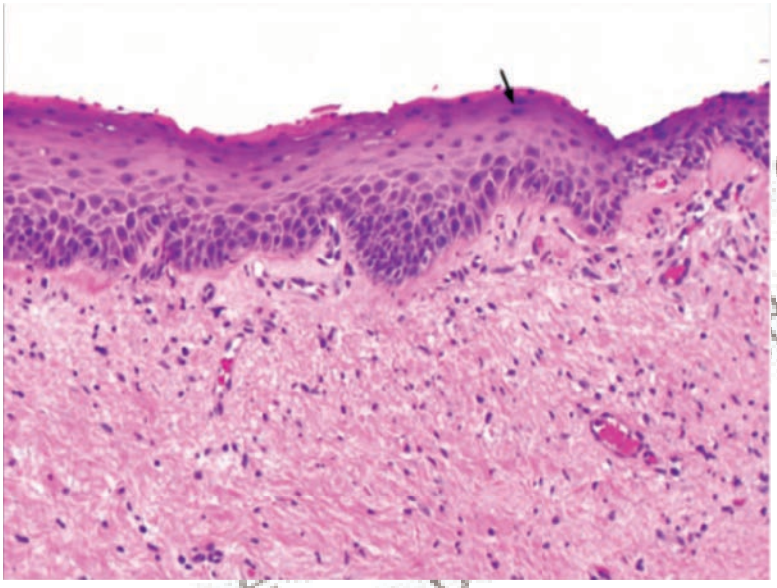
• Capsules of various organs and glands (e.g., testis, sclera, periosteum, perichondrium)

On the other hand, dense regular collagen fibers are found in tendons.

Dermatopathology of Skin Lesions

Question 1:

Which of the following conditions are associated with the given histopathological finding?



a) 2, 3, 4

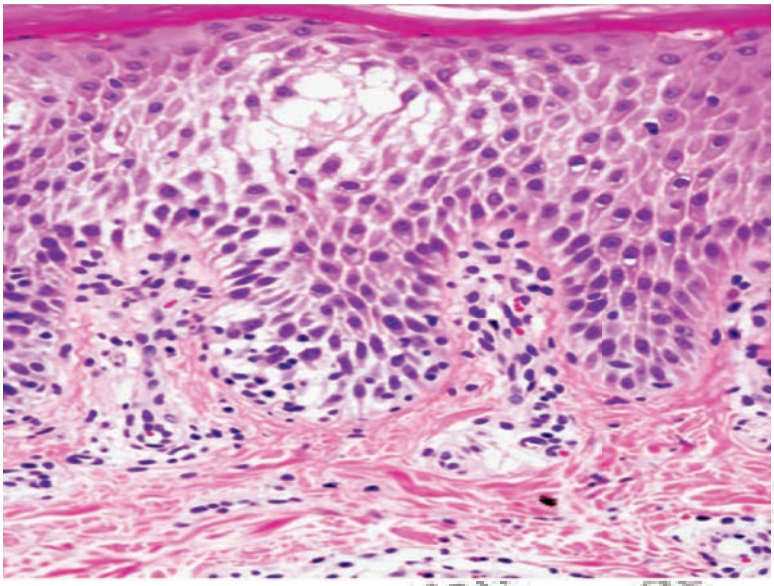
b) 2, 5

c) 1, 3

d) 4, 5

Question 2:

Choose the correct option with respect to the histopathological finding shown below.



a) Intracellular edema in stratum spinosum

b) Intercellular edema in stratum granulosum

c) Intracellular edema in stratum granulosum

d) Intercellular edema in stratum spinosum

Question 3:

Which of the following is not a histopathological feature of lichenoid tissue reaction?

a) Liquefactive degeneration

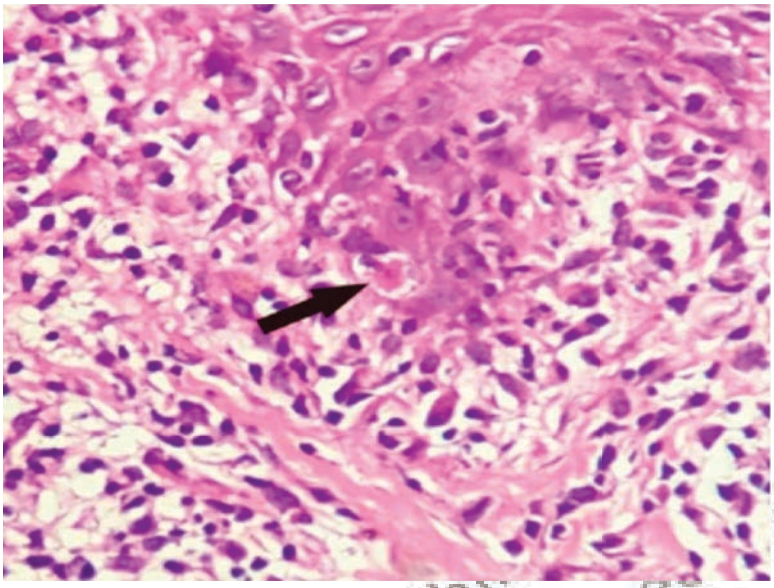
b) Saw toothing

c) Microabscess

d) Colloid body formation

Question 4:

A 29-year-old man presented with purple, pruritic plaques on the flexor aspect of the left forearm for 7 months. A history suggestive of Koebner's phenomenon was elicited. A skin biopsy done is shown below. Identify the structure marked.



a) Copper penny bodies

b) Colloid bodies

c) Donovan bodies

d) Kamino bodies

Question 5:

Acantholysis is seen in all except:

a) Pemphigus vulgaris

b) Herpes labialis

c) Staphylococcal scalded skin syndrome

d) Bullous pemphigoid

Question 6:

Choose the correct statement regarding acanthosis.

a) Thickening of stratum corneum

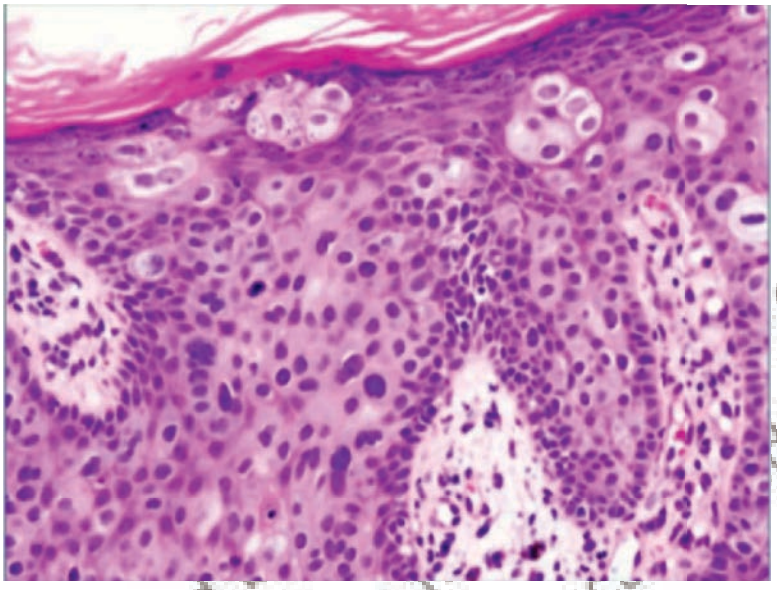
b) Thickening of stratum granulosum

c) Thickening of stratum spinosum

d) Thickening of dermo-epidermal junction

Question 7:

A patient presented with a scaly, plaque-like lesion on the face. A skin biopsy was done. What is the likely diagnosis?



a) Psoriasis

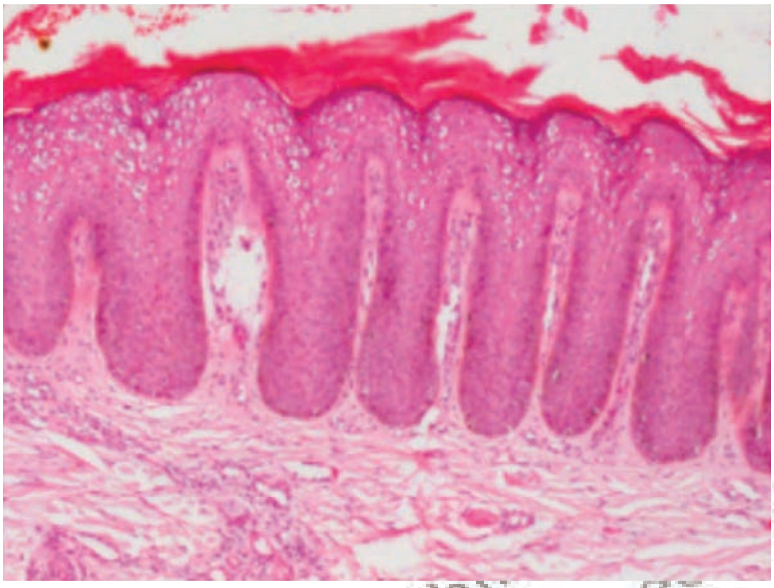
b) Lichen Planus

c) Bowen's disease

d) Vitiligo

Question 8:

A patient presented with scaly pruritic lesions on his arm. Biopsy done is shown below. What is this finding called?



a) Papillomatosis

b) Parakeratosis

c) Saw toothing

d) Villi

Question 9:

Neutrophilic micro-abscesses are seen in which of the following conditions?

a) Pemphigus vegetans

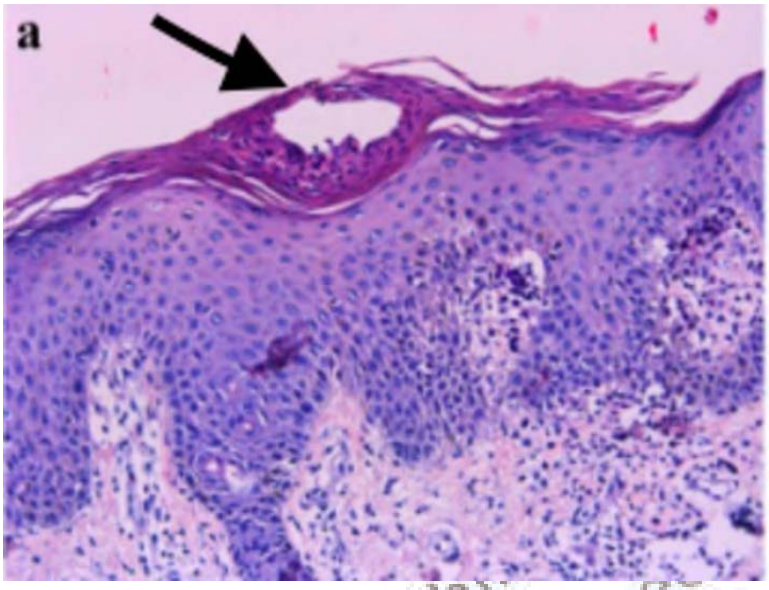
b) Urticaria pigmentosa

c) Mycosis fungoides

d) Psoriasis

Question 10:

The skin biopsy section was taken from a patient diagnosed with psoriasis is shown below. What is the arrow pointing to?



a) Munro's microabscess

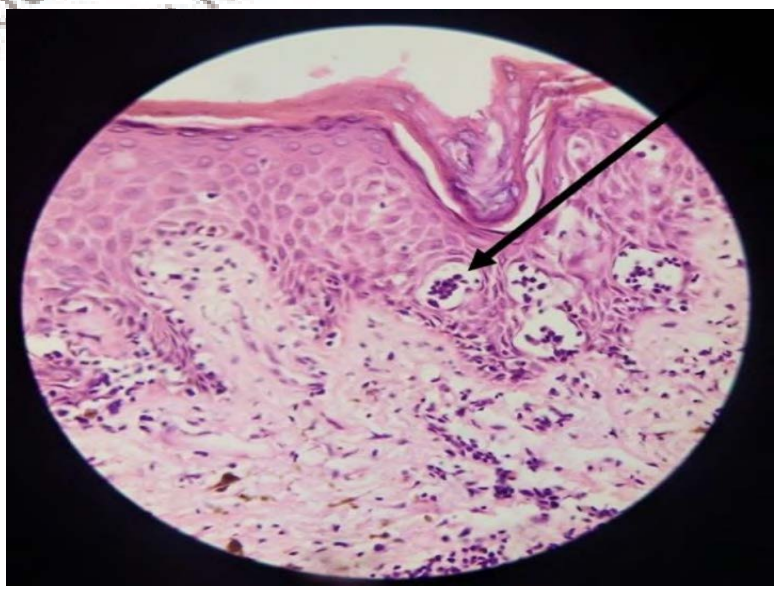
b) Pautrier's microabscess

c) Spongiform pustules of Kogoj

d) Eosinophilic microabscess

Question 11:

The arrow depicted in the image is an important histopathological feature of which of the following conditions?



a) Mycoses fungoides

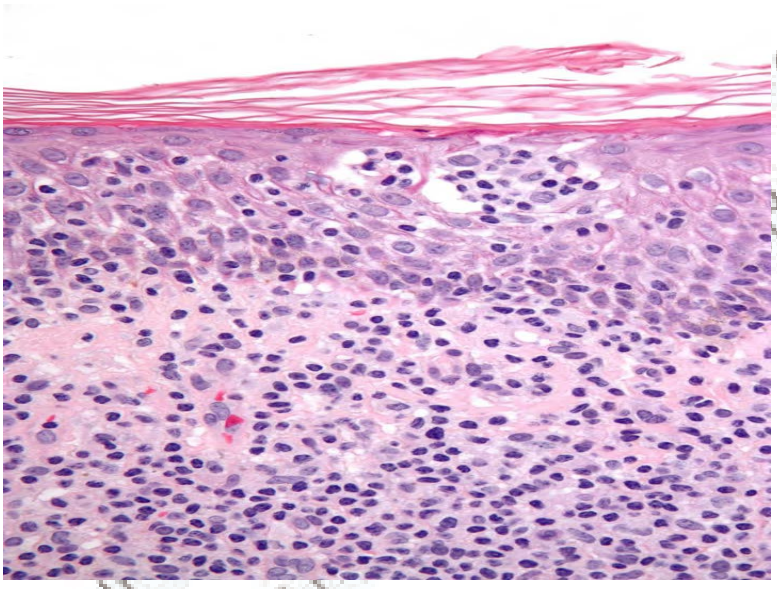
b) Psoriasis

c) Lichen planus

d) Eczema

Question 12:

A patient presents with fine scaly plaque-like lesions on the upper arm. A skin biopsy is taken which shows the following histopathological finding. What is the most likely diagnosis?



a) Psoriasis

b) Mycosis fungoides

c) Dermatitis herpetiformis

d) Lichen planus

Answer Key

Question No.	Correct Option
1	d
2	d
3	c
4	b
5	d

6	c
7	c
8	a
9	d
10	a
11	a
12	b

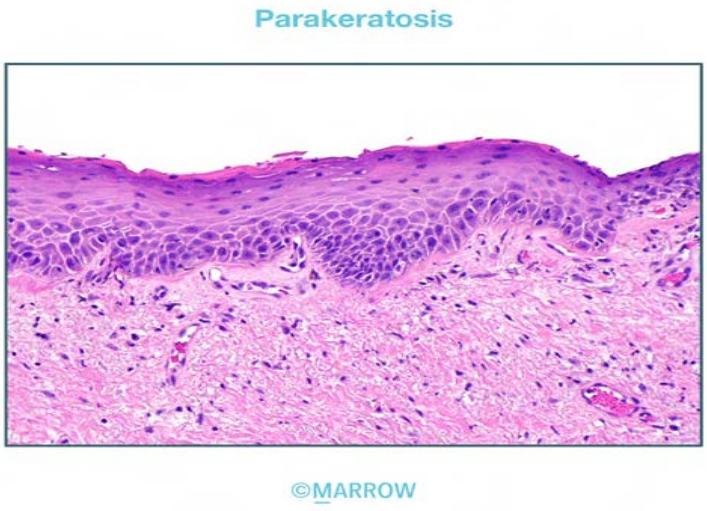
Detailed Explanations

Solution to Question 1:

The above image shows nucleated stratum corneum suggestive of parakeratosis commonly seen in psoriasis and actinic keratosis.

Parakeratosis refers to abnormal keratinization in which the cells of basal layer divide rapidly reaching the stratum corneum faster and do not have time to shed the nucleus. As a result, the nucleated stratum corneum is observed on histopathology.

Hyperkeratosis refers to the increased thickness of the stratum corneum. This is observed in psoriasis, lichen planus, and ichthyosis.

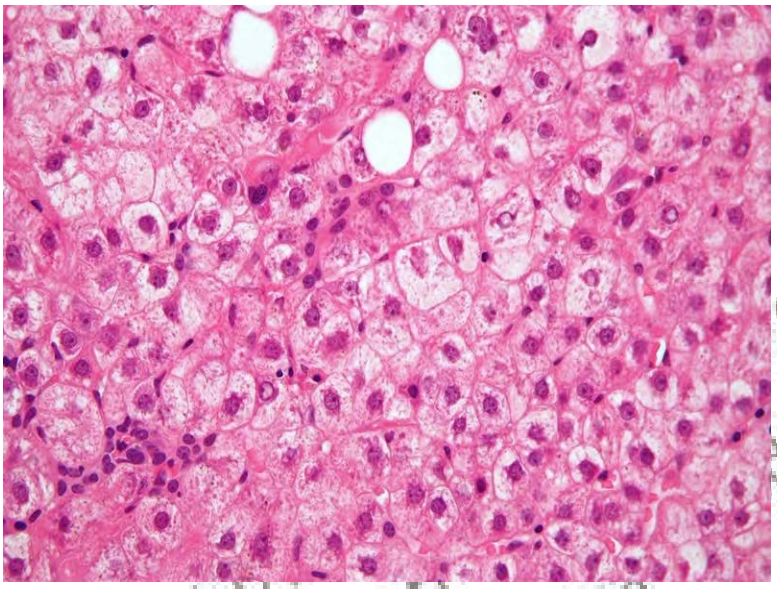


Solution to Question 2:

The above image shows intercellular edema involving the stratum spinosum which is suggestive of spongiosis. Spongiosis is the characteristic histopathological feature of acute eczema.

In contrast, ballooning degeneration is a term that refers to the intracellular edema occurring in the stratum spinosum. This results in acantholysis. Ballooning degeneration is often seen secondary to viral infections like herpes.

The image below shows ballooning degeneration (intracellular edema is seen).



Solution to Question 3:

Microabscess is not typical of lichenoid tissue reactions.

Skin changes in lichenoid tissue reactions:

• Upper dermis - Band■like infiltrate of mononuclear cells.

• Dermoepidermal junction - Saw■toothed pattern.

• Basal cell layer - Liquefaction degeneration, colloid body formation.

• Epidermis - Increase in thickness.

Lichenoid reactions are seen in:

• Lichen planus

• Lupus erythematosus

• Lichen sclerosis

• Poikilodermas

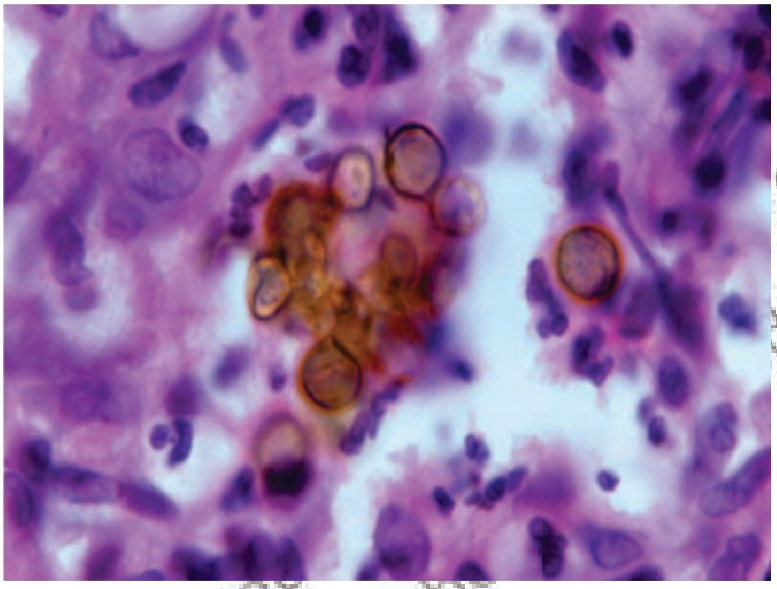
• Cutaneous drug eruptions.

Solution to Question 4:

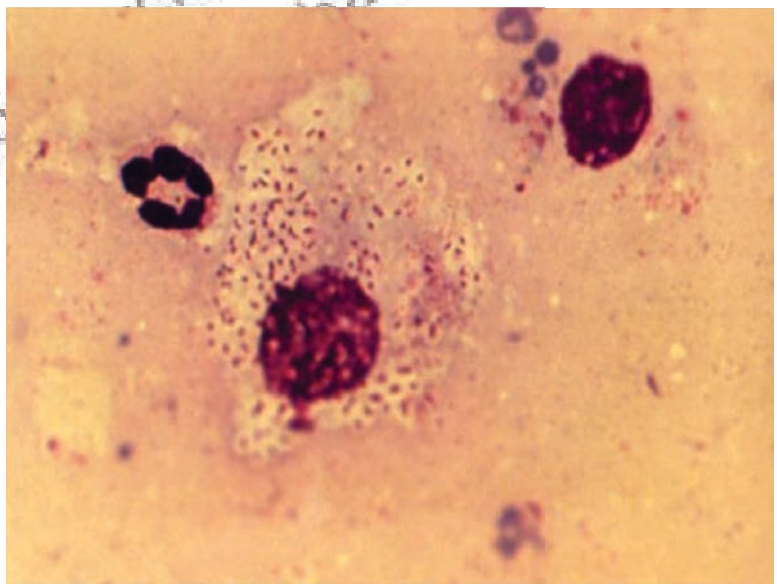
The given scenario with symptoms of purple, itchy, plaque exhibiting Koebner's phenomenon is suggestive of lichen planus. It is characterized by the presence of Civatte bodies or colloid bodies as seen in the image above.

The colloid body is a homogeneous, eosinophilic, rounded body resulting from the degeneration and death of keratinocytes, particularly in the lower layers of the epidermis. This structure is found in various lichenoid tissue reactions.

Option A: Copper penny bodies are seen in chromoblastomycosis.



Option C: Donovan bodies are seen in granuloma inguinale.



Option D: Kamino bodies are eosinophilic globules seen in the epidermis or in the region of the dermal-epidermal junction in the spindle and epithelioid cell (Spitz) naevi.

Solution to Question 5:

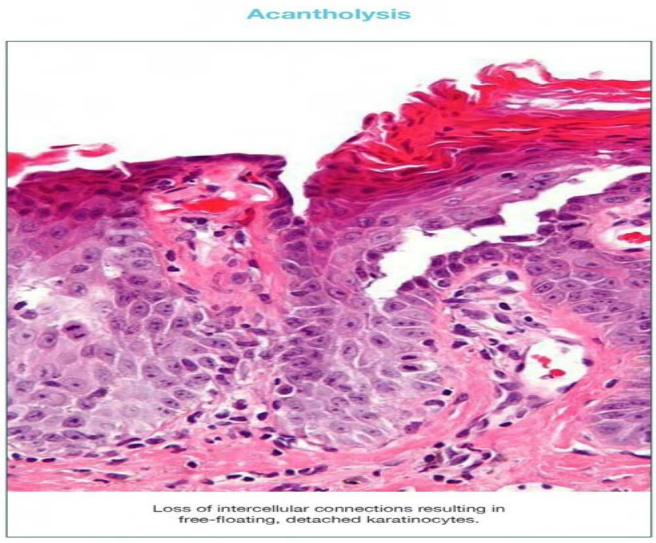
Acantholysis is not seen in bullous pemphigoid as it is associated with subepidermal blistering.

Acantholysis is the loss of intercellular connections, such as desmosomes, resulting in the loss of cohesion between keratinocytes.

Acantholysis is classified as:

The image below shows acantholysis (note the rounded and free-floating, detached keratinocytes).

Primary	Secondary
Ruptureof the desmosome first, forming circular acantholytic cells	Ballooningof the keratinocyte first, formingcircular acantholytic cells(Tzank cell)
Seen in:Pemphigus vulgarisStaphylococcal scalded skin syndromeDarier's diseaseHailey Hailey disease	Seen in:Herpes simplex infections (HSV-1 and 2)Varicella-zosterinfections (chickenpox, shingles)



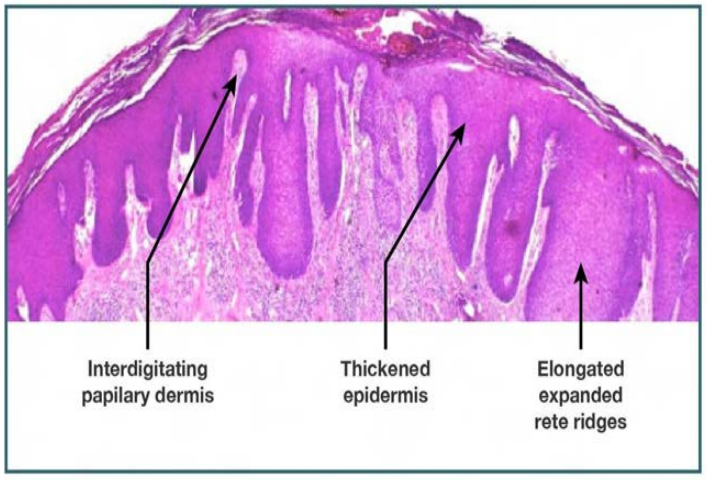
Solution to Question 6:

Acanthosis is characterized by the increase in the number of cells of the stratum spinosum leading to its increased thickness.

Acanthosis is commonly accompanied by other histological changes such as hypergranulosis, hyperkeratosis, and papillomatosis. It is seen in verruca vulgaris, chronic eczema, lupus vulgaris.

Kindly note that this should not be confused with the term acantholysis. Acantholysis refers to the loss of cohesion between keratinocytes due to the breakdown of intercellular bridges formed by desmosomes. This can be seen in various pemphigus-related disorders and secondary to bullous impetigo and other infections.

The image below shows acanthosis. Notice the increased thickness of the Malpighian layer and the elongated rete ridges.



Solution to Question 7:

The above image showing abnormal epidermal cell keratinization suggestive of dyskeratosis along with the clinical presentation points to a likely diagnosis of Bowen's disease.

Dyskeratosis is characterized by nuclear pyknosis and condensation of the cytoplasm of keratinocytes.

This can occur in:

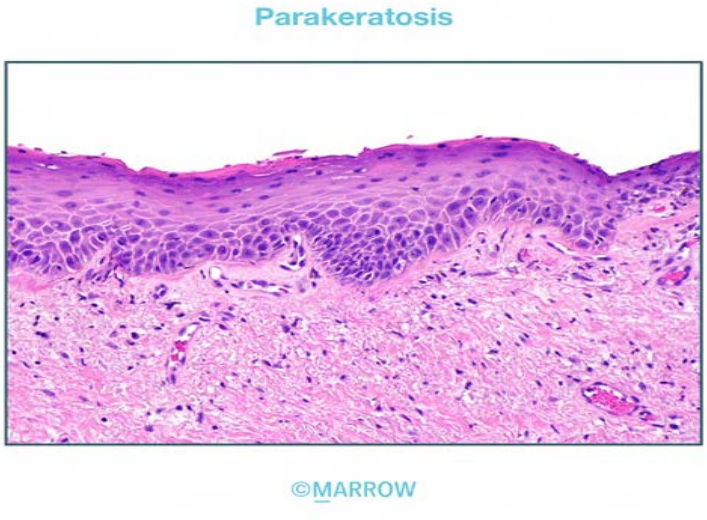
- Malignant lesion - squamous cell carcinoma
- Premalignant lesions:
- Bowen disease
- Paget's disease
- Solar keratosis
- Benign conditions:
- Darier disease
- Hailey Hailey disease

Solution to Question 8:

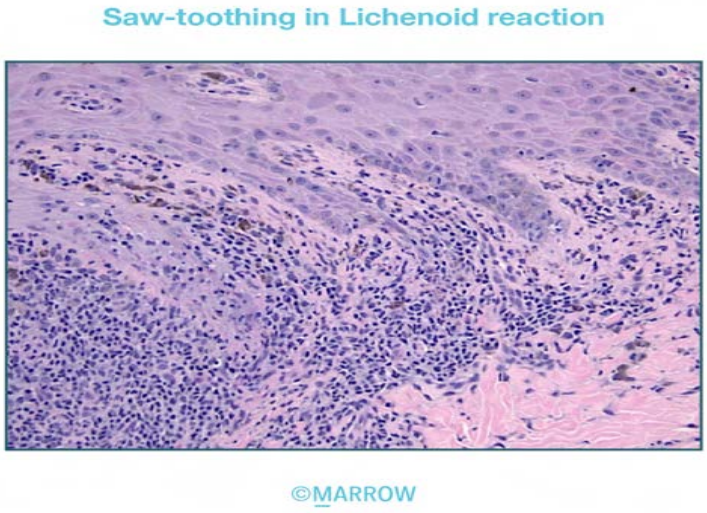
The above image shows upward elongation of the dermal papillae, giving an accentuated and sometimes irregular, undulating configuration to the dermal-epidermal junction which is suggestive of papillomatosis. The feature is commonly seen in psoriasis, and a wide variety of

other inflammatory and neoplastic cutaneous disorders.

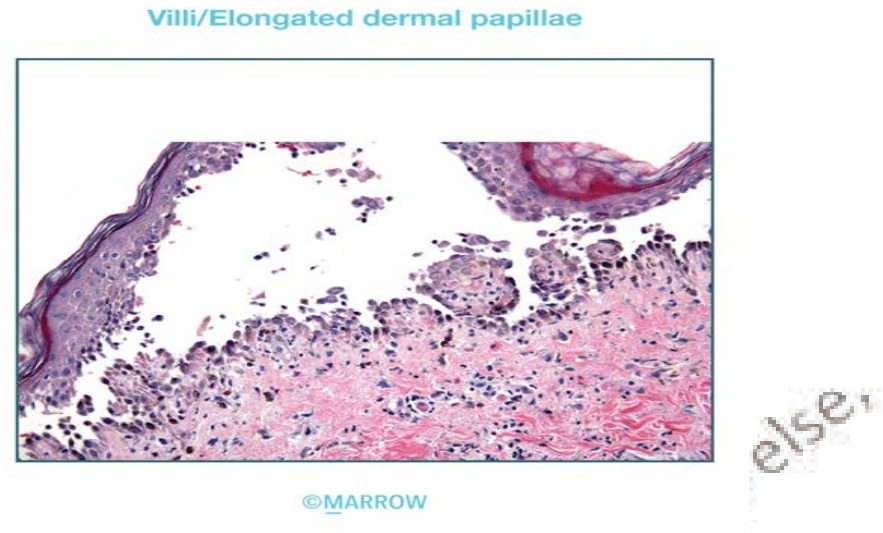
Option B: Parakeratosis can be defined as the retention of keratinocyte nuclei within the stratum corneum. It is commonly seen in psoriasis.



Option C: Saw toothing refers to the pattern of the dermal-epidermal junction where dermal papillae are expanded and the tips of the rete pegs are pointed. It is seen in lichen planus and other lichenoid reactions.



Option D: Villi refers to elongated dermal papillae usually covered with a single layer of epidermal cells, which form the base of a blister cavity as a result of suprabasal acantholysis. It is seen in various forms of pemphigus and Darier disease.



Solution to Question 9:

Neutrophilic micro-abscesses are seen in psoriasis.

A microabscess is a small cavity in the epidermis or dermis formed by collections of leucocytes.

Some types of microabscesses and their examples are given below:

Predominant cell	Name of microabscess	Disease
Neutrophilic microabscess	Papillary tip microabscessMunroe's microabscess (superficial)Spongiform pustules of Kogoj (deep)	Dermatitis HerpetiformisPsoriasis
Lymphocytic microabscess	Pautrier's microabscess	Mycosis fungoides
Eosinophilic microabscess		Pemphigus vegetans

Solution to Question 10:

In the given image, the arrow points to a small collection of cells seen within the stratum corneum in a patient with psoriasis. This is suggestive of a Munro's microabscess.

Munro's microabscesses are small collections of neutrophil polymorphs. Hyperkeratosis and parakeratosis are also seen here.

The spongiform pustule of Kogoj refers to the multilocular micropustules that form in the spinous layer of the epidermis in pustular psoriasis.

Predominant cell	Name of microabscess	Disease
Neutrophilic microabscess	Papillary tip microabscessMunroe's microabscess (superficial)Spongiform pustules of Kogoj (deep)	Dermatitis HerpetiformisPsoriasisPsoriasis
Lymphocytic microabscess	Pautrier's microabscess	Mycosis fungoides
Eosinophilic microabscess		Pemphigus vegetans

Solution to Question 11:

The arrow mark is pointing towards a collection of atypical lymphocytes in the epidermis termed as Pautrier microabscess. This is a very important histopathology feature of mycoses fungoides which is the most common type of cutaneous T cell lymphoma.

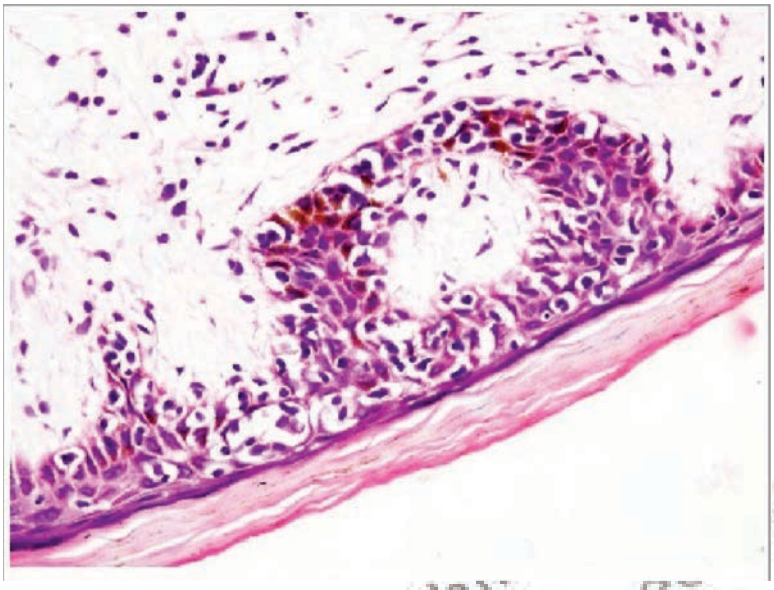
Predominant cell	Name of microabscess	Disease
Neutrophilic microabscess	Papillary tip microabscessMunroe's microabscess (superficial)Spongiform pustules of Kogoj (deep)	Dermatitis HerpetiformisPsoriasisPsoriasis
Lymphocytic microabscess	Pautrier's microabscess	Mycosis fungoides
Eosinophillic microabscess		Pemphigus vegetans

Solution to Question 12:

The above image shows malignant lymphocytes that have migrated to the epidermis from the dermis which is called epidermotropism. It is seen in mycosis fungoides.

Pautrier's microabscess constituting a collection of atypical T-cells in the epidermis is also a feature of mycosis fungoides (cutaneous T-cell lymphoma).

The image below shows atypical lymphocytes showing epidermotropism and the formation of Pautrier's microabscesses (H&E stain, 400x).



Morphology and Investigations of Skin Lesions

Question 1:

Which of the following is a primary skin lesion?

a) Crust

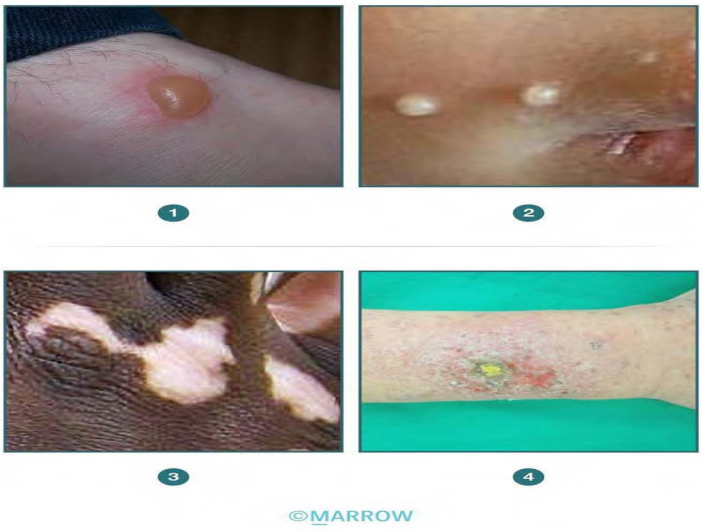
b) Atrophy

c) Purpura

d) Induration

Question 2:

Which of the following is a secondary skin lesion?



a) Image 1

b) Image 2

c) Image 3

d) Image 4

Question 3:

Which of the following cannot be considered as a primary lesion of skin?

a) 1, 2 and 4

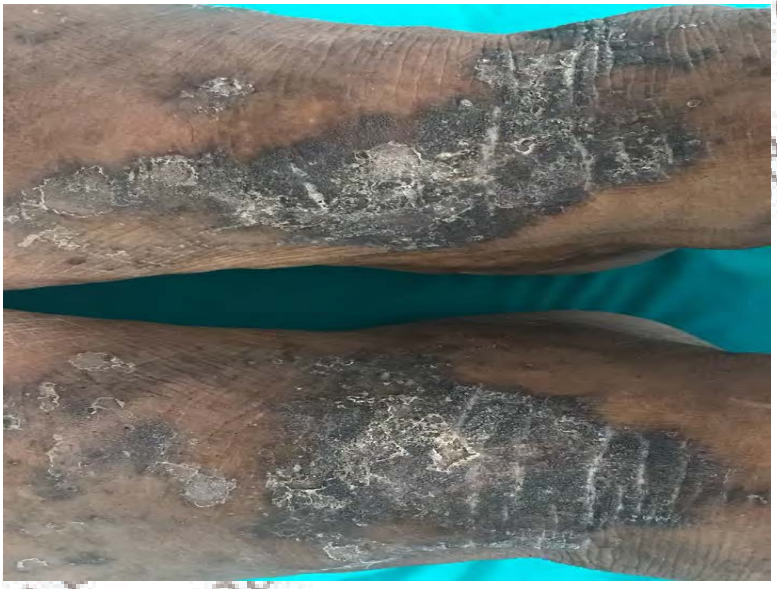
b) 2 and 5

c) 1, 3 and 4

d) 3 and 5

Question 4:

A patient presents to the dermatology OPD with the following finding. How would you describe the morphology of this lesion?



a) Plaque

b) Lichenification

c) Scale

d) Crust

Question 5:

A patient presents with flat, circumscribed, non-palpable skin lesions that are less than 1 cm in diameter. Which of the following terms best describes them?

a) Macule

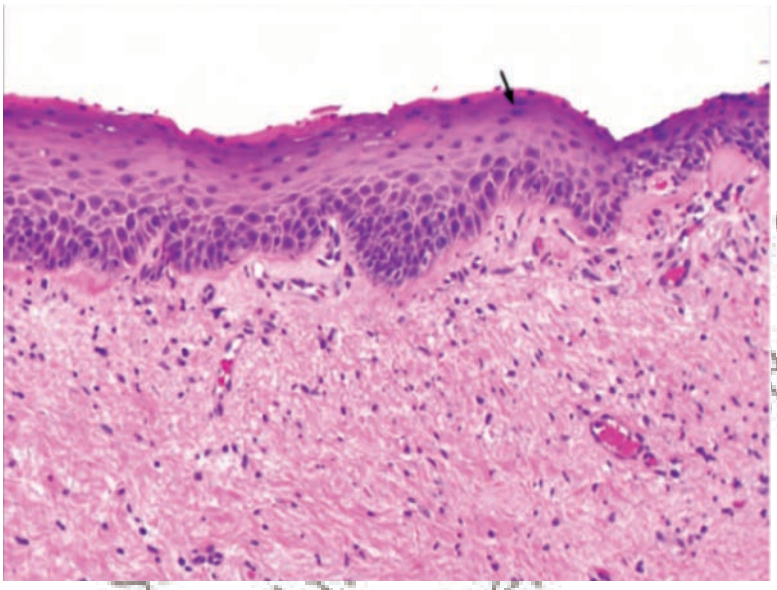
b) Patch

c) Ecchymosis

d) Papule

Question 6:

A dermatology resident identified several flake-like lesions while examining a patient. Skin biopsy is shown below. What are these lesions?



a) Scar

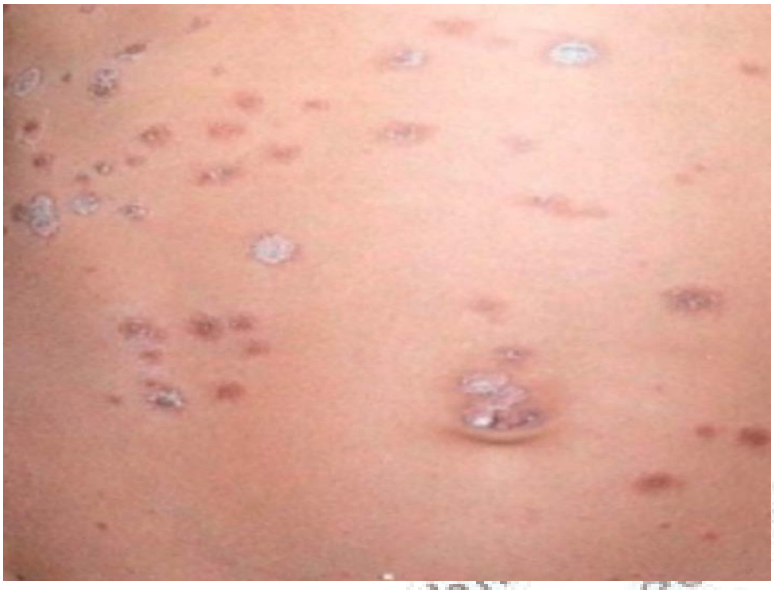
b) Crust

c) Scale

d) Excoriation

Question 7:

A patient presents with the following rash. What is the diagnosis?



a) Psoriasis

b) Seborrheic dermatitis

c) Pityriasis rosea

d) Ichthyosis vulgaris

Question 8:

A 50-year-old man with a chronic skin condition is noted to have areas of linear discontinuation over his skin. What is this finding called?

a) Ulcer

b) Excoriation

c) Erosion

d) Fissure

Question 9:

A 39-year-old woman is being evaluated for pale-colored stools. Further workup reveals elevated direct bilirubin, elevated ALP, and GGT. Which of the following skin lesions would you expect to see?

a) Erosion

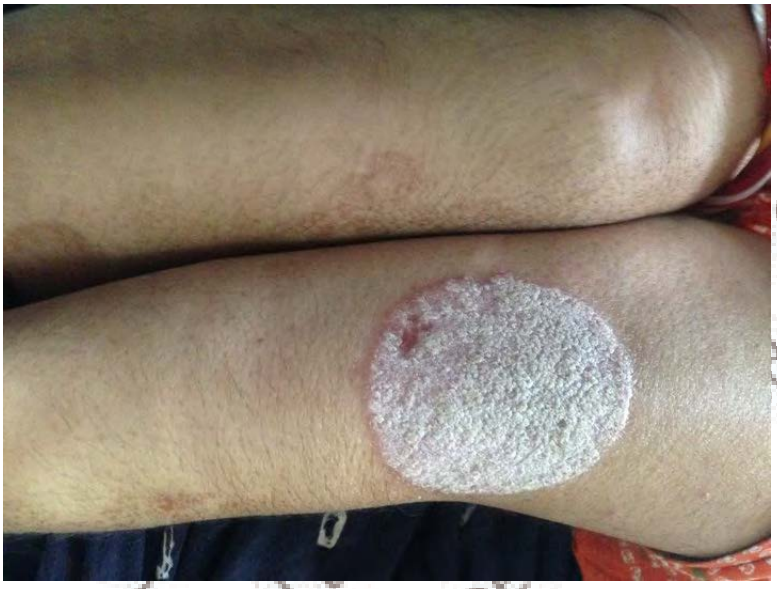
b) Macule

c) Fissure

d) Excoriation

Question 10:

A 26-year-old man presents with the following skin lesion. How will you describe it?



a) Annular

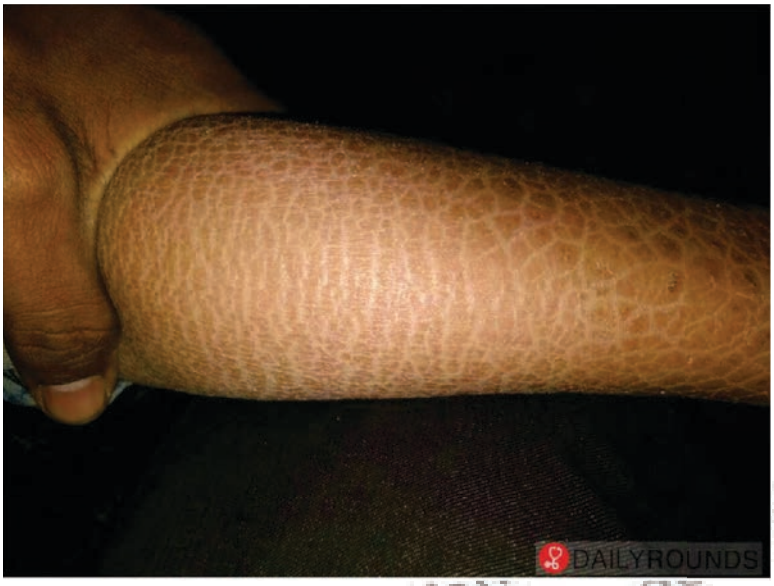
b) Nummular

c) Arcuate

d) Polycyclic

Question 11:

An 11-month-old infant is brought with the given finding for the past 1 month. The mother is concerned that the lesions are itchy as the baby has been fussy and not sleeping well. What is the diagnosis?



a) X-linked ichthyosis

b) Seborrheic dermatitis

c) Atopic dermatitis

d) Ichthyosis vulgaris

Question 12:

A circumscribed elevation, greater than 1 cm in diameter containing clear fluid is known as a:

a) Pustule

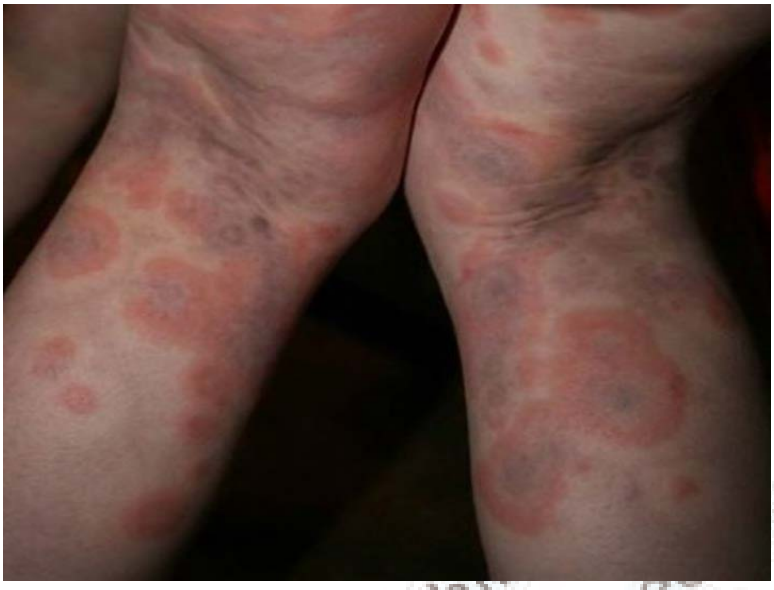
b) Vesicle

c) Wheal

d) Bulla

Question 13:

A 7-year-old girl develops the following lesions after a camping trip. They are mildly itchy. In which condition are they characteristically seen?



a) Tinea corporis

b) Erythema multiforme

c) Contact dermatitis

d) Urticaria

Question 14:

Which of the following diseases has an intertriginous distribution?

a) Herpes zoster

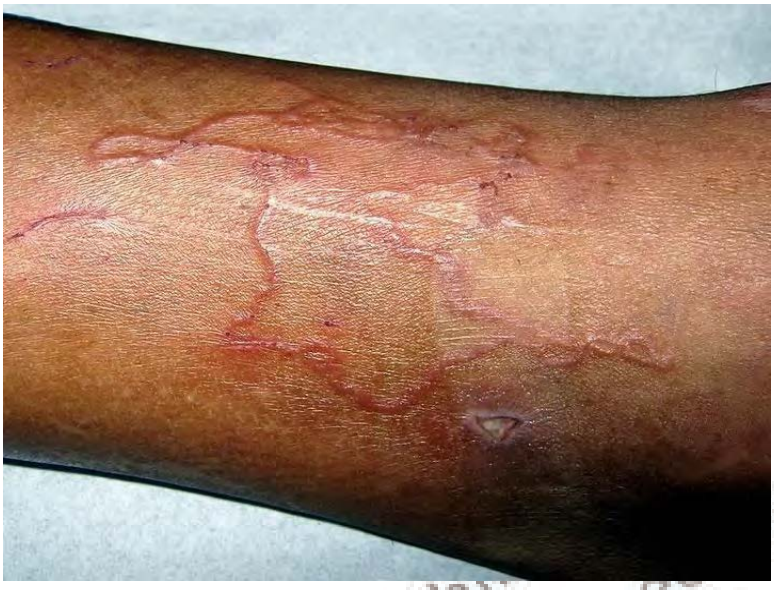
b) Hailey-Hailey Disease

c) Incontinentia pigmenti

d) Sporotrichosis

Question 15:

A 30-year-old professional mountain climber presents with the following lesions over his leg. What is the diagnosis?



a) Scabies

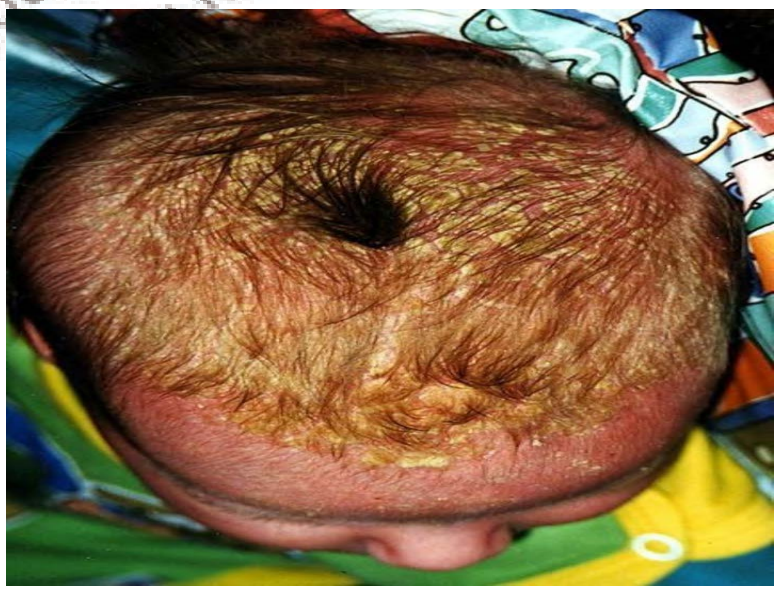
b) Cutaneous larva migrans

c) Allergic contact dermatitis

d) Tinea corporis

Question 16:

A 2-month-old infant is brought to the pediatrician with the following finding. His mother says that he is otherwise healthy. What is the diagnosis?



a) Impetigo

b) Seborrheic dermatitis

c) Atopic dermatitis

d) Tinea capitis

Question 17:

Which of the following would not be seen in a patient with poikiloderma?

a) Varied pigmentation

b) Loss of temperature sensation

c) Skin atrophy

d) Telangiectasia

Question 18:

You have ordered a patch test for an 8-year-old boy with a history of allergic contact dermatitis. After the application of the patch, when should you ask him to return for removal?

a) 24 hours

b) 72 hours

c) 48 hours

d) 96 hours

Question 19:

A dermatology resident performing Wood's lamp examination on a patient notes a milky-white fluorescence. What is the diagnosis?

a) Pityriasis versicolor

b) Vitiligo

c) Tinea capitis

d) Albinism

Question 20:

A 67-year-old diabetic comes to you with a rash over the intertriginous areas, which is more pronounced over his groin. Wood's lamp examination shows coral pink fluorescence. What is the diagnosis?

a) Pityriasis versicolor

b) Erythrasma

c) Tinea cruris

d) Candidal intertrigo

Question 21:

Which of the following diseases cannot be diagnosed by Tzanck smear?

a) Hansen's disease

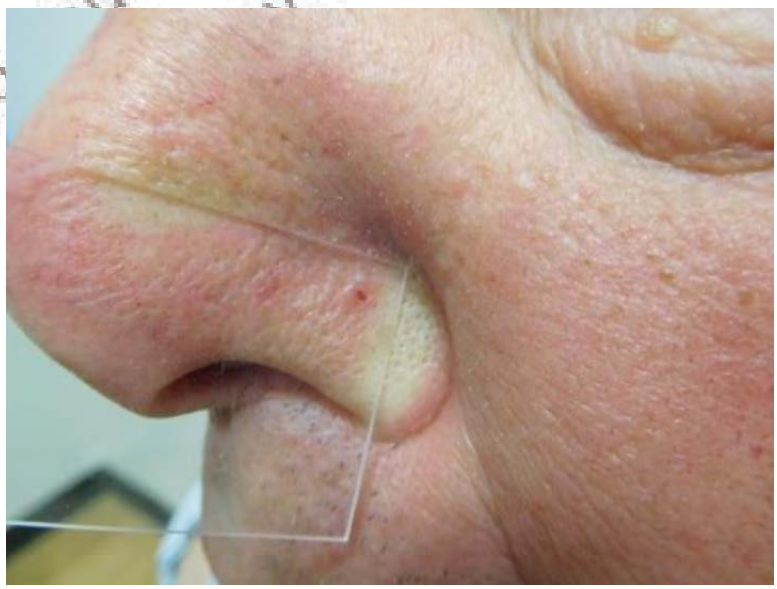
b) Toxic epidermal necrolysis

c) Staphylococcal scalded skin syndrome

d) Pemphigus

Question 22:

What test is being performed in the image given below?



a) Scratch test

b) Auspitz sign

c) Diascopy

d) Patch test

Question 23:

A pathologist is preparing paraffin sections of a skin biopsy sample. Which fixative is he likely to use in this process?

a) Alcohol

b) Formal saline solution

c) 2.5% glutaraldehyde

d) 10% neutral buffered formalin

Question 24:

Scrapings from a patient's skin lesion are mounted in KOH and observed under Calcofluor white UV illumination. Hyphae and clusters of yeast are seen. What is the diagnosis?

a) Pemphigus vulgaris

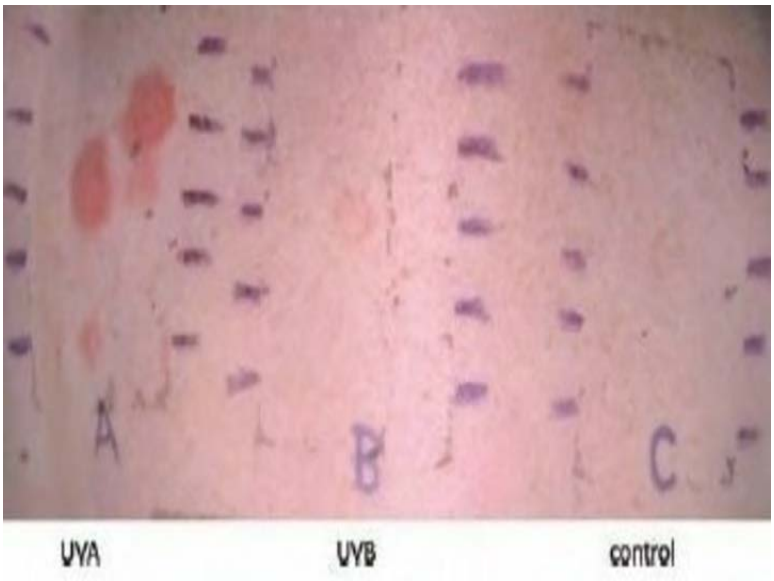
b) Candidiasis

c) Pityriasis versicolor

d) Bullous Pemphigoid

Question 25:

Which of the following statements is false about the test shown below?



a) It is used for photoallergy

b) The covered side shows reaction

c) Reading is taken at 48 hours

d) Patients back is positioned 15 cm from the front panel of lamps

Question 26:

Which of the following drugs used as nail lacquer belongs to morpholines?

a) Amorolfine

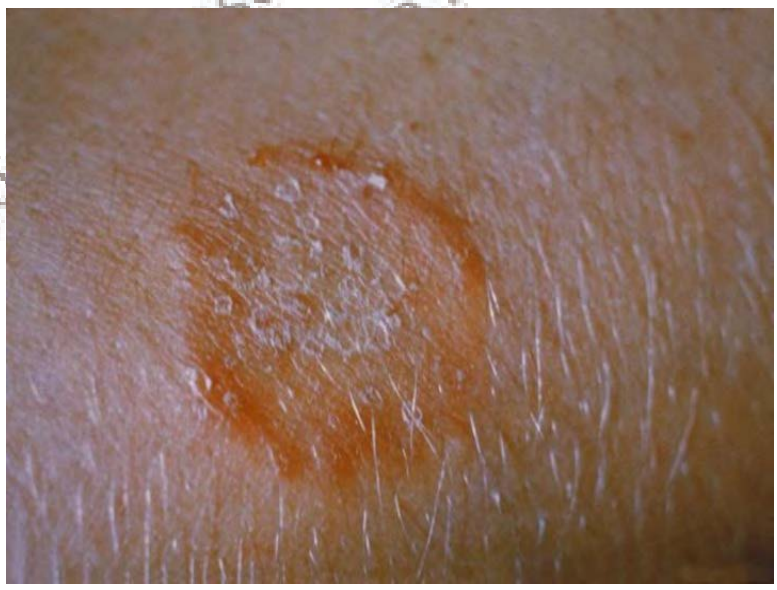
b) Oxiconazole

c) Ciclopirox olamine

d) Tioconazole

Question 27:

Identify the type of skin lesion.



a) Nummular

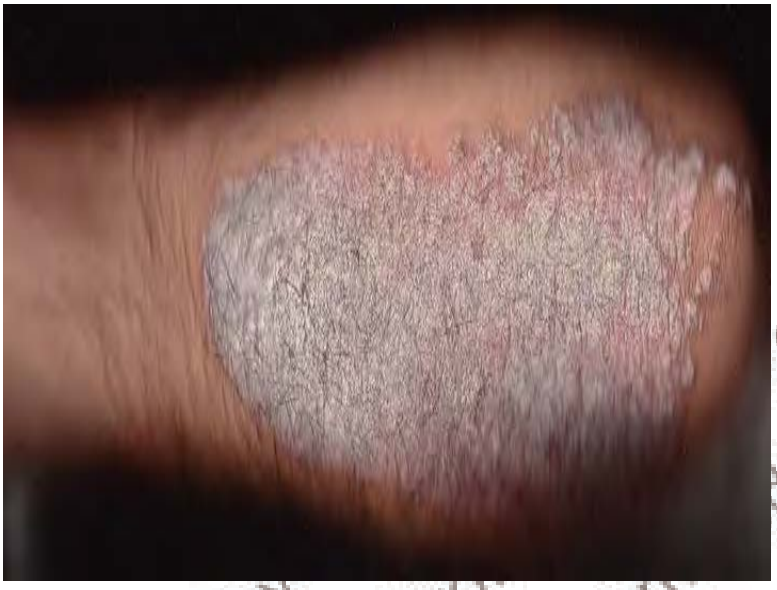
b) Annular

c) Discoid

d) Target

Question 28:

Identify the condition shown in the image below.



a) Psoriasis

b) Seborrheic dermatitis

c) Pityriasis rubra pilaris

d) Pemphigus foliaceus

Question 29:

Which of the following are primary lesions of skin?

a) 1,3,4

b) 3,4,5

c) 3

d) 3,5

Answer Key

Question No.	Correct Option
1	c
2	d

3	d
4	b
5	a
6	c
7	c
8	d
9	d
10	b
11	d
12	d
13	b
14	b
15	b
16	b
17	b
18	c
19	b
20	b
21	a
22	c
23	d
24	c
25	b
26	a
27	b
28	a
29	d

Detailed Explanations

Solution to Question 1:

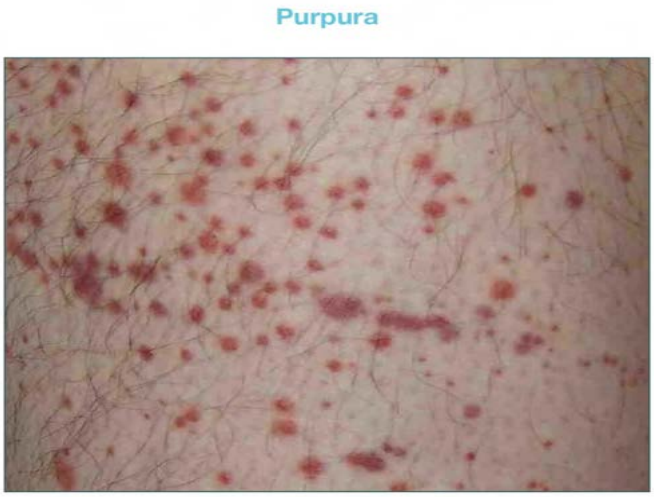
Purpura is a primary skin lesion. Crust, atrophy, and induration are secondary lesions.

It is a condition with red or purple discolored spots on the skin that do not blanch on applying pressure. The spots are caused by bleeding underneath the skin. It is seen:

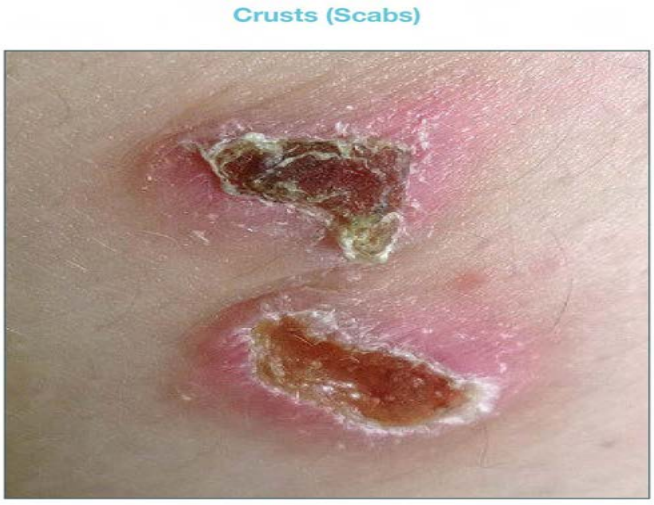
• Vasculitis

• Thrombocytopenia

• Vitamin C deficiency



Option A: Crusts or scabs consist of dried-up discharge from the lesions.



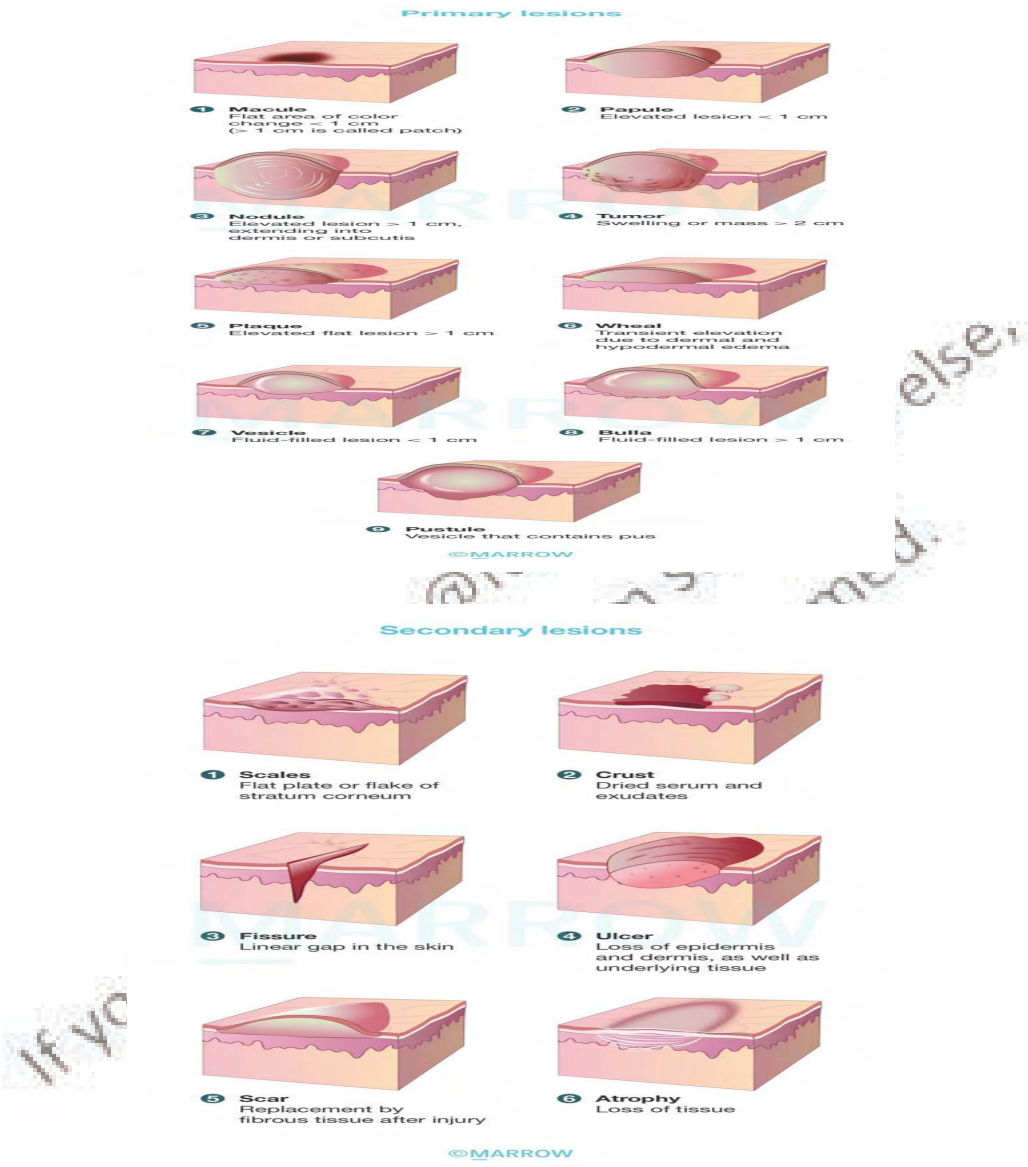
Option B: Atrophy refers to loss of tissue. There may be fine wrinkling and increased translucency if the process is superficial.

Option D: Induration refers to dermal thickening that clinically presents as skin that feels thicker and firmer than normal on palpation.

Solution to Question 2:

Image 4 shows an ulcer with crusting. This is a secondary skin lesion.

Images 1, 2, and 3 show a bulla, a papule, and a patch respectively. All of these are primary skin lesions.



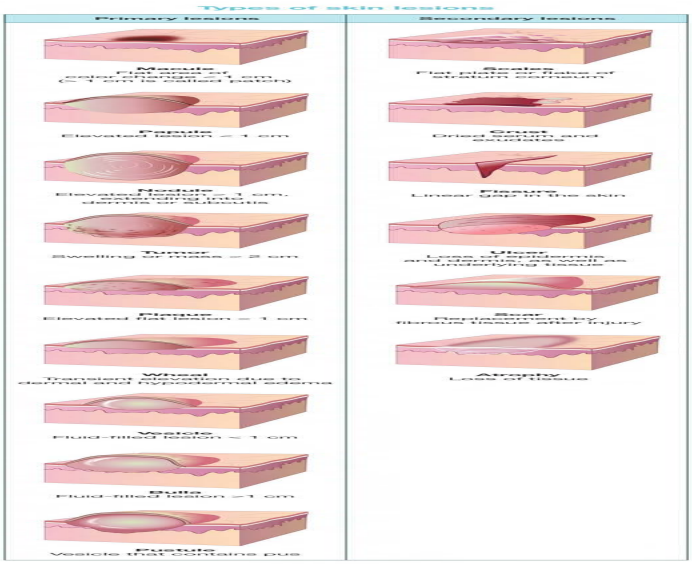
Solution to Question 3:

Excoriation and crusts are secondary skin lesions.

Wheal, macule and pustule are primary skin lesions.

Primary lesions	Secondary lesions
Basic lesions that appear on t he skin.	Appear later in the disease d ue to scratching or infection.

Primary lesions	Secondary lesions
MaculePapulePustulePatchPlaqueNoduleVesicleBullaWheal	LichenificationErosionExcoriationUlcerCrustScar



Solution to Question 4:

The given image shows lichenification.

It is a secondary skin lesion characterized by hyperpigmentation, thickening of the skin, and exaggerated skin markings. It is a feature of chronic eczema.

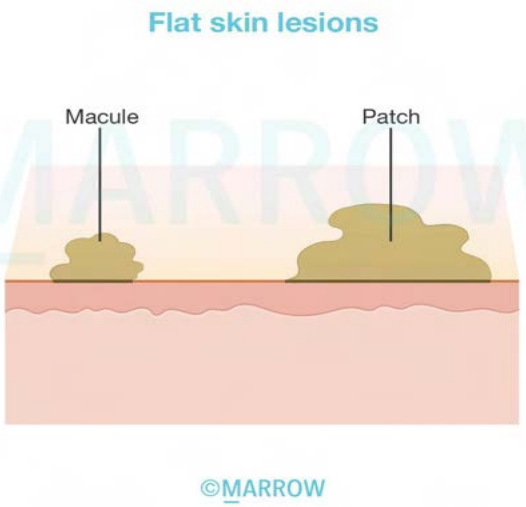
Solution to Question 5:

A macule is a flat, circumscribed, non■palpable lesion of less than 1 cm that differs in color from the surrounding skin. It can be of any color or shape.

Option B: A patch is a lesion of similar description but of size >1 cm.

Option C: An ecchymosis is macular area of hemorrhage > 1 cm

Option D: A papule is a raised lesion < 1 cm.

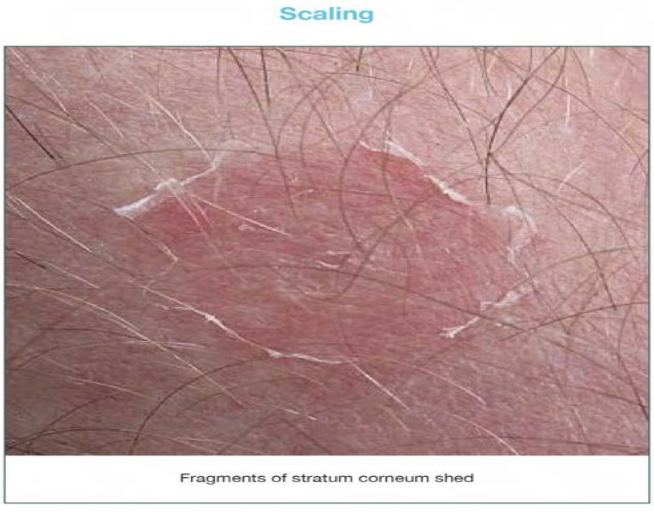


Solution to Question 6:

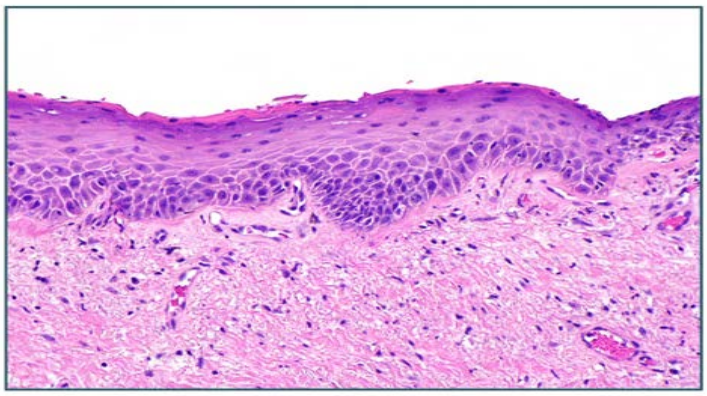
The given biopsy shows parakeratosis. It is associated with visible scales or visible exfoliation of the skin that consists of flakes of stratum corneum.

Parakeratosis refers to the presence of nucleated keratinocytes in the stratum corneum. It is indicative of a high turnover of keratinocytes. It is associated with thickening of the stratum corneum and visibly presents as scaling. The scales represent compacted desquamated layers of stratum corneum.

The following image shows visible fragments of the stratum corneum as it is shed from the skin.



Parakeratosis



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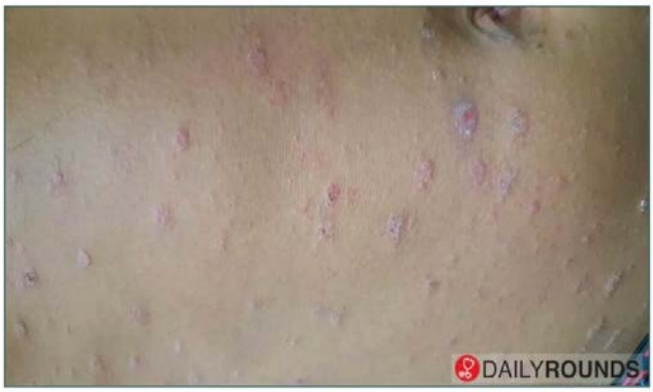
Solution to Question 7:

The given image shows collarette scales, which are a characteristic feature of pityriasis rosea.

Collarette refers to a scale with an adherent outer border and detachable inner border. It appears like a rim around the lesion as seen below.

Collarette scales in Pityriasis rosea



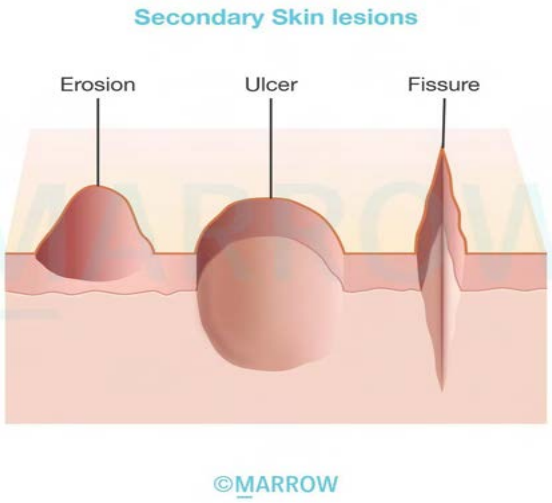
Solution to Question 8:

A linear crack or discontinuation of the skin surface is called a fissure.

Option A: Ulcer refers to a loss of dermis and epidermis, often involving underlying tissue as well.

Option B: Excoriation refers to loss of skin substance, specifically produced by scratching.

Option C: Erosion refers to a loss of the epidermis, which heals without scarring. It commonly follows a blister.



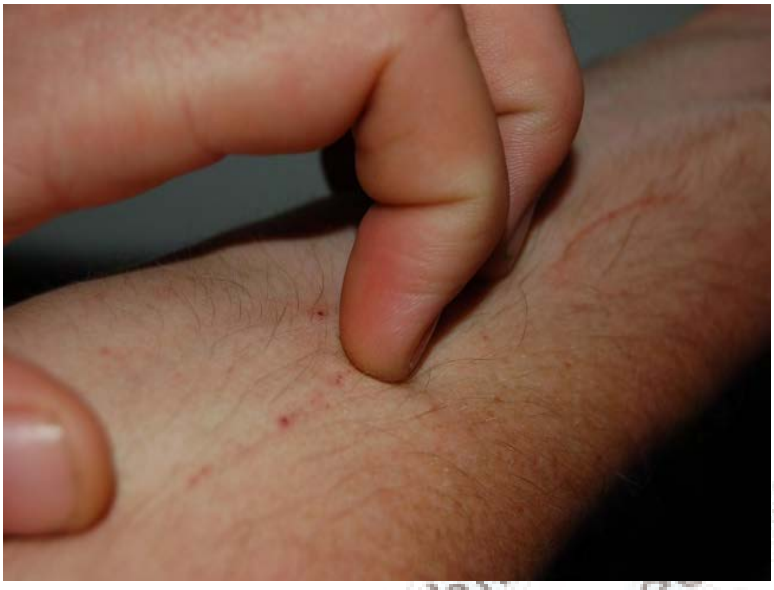
Solution to Question 9:

This clinical scenario is suggestive of obstructive jaundice, which is associated with severe itching. Hence, you would expect to see excoriations or scratch marks.

The pruritis occurring in obstructive jaundice is due to cholestasis. The bile salts deposit in the skin, causing saponification of the fat surrounding the nerve endings. This leaves the nerves exposed, producing the sensation of a severe itch.

It involves loss of skin substance till the level of the epidermis or upper dermis. Almost all pruritic conditions (except lichen planus) cause excoriation.

The image given below shows excoriations.

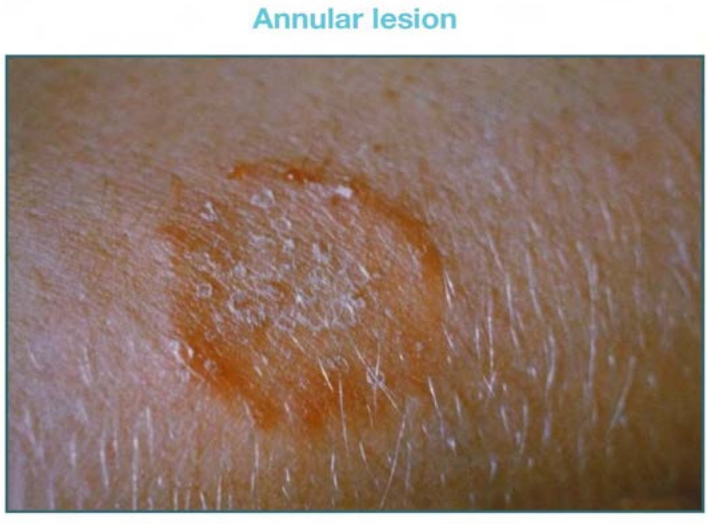


Solution to Question 10:

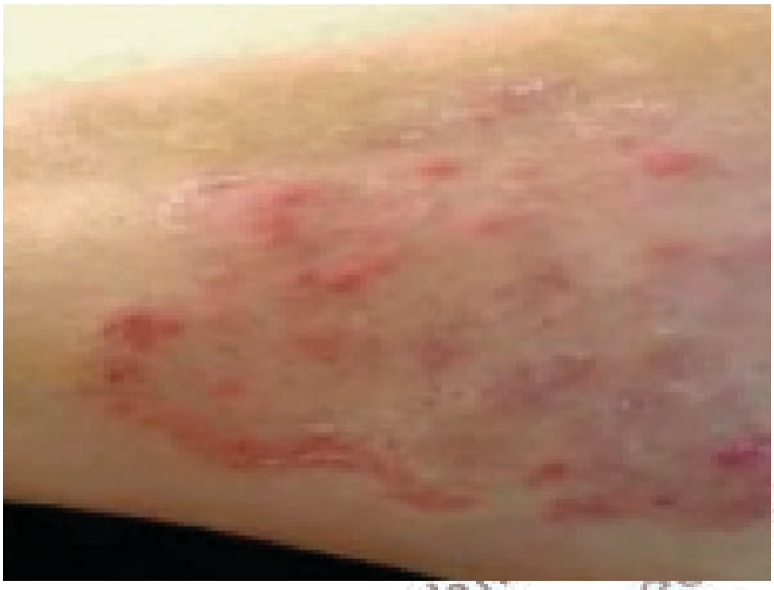
The given image showing a round lesion without central clearing is called a nummular (coin-like) or a discoid lesion.

Both, the edge and center are equally active and uniformly colored. It is seen in discoid eczema, psoriasis.

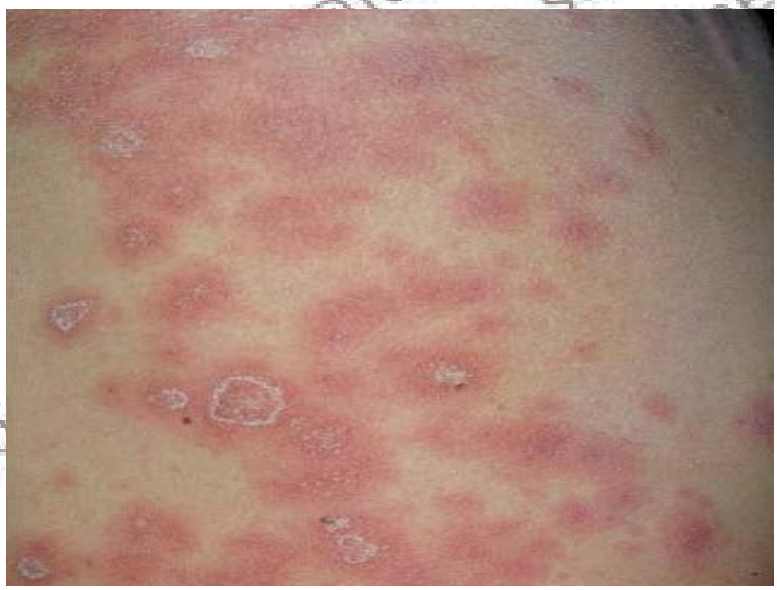
Option A: Annular lesions are ring-shaped with central clearing i.e., only the edges are active and appear raised, or in a different color. It is seen in tinea corporis, granuloma annulare.



Option C: Arcuate lesions are arc-shaped or incomplete circles.



Option D: Polycyclic lesions are several circles that have merged together.



Solution to Question 11:

This image shows fish-like scales on the skin that is characteristic of ichthyosis vulgaris.

It is an autosomal dominant condition that is associated with filaggrin mutations. This leads to a reduction in the natural moisturizing factors (NMF) in the skin. It develops at 3-12 months of life and presents with generalized, itchy, small, light-grey scales and xerosis that are more marked over extensor surfaces and trunk. The groin and flexures are spared.

X-linked recessive ichthyosis occurs only in males. It results in larger, dirty-brown scales.

Solution to Question 12:

A bulla is a circumscribed elevation of > 1 cm in diameter.

Bullae can be multilocular due to coalesced vesicles, as seen in eczema, or unilocular.

Solution to Question 13:

This image shows typical target lesions, characteristically seen in erythema multiforme.

It is also called an iris or bull's eye lesion and typically consists of 3 zones as follows:

• Central area of dusky erythema or purpura

• Middle paler zone of edema

• Outer ring of erythema with a well-defined edge

Atypical target lesions with only 2 zones may be seen in Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN).

Solution to Question 14:

Hailey–Hailey disease has an intertriginous distribution.

Distribution pattern	Description	Examples
Dermatomal / zosteriform	Unilateral and in the distribution of a single spinal afferent nerve root	Herpes zoster
Blaschkoid	Following lines of skin cell migration during embryogenesis	Incontinentia pigmenti
Lymphangitic	Distribution of a lymph vessel	CellulitisSporotrichosisSwimming pool granuloma
Sun-exposed	Areas not covered by clothing (face, dorsal hands, V area of neck)	PhotodermatitisSubacute cutaneous lupus erythematosus
Sun-protected	Areas covered by clothing	ParapsoriasisMycosis fungoides
Acral	Distal locations (hands, feet, wrists, and ankles)	Palmoplantar pustulosisChilblains
Extensor	Dorsal extremities, overlying the extensor muscles, knees, or elbows	PsoriasisDermatitis herpetiformis
Flexor	Flexor muscles of the extremities, antecubital and popliteal fossae	Atopic dermatitis (childhood and adult phase)

Distribution pattern	Description	Examples
Intertriginous	Skin folds, where two skin su rfaces are in contact (axilla, i nguinal folds, inner thighs, in framammary)	CandidiasisHailey-Hailey dis ease

Solution to Question 15:

The given image shows serpiginous or serpent-like skin lesions, which are characteristically seen in cutaneous larva migrans or ground itch.

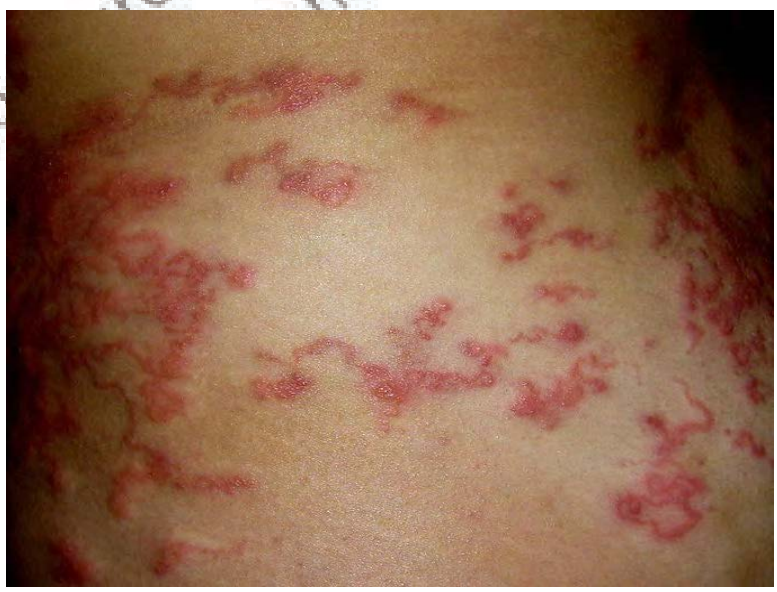
It is caused by the larvae of various hookworm or Ancylostoma species. The parasite is acquired from direct skin contact with soil contaminated by dog or cat feces. It is common following travel to endemic or tropical areas and symptoms develop within the first 2 weeks.

The site of entry is marked by an inflamed papule, often located between the toes. Serpentine or linear single-track lines later appear as the larvae migrate through the epidermis. The lesions can enlarge as much as 1 to 2 cm per day.

The first-line treatment is oral ivermectin at 200 µg/kg. Oral albendazole is an alternative treatment.

Note: Larva currens is caused by the migrating larva of Strongyloides stercoralis. It also produces serpiginous lesions and can be differentiated by the faster rate of progression and haphazard distribution of lesions.

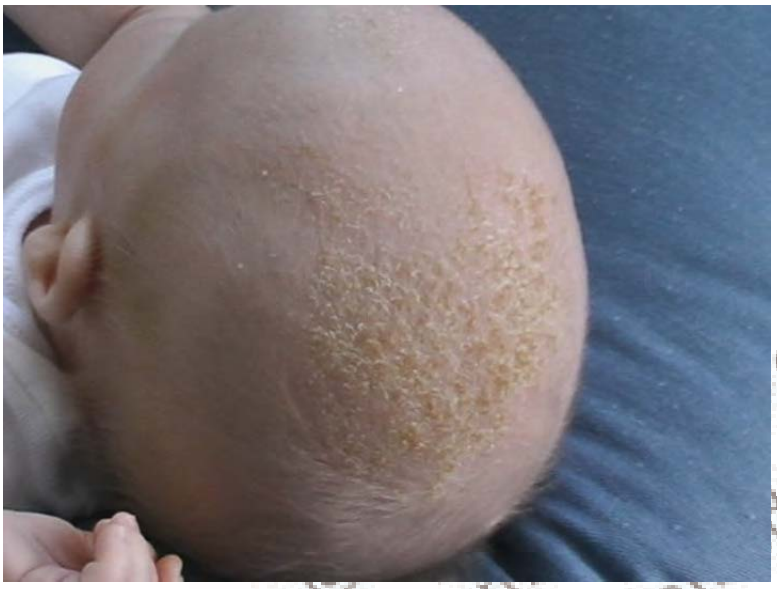
The image below shows serpiginous larval tracks over the skin.



Solution to Question 16:

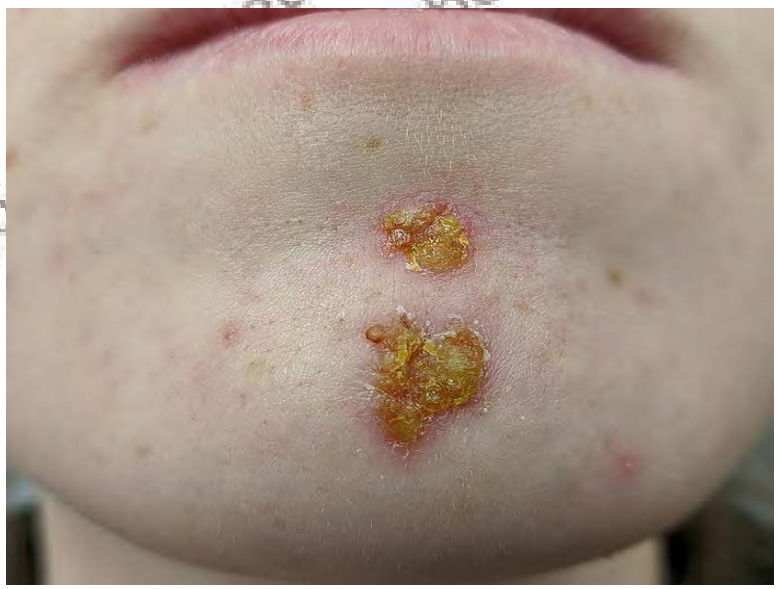
The yellowish greasy scales on the scalp of an infant are characteristic of seborrheic dermatitis.

Seborrheic dermatitis is a common, inflammatory skin condition that causes the formation of flaky, white to yellowish greasy scales on oily areas such as the scalp, forehead, nose, or inside the ear. It is known as cradle cap when it affects the scalp of infants, as shown in the image below:

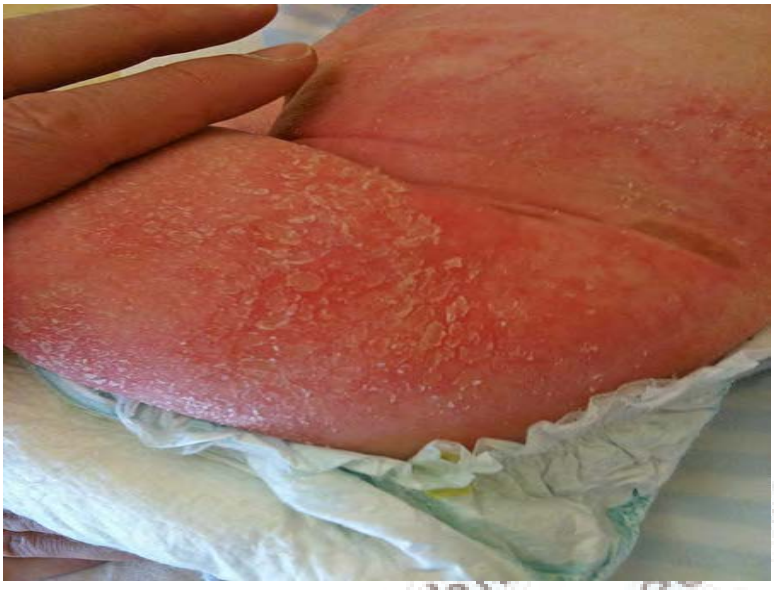


Other options:

Option A: Impetigo presents with shallow bullae. When ruptured, they result in erosions and discharge that forms honey-colored crusting.

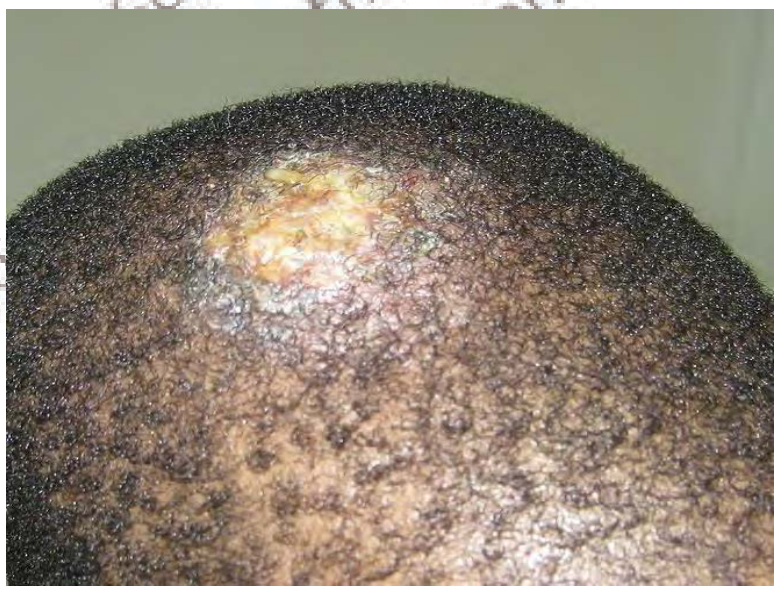


Option C: Atopic dermatitis presents in infants as an itchy erythematous rash that affects the face and flexural areas such as elbows. The given image shows atopic dermatitis on the abdomen and thigh of an infant:



Option D: Tinea capitis is ringworm of the scalp. It is uncommon in infants. It is common in older children and presents as patches of alopecia associated with scaling or black dots (swollen hair shafts).

The given image shows severe tinea capitis infection with follicles discharging pus, this clinical variant is known as kerion:



Solution to Question 17:

Loss of temperature sensation is not associated with poikiloderma.

Poikiloderma is a special skin lesion with a triad of features:

• Cutaneous pigmentation (both hypopigmentation and hyperpigmentation)

• Skin atrophy

• Telangiectasia

It may be congenital or acquired. It is associated with mycosis fungoides, dermatomyositis, xeroderma pigmentosum, etc.

Solution to Question 18:

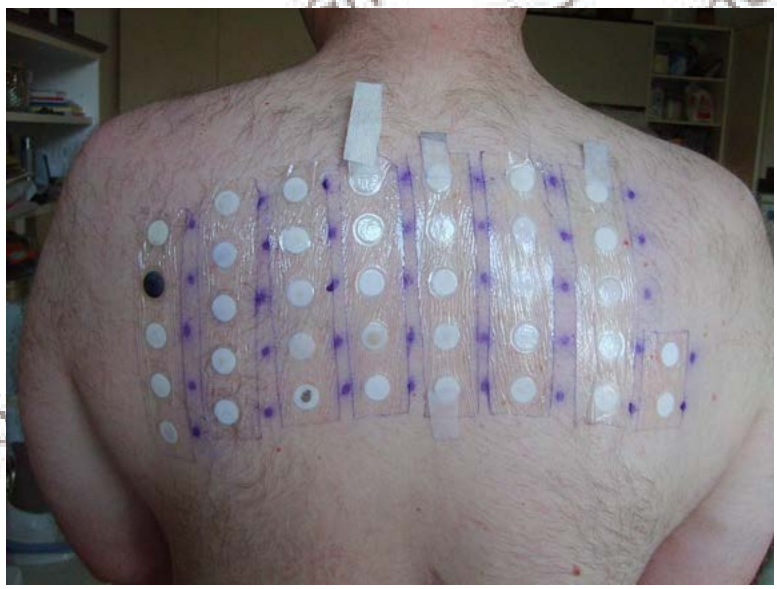
In patch testing, the patch is removed after 48 hours to examine the site of reaction.

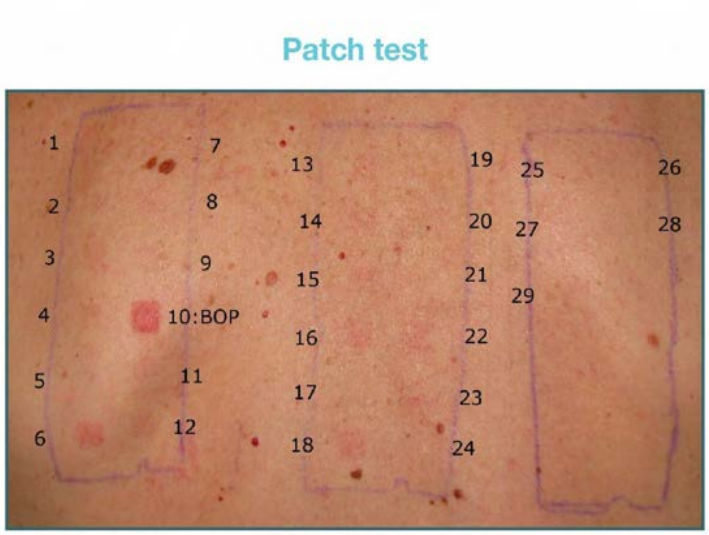
Patch testing is a test to detect sensitivity to a specific allergen. A battery of suspected allergens is applied to the patient's back under occlusive dressings or patches. It is allowed to remain in contact with the skin for 48 hours.

• 48 hours: Patch removal for initial reading to detect delayed hypersensitivity reaction.

• 72-96 hours: Final reading done for confirmation.

Note: Since the question is regarding the timing of patch removal and not regarding the final diagnosis, 48 hours is the answer.





Solution to Question 19:

Ivory or milky-white fluorescence on Wood's lamp examination is seen in vitiligo.

In vitiligo, there is less or no epidermal melanin in the affected patches. As the normal function of melanin is to absorb light, the vitiligo-affected patches cannot block the light emitted from deeper layers of the skin. They appear as bluish, milky, or ivory white patches with sharp margins. Woods lamp is hence helpful in the diagnosis of vitiligo, especially in fair-skinned people in whom lesions may not be obvious to the naked eye.

The following image shows milky-white fluorescence under a Wood's lamp.

Solution to Question 20:

Coral pink fluorescence on Wood's lamp examination is characteristic of erythrasma.

Erythrasma is a skin infection caused by Corynebacterium minutissimum. It is common in diabetics and immunodeficient patients and is associated with obesity, sweating and poor hygiene.

Coral pink fluorescence is due to the production of coproporphyrin III by the bacterium.

Solution to Question 21:

Hansen's disease is diagnosed by slit skin smear for acid-fast bacilli using the modified Ziehl-Neelsen technique.

Some important findings on Tzanck smear are as follows:

Tzanck Smear findings	Disease
Acantholytic cells	Pemphigus, Hailey-Hailey dis ease
Degenerated necrosed kerati nocytes	Toxic epidermal necrolysis
Dyskeratotic acantholytic cell s	Staphylococcal scalded skin s yndrome, Bullous impetigo
Multinucleated giant cells	Herpes simplex virus 1 and 2, Herpes zoster
Henderson-Patterson bodies	Molluscum contagiosum
Leishman-Donovan bodies	Leishmaniasis
Clusters of basaloid cells	Basal cell carcinoma

Solution to Question 22:

The test depicted in the given image is diascopy.

It involves pressing a glass slide or a stiff, clear, colorless piece of plastic onto the skin to cause blanching by compressing blood out of small vessels. This allows other colors to be evaluated.

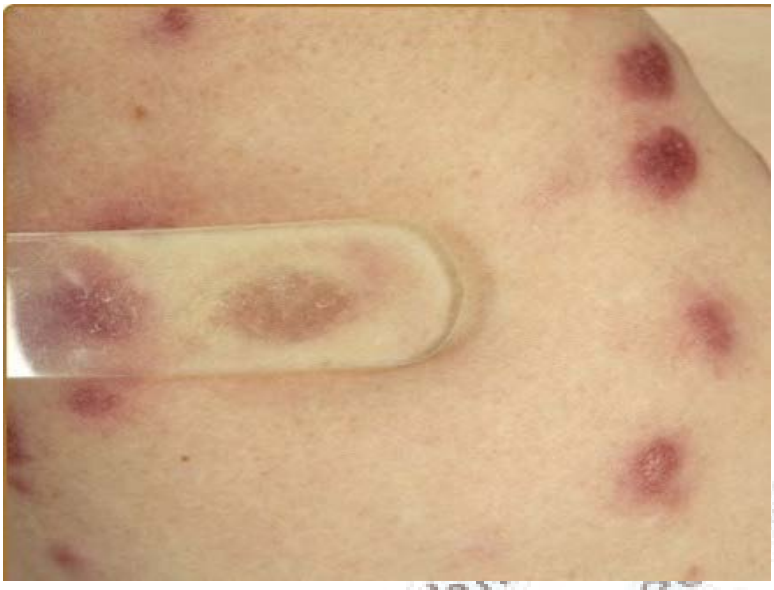
Some uses of diascopy are as follows:

• Apple jelly nodules - Yellow-brown lesions seen in lupus vulgaris and sarcoidosis.

• Spider naevi - Compression of radiating arterioles is noted.

• Differentiation of erythema (disappears) and purpura (remains unaltered).

The image given below shows apple-jelly nodules on diascopy.



Solution to Question 23:

10% neutral buffered formalin is the most widely used fixative for routine diagnostic microscopy of paraffin-embedded tissue samples.

Skin biopsies are indicated in various conditions like epidermal or dermal neoplasms as well as blistering disorders for immunofluorescence. Michel's medium is used as a transport medium.

Various techniques of skin biopsy are available based on the lesions to be biopsied:

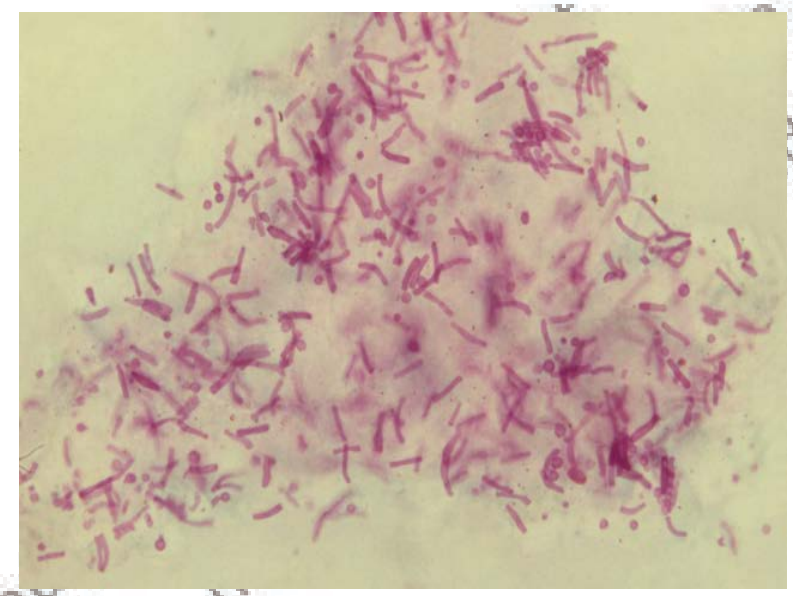
Technique	Application
Excision	For removal of a single, small lesion. An elliptical or fusiformshaped area of skin is removed
Incision biopsy(wedge)	A part of a large lesion is removed, with some normal peri-lesional skinfor comparison
Punch biopsy (3-6 mm)	Useful for accurate sampling of limited tissue
Curettage	For hyperkeratotic lesions like seborrhoeickeratoses, viral warts, basal cell carcinomas. It is usually accompanied by cautery
Shave biopsy	For protuberant lesions on the face like benign intradermal naevi
Snip	For skin tags

Solution to Question 24:

The microscopic picture described in this clinical scenario is called spaghetti and meatball appearance. It is diagnostic of pityriasis versicolor or tinea versicolor.

Skin scrapings from the lesions are mounted in 10-30% potassium hydroxide. A higher percentage of KOH solution speeds up the process. It is then observed under fluorescence microscopy using a fluorescent brightener like Calcofluor white or Blankophor which specifically stains polysaccharides in the fungal cell wall.

The hyphae and spherical Malassezia yeasts are called spaghetti and meatballs or bananas and grapes appearance as shown below.



Solution to Question 25:

The given image shows a photo-patch test. Skin reaction is seen on the uncovered side that is exposed to UV rays.

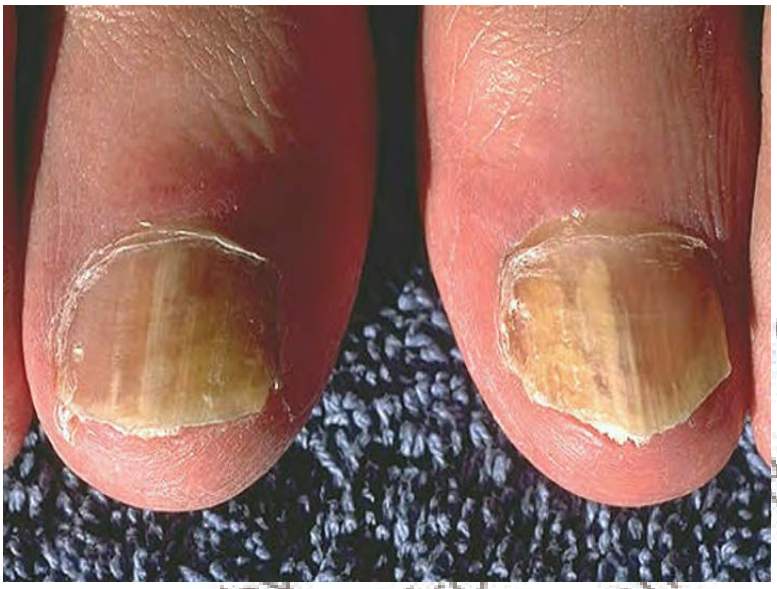
Photo-patch test is useful in the diagnosis of photosensitive rashes and photoallergic contact dermatitis that are typically localized to the sun-exposed areas of the skin.

UV light is used at a dose sufficient to trigger the photoallergic response, without causing a false positive phototoxic reaction. It is performed like a conventional patch test, except two sets of allergens are applied over the back. The control set of allergens and the rest of the skin are covered with an opaque material. The patient is positioned 15 cm from a UV lamp and the test site is irradiated with UV light.

This test is best read after 48 hours. In the case of a positive test indicating photoallergy, the exposed side shows a reaction.

Solution to Question 26:

Amorolfine is a morpholine that is available as a 5% nail lacquer. It is used in the treatment of onychomycosis.



Options B and D: Oxiconazole and tioconazole are classified as imidazoles

Option C: Ciclopirox olamine is a hydroxypyridone compound.

Solution to Question 27:

The given image shows ring-shaped lesions with central clearing, which are characteristic of annular lesions.

In annular lesions, only the edges are active and appear raised, or in a different color. They are seen in tinea corporis, granuloma annulare, borderline leprosy, and psoriasis.

Solution to Question 28:

This image shows silvery or mica scales on the extensor aspect of the elbow, which is indicative of psoriasis.

Scales are flakes of stratum corneum that are characteristic of processes involving parakeratosis. The silvery colour is due to reflection of light at many air–keratin interfaces and can be altered by wetting the skin.

Solution to Question 29:

Purpura and vesicles are primary skin lesions.

Acne, Rosacea and Others

Question 1:

Which of the following is a specific lesion of acne vulgaris?

a) Cysts

b) Pustules

c) Comedones

d) Nodules

Question 2:

A 15-year-old girl presents with multiple papulopustular, erythematous lesions on her face. Which of the following is the most likely diagnosis?

a) Acne rosacea

b) Acne vulgaris

c) Eczema

d) Tinea faciei

Question 3:

Which of the following is not a component of SAPHO syndrome?

a) Synovitis

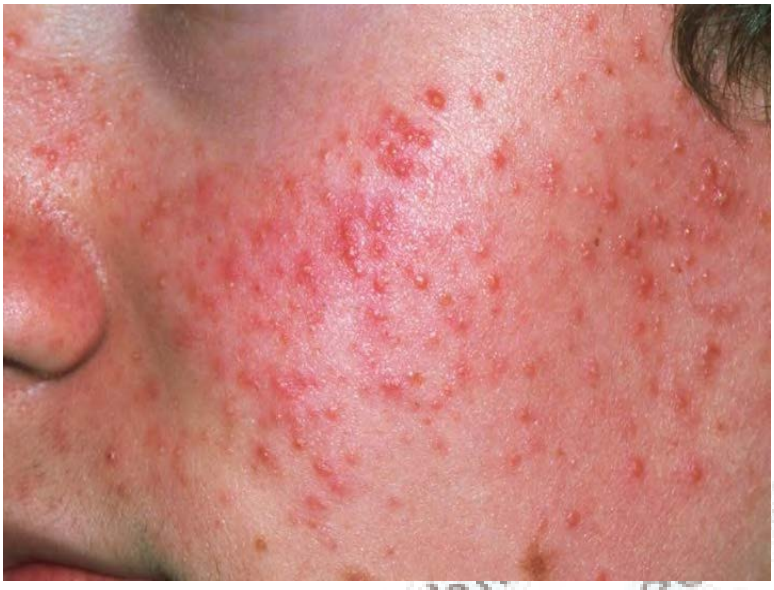
b) Seborrhoea

c) Acne

d) Hyperostosis

Question 4:

A teenager presents to the dermatologist with the following finding. Which of the following is not a causative factor for this condition?



a) Androgen

b) Oily food

c) Bacterial proliferation

d) Hypercornification of duct

Question 5:

A patient presents with multiple nodulocystic lesions on the face. Which among the following is the drug of choice in this condition?

a) Steroids

b) Isotretinoin

c) Erythromycin

d) Tetracycline

Question 6:

An 18-year-old girl with pustular acne comes to your clinic for follow-up saying that her acne has not reduced even after taking medications for 6 months. Which of the following drugs will you now prescribe?

a) Oral erythromycin

b) Topical steroids

c) Oral retinoids

d) Oral tetracyclines

Question 7:

A patient with nodular acne has been on oral retinoids for 3 months. Which of the following tests are required to monitor the therapy?

a) Liver function test

b) Renal function test

c) WBC count

d) Thyroid function test

Question 8:

A 16-year-old girl with moderate acne also complains of irregular menses. Which of the following is the drug of choice?

a) Retinoids

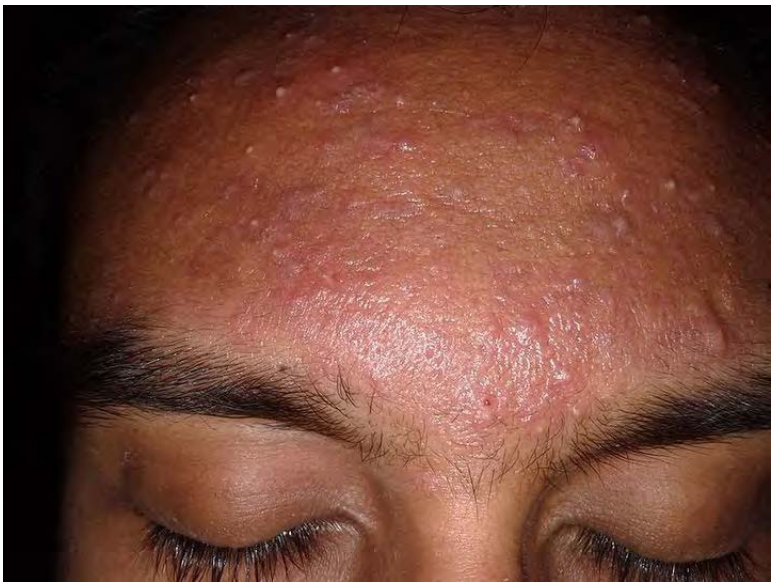
b) Tetracycline

c) Oral contraceptive pills

d) Minocycline

Question 9:

A 17-year-old girl presents with the following skin lesions. What is the likely diagnosis?



a) Acne vulgaris

b) Acne rosacea

c) Seborrheic dermatitis

d) Milia

Question 10:

A 40-year-old woman presents with a 2-year history of erythematous papulopustular lesions over the center of her face. There is a background of erythema and telangiectasia. What is the most likely diagnosis?

a) Acne vulgaris

b) Rosacea

c) Systemic lupus erythematosus

d) Lupus pernio

Question 11:

Intake of which of the following drugs can produce an acneiform eruption?

a) Tetracycline

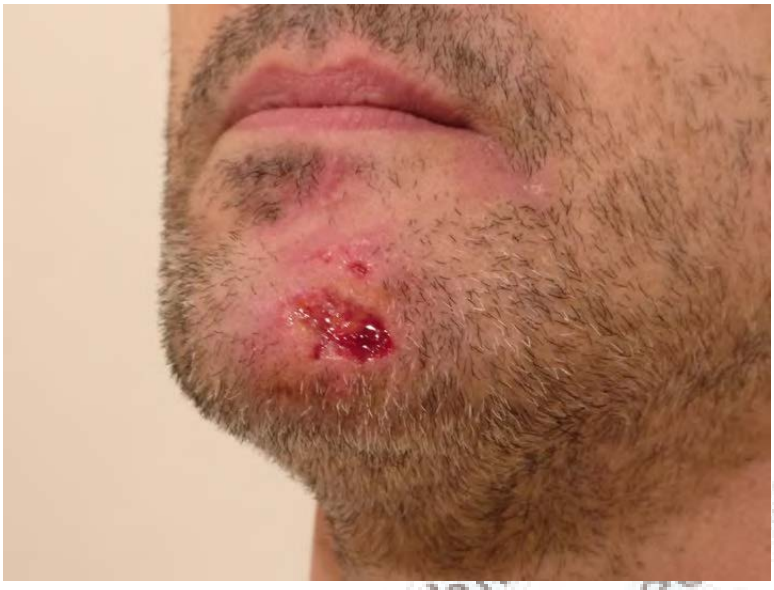
b) Phenytoin

c) Aminoglycoside

d) Quinolone

Question 12:

A patient with obsessive-compulsive disorder presents with lesions on his face. He confides that he frequently picks at his face, regardless of the presence of acne. What is the diagnosis?



a) Acne excoriée

b) Acne fulminans

c) Acne conglobata

d) Acne mechanica

Question 13:

Which of the following is a preferred chemical peel agent for a dark-skinned patient with acne?

a) Pyruvic acid

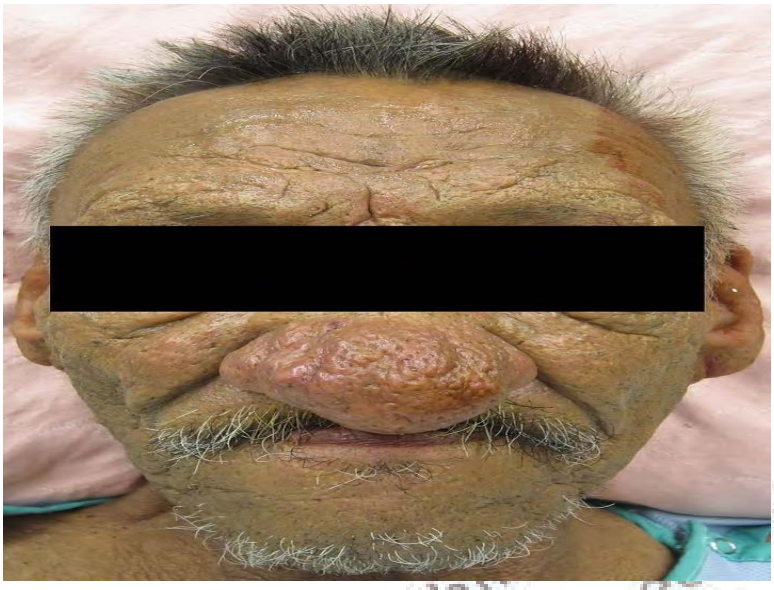
b) Lactic acid

c) Jessener's solution

d) Glycolic acid

Question 14:

Identify the following condition.



a) Acne rosacea

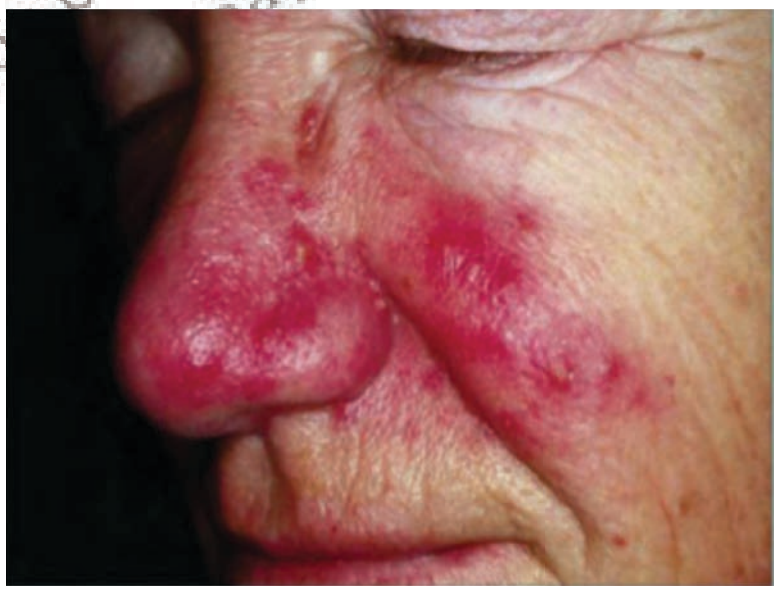
b) Acne vulgaris

c) Rhinophyma

d) Sebaceous gland neoplasm

Question 15:

Which of the following is not associated with the given skin condition?



a) Photosensitivity

b) Blepharitis

c) Flushing

d) Comedones

Question 16:

Fordyce's spots mainly involves which of the following sites?

a) Lips

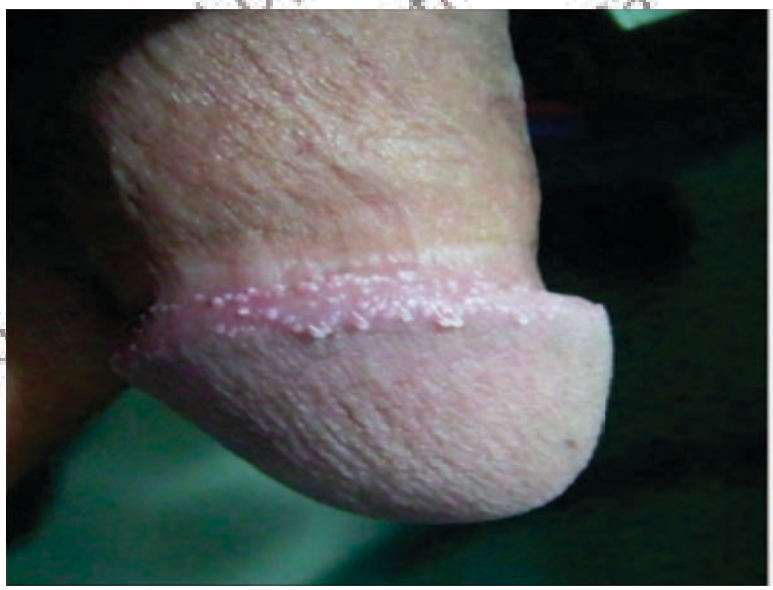
b) Scalp

c) Neck

d) Trunk

Question 17:

Which of the following is a correct statement regarding the given condition?



a) Ectopic sebaceous glands

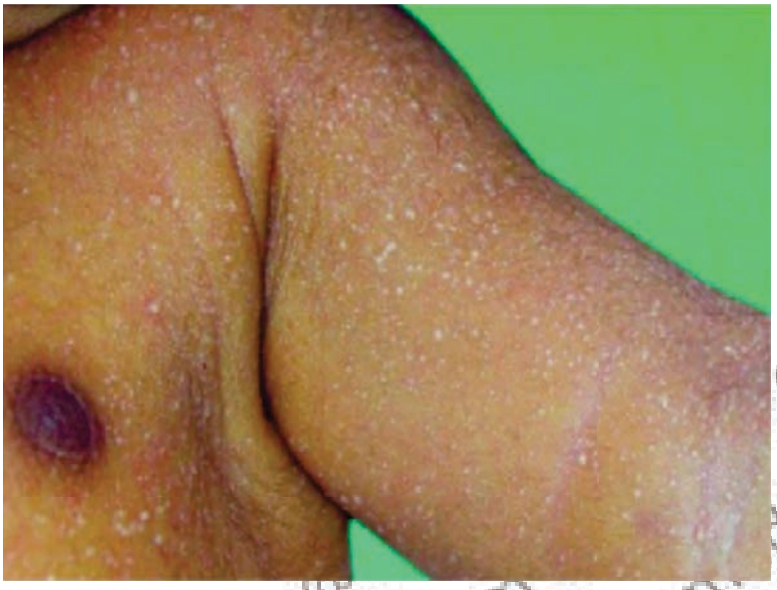
b) Antibiotics are the first line treatment

c) It is asymptomatic

d) Occur commonly on upper lip

Question 18:

During your rounds in the neonatal ward, you see a 2-week-old neonate with the following skin finding. It is a disorder of which of the following glands?



a) Sebaceous glands

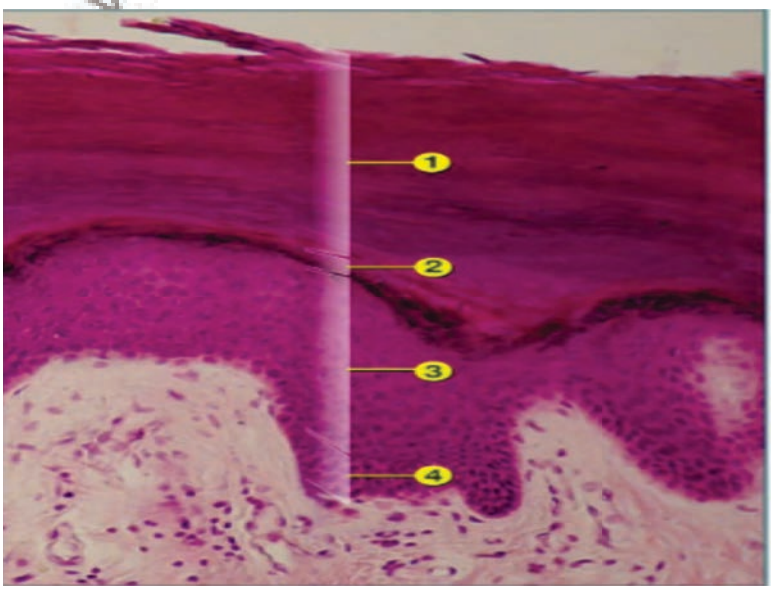
b) Apocrine glands

c) Holocrine glands

d) Eccrine glands

Question 19:

At what level does the obstruction occur in miliaria crystallina?



a) 1

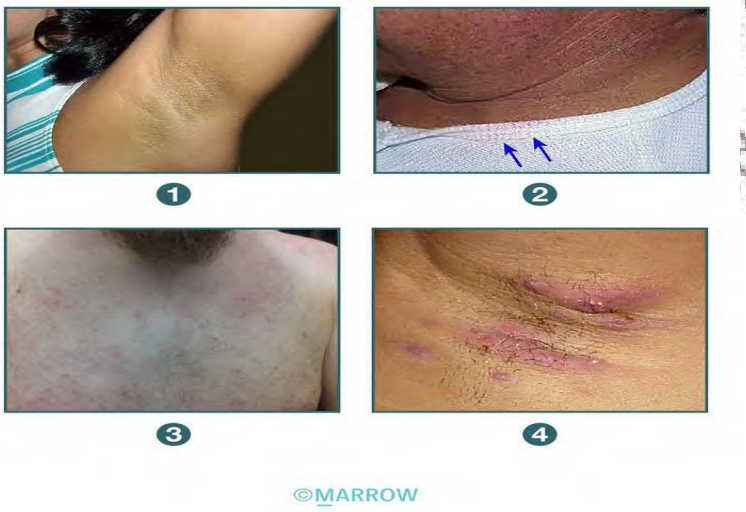
b) 2

c) 3

d) 4

Question 20:

Which of the following is not a disorder of the apocrine glands?



a) 1

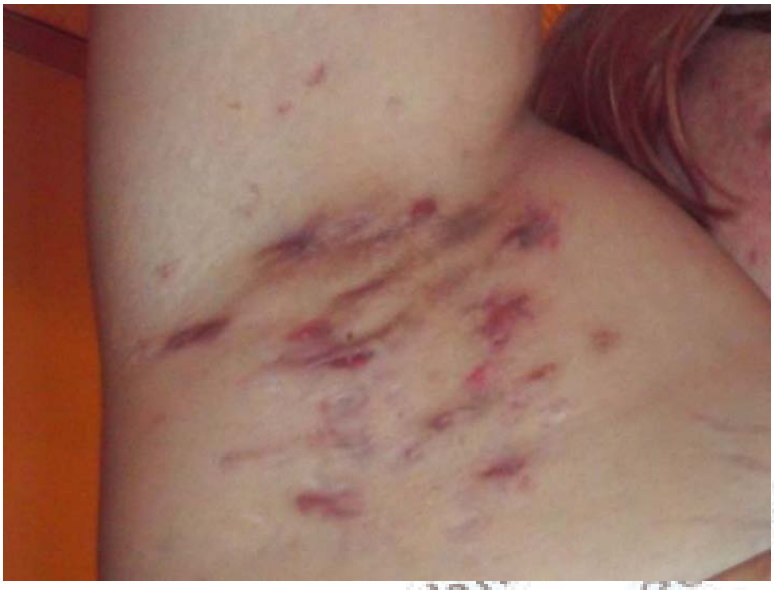
b) 2

c) 3

d) 4

Question 21:

Which is the incorrect statement regarding the condition shown in the image?



a) Inframammary area and intermammary folds may be involved

b) TNF alpha inhibitors can be used in treatment

c) Obesity and smoking are associated with it

d) Surgery cannot be done for this condition.

Answer Key

Question No.	Correct Option
1	c
2	b
3	b
4	b
5	b
6	c
7	a
8	c
9	a
10	b
11	b
12	a
13	d
14	c

15	d
16	a
17	c
18	d
19	a
20	c
21	d

Detailed Explanations

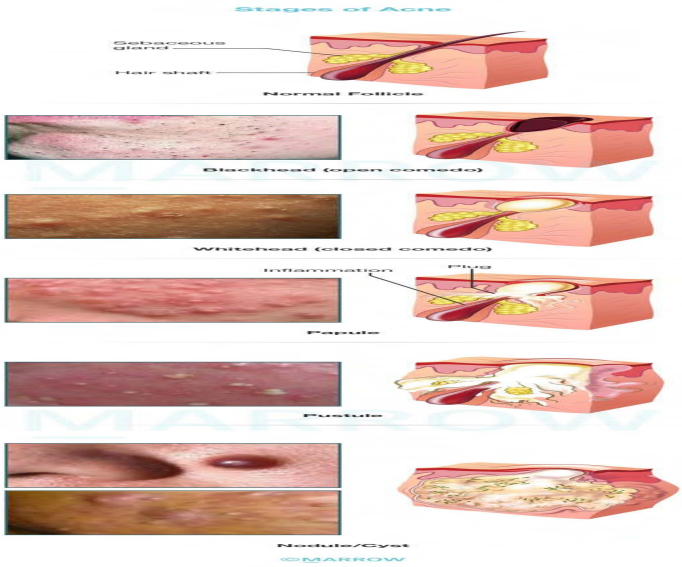
Solution to Question 1:

Comedones are the specific lesions of acne vulgaris.

Acne is a chronic inflammatory disease of the pilosebaceous unit. Comedonal lesions are the earliest lesions of acne. They represent the keratin plugs of the pilosebaceous duct.

When the keratin plug is inside the follicle, it is called a closed comedone (whitehead).

When the keratin plug is exposed to the environment, it gets oxidized by the air and turns black which is known as open comedone (blackhead).



Solution to Question 2:

The age of the patient and the presence of papules and pustules with an erythematous base on the face are suggestive of acne vulgaris.

It is commonly seen in teenagers and young adults. The condition can vary from very mild comedonal acne to severe aggressive pustular acne. These eventually may lead to scarring due to sinus formation.

Option A: Acne rosacea or Rosacea is predominantly a disease with onset in middle■aged adults (30–50 years old) and involves the convexities of the face.

Option C: Eczema presents more over the flexures and extremities from early adulthood. Features of pruritus and excoriations are predominant.

Option D: Tinea faciei is a fungal infection of the face and presents with a scaly lesion.

Solution to Question 3:

Seborrhoea is a constituent of SAHA syndrome, not SAPHO syndrome.

SAPHO syndrome consists of:

• Synovitis

• Acne

• Pustulosis

• Hyperostosis

• Osteitis

Solution to Question 4:

A teenager presenting with papulopustular lesions on the face and the presence of comedones is most likely suffering from acne vulgaris. Oily skin due to excessive sebum production is one of the causative factors of acne, but oily food is not directly implicated

Acne results from the combination of:

• Increased sebaceous gland activity under the influence of androgens - oily skin

• Abnormal follicular differentiation with increased keratinization- hypercornification of duct due to increased IL-1

• Microbial hypercolonization of the follicular canal leading to its inflammation.

Solution to Question 5:

The presence of multiple nodulocystic lesions implies that this is a case of severe acne. Isotretinoin is the first-line drug for the treatment of severe acne (nodular acne and acne conglobata).

Systemic retinoids are highly teratogenic and are absolutely contraindicated in pregnant women, those planning to become pregnant, or breastfeeding mothers. Two negative pregnancy tests (on

separate occasions) are required for females of childbearing age before starting acitretin or isotretinoin.

Baseline evaluation of serum lipids, transaminases, and complete blood counts should be done before starting any systemic retinoids. These values should be checked monthly for the first 3–6 months and once every 3 months thereafter. Monthly pregnancy tests should be done while on the drug.

Note: Female patients should avoid conception for 3 years after discontinuing acitretin treatment for cutaneous psoriasis.

Solution to Question 6:

Oral isotretinoin, an oral retinoid is indicated for the treatment of recalcitrant acne.

Recalcitrant acne is poorly responsive acne, less than 50% improvement after 6 months of therapy with combined oral and topical antibiotics.

Solution to Question 7:

Liver function tests (LFT) must be monitored during retinoid therapy as it can lead to variation in LFT by causing drug-induced liver injury.

Side effects of retinoids:

• Cheilitis/dryness of lips (most common)

• Deranged liver function tests

• Hypertriglyceridemia

• Teratogenicity - contraception is required until 1 month of stoppage of isotretinoin.

Note: Female patients should avoid conception for 3 years after discontinuing acitretin treatment to prevent retinoid-induced embryopathy.

Solution to Question 8:

Moderate acne with irregular menses are best treated with OCPs.

Giving OCP will increase sex hormone-binding globulin (SHBG) and hence reduce free androgens which play a major role in the pathogenesis of acne. In addition, OCPs also help in regularising the menses.

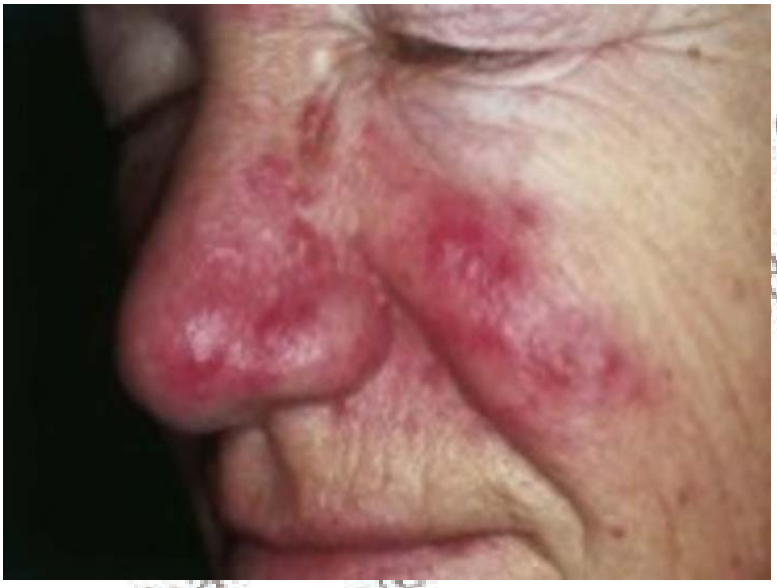
Solution to Question 9:

The image shows typical erythematous papules and nodules along with few whiteheads, suggestive of acne vulgaris.

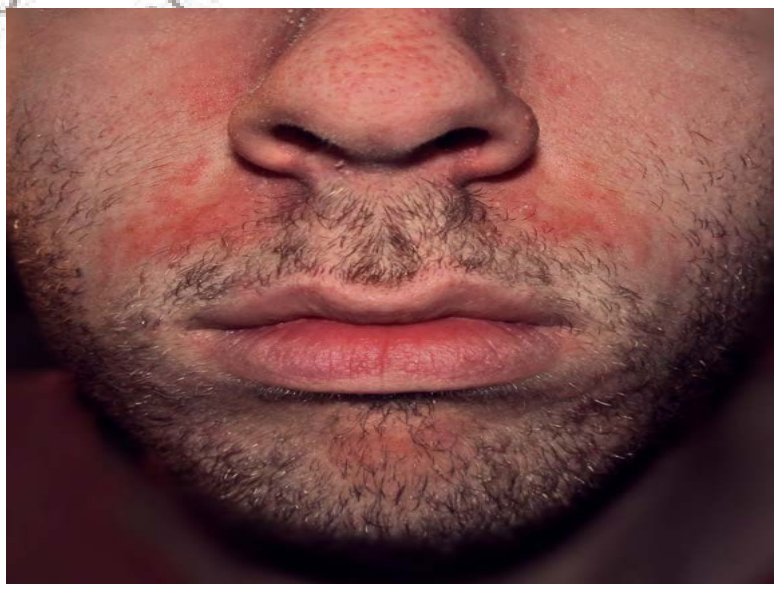
Other options:

Option B: Acne rosacea is a disorder that appears mainly in people within 30 to 50 years of age. The lesions are mainly present on the convexities of the face but don't lead to central crusting or scarring. It is followed by triggering factors such as sunlight exposure, emotional disturbances, spicy food, alcohol, etc.,

Given below is an image showing acne rosacea:

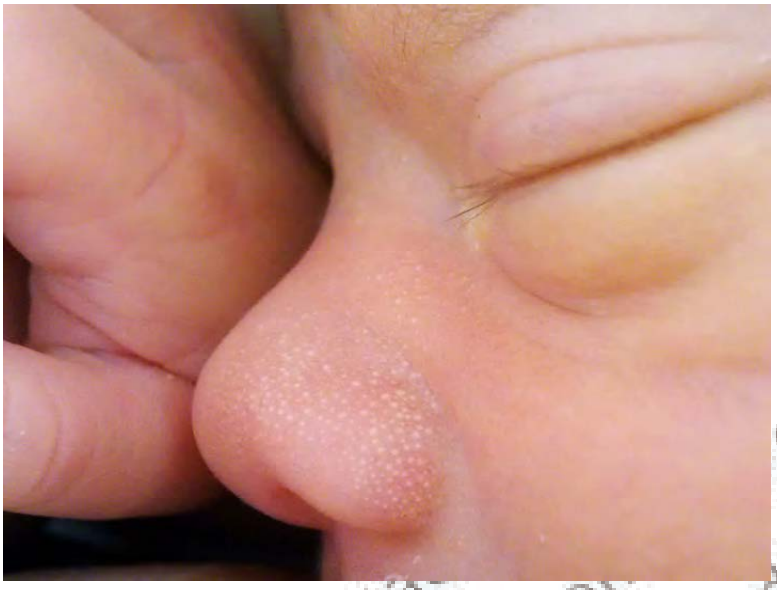


Option C: Seborrheic dermatitis is a chronic inflammatory skin condition which presents with erythematous patches with superficial scaling, affecting areas with a high density of sebaceous glands- scalp, face, central chest, and anogenital areas.



Option D: Milia are small cysts formed around the pilosebaceous follicles usually seen over nose, cheek, forehead of neonates. Pearly opalescent white epidermal inclusion cysts. Resolve

spontaneously without scarring.



Solution to Question 10:

The patient comes with erythema and papules on facial convexities (central face), a characteristic feature of acne rosacea.

It is triggered by exposure to sunlight, spicy food, alcohol, or emotional disturbances. Patients also develop telangiectasia later. They also have a tendency for developing rapid flushing due to temperature change. Rosacea is more common in women of age 30-50 years.

The innate immune response in rosacea appears to be altered. There is increased Toll■like receptor 2 (TLR2) activity and increased protease activity.

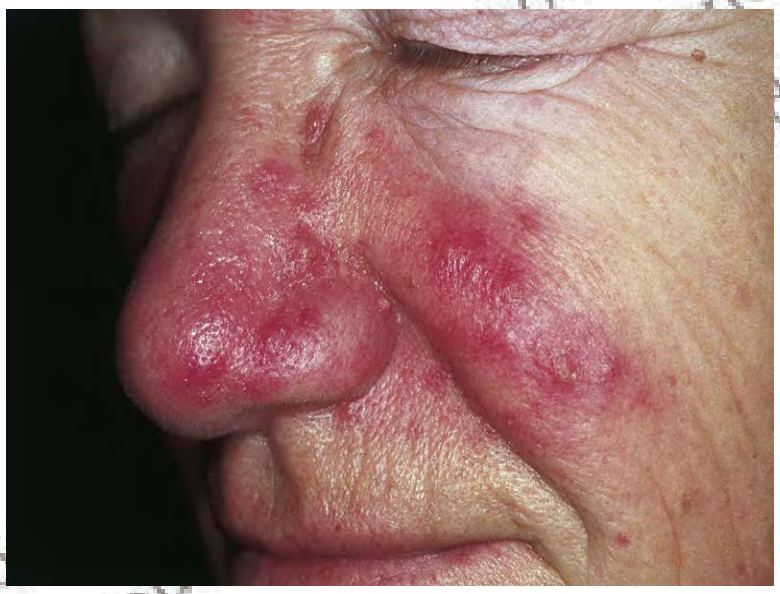
Demodex mite proliferation in the pilosebaceous follicles of the face has also been suggested as a possible aetiological factor in cutaneous and ocular inflammation. The pathogenesis of ocular rosacea seems to be closely associated with meibomian gland dysfunction.

The table below shows the 4 subtypes and the corresponding treatment options. The subtypes are not equivalent to the progression of the disease.

The image below shows rosacea.

Subtype	Treatment
Erythematotelangiectatic ros acea (ETTR)	Sun avoidance and protectio nTopical ° ■receptoragonists - brimonidine or oxymetazoli ne

Subtype	Treatment
Papulopustular rosacea (PPR)	Active inflammatory lesions: Topical metronidazoleAzelaic acidIvermectinSodium sulfacetamideSulfurPerilesional erythema:BrimonidineOxymetazoline
Phymatous rosacea	Topical skin■peeling agent if there are large occluded follicesElectrocautery or laser for telangiectases
Ocular rosacea	Daily lid hygieneOily tear■substitute lubricating eye drops or aqueous gels



Solution to Question 11:

Drug-induced acne (acneiform eruptions) are associated with the following:

• Topical or systemic steroids (most common)

• Anabolic steroids - danazol, stanozolol

• Anticonvulsants - carbamazepine, phenytoin, phenobarbitone

• Antituberculosis drugs- isoniazid, pyrazinamide

Clinically, acneiform eruptions are characteristically monomorphic.

Drugs most commonly implicated in acneiform eruptions:

• Worldwide- steroids

• India- isoniazid (INH)

Solution to Question 12:

This given image shows acné excoriée on the chin of a male with compulsive picking of the face using nail pliers and tweezers.

Acné excoriée is regarded as a self■inflicted skin condition in which the sufferer compulsively picks real or imagined acne lesions predominantly on the face. It is mostly seen in adolescent girls.

Other psychiatric disorders associated with acne are:

• Body dysmorphic disorder - Some patients have acne as their prime symptom. The perceived acne is out of proportion to physical signs.

• Eating disorders - reported in anorexia nervosa. Acne itself may be a predisposing factor for anorexia in vulnerable teenaged age groups who adopt a diet in an attempt to control their acne.

Option B: Acne fulminans or acne maligna is a rare and severe destructive form of acne presenting primarily in adolescent males. It most frequently affects the trunk but can affect the face and presents acutely in association with systemic symptoms.

Options C: Acne conglobata represents a rare and severe form of acne characterized by multiple and extensive inflammatory papules, tender nodules, and abscesses which commonly coalesce to form malodorous draining sinus tracts.

Option D: Acne mechanica describes acne that occurs at the site of repeated mechanical trauma and/or frictional obstruction of the pilosebaceous outlet resulting in comedo formation. Examples include 'fiddler's neck', which may occur on the neck of violin players, and is characterized by well■defined plaques with the presence of comedones, lichenification, and pigmentation

Solution to Question 13:

Glycolic acid is the preferred chemical peel agent in dark-skinned individuals.

Dark skin (Fitzpatrick type IV to VI) has a tendency for post-inflammatory hyperpigmentation (PIH) after procedures like lasers and chemical peel. Deep chemical peels cannot be used in dark-skinned patients. Even medium-depth peels need to be used with extreme caution.

Chemical peels are believed to promote desquamation which reduces corneocyte cohesion and keratinocyte plugging, so enabling the extrusion of inflammatory contents. Light chemical peels are used with the aim of helping to remove comedones as well as superficial scarring and hyperpigmentation.

Other peeling agents are:

• Pyruvic acid

• Lactic acid

• Maleic acid

• Citric acid

• Tartaric acid

• Mandelic acid

• Jessener's Solution - lactic acid + salicyclic acid + resorcinol

Solution to Question 14:

Rhinophyma (also known as potato nose) is a slowly progressive condition due to hypertrophy and hyperplasia of the sebaceous glands of the tip of the nose.

It is often seen in cases of long-standing rosacea called phymatous rosacea. It is not a neoplasm.

It presents as a pink, lobulated mass over the nose with superficial vascular dilation. It mostly affects men past middle age. Patients seek advice because of the distorted appearance of the enlarged nose, or obstruction in breathing and vision.

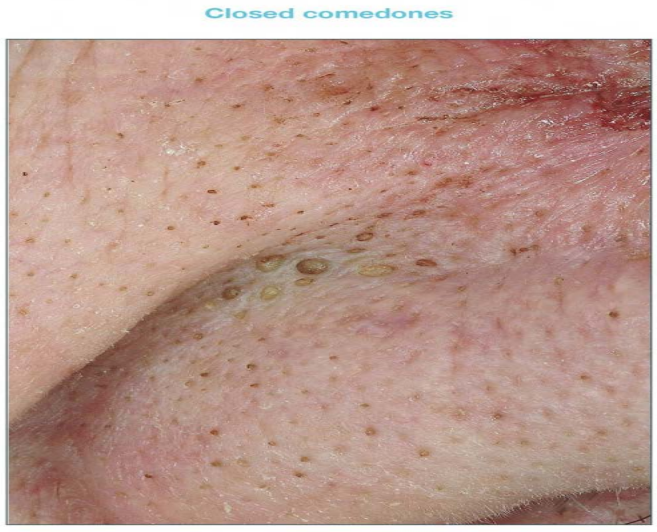
Rhinophyma may be diagnosed clinically, but a skin biopsy can confirm the diagnosis. On histology, rhinophyma shows sebaceous gland hypertrophy, hyperplasia and fibrosis.

The most common indication for treatment is cosmetic. Ablation using CO_2 laser or surgical resection of excess tissue with remodelling of nose can be performed.

Solution to Question 15:

The image shows acne rosacea. Comedones are pathognomonic features of acne vulgaris, not rosacea.

The absence of comedones helps in differentiating rosacea from acne vulgaris.



Option A: Photosensitivity is a feature of rosacea. It may be triggered/exacerbated by exposure to sunlight.

Option B: Ocular rosacea is associated with involvement of eye due to meibomian gland dysfunction, which causes gritty sensation in the eye, blepharitis, recurrent chalazion, and conjunctivitis.

Option C: Erythemato telangiectatic rosacea (ETT) is associated with facial vascular changes – redness (flushing) and telangiectasia on central cheeks.

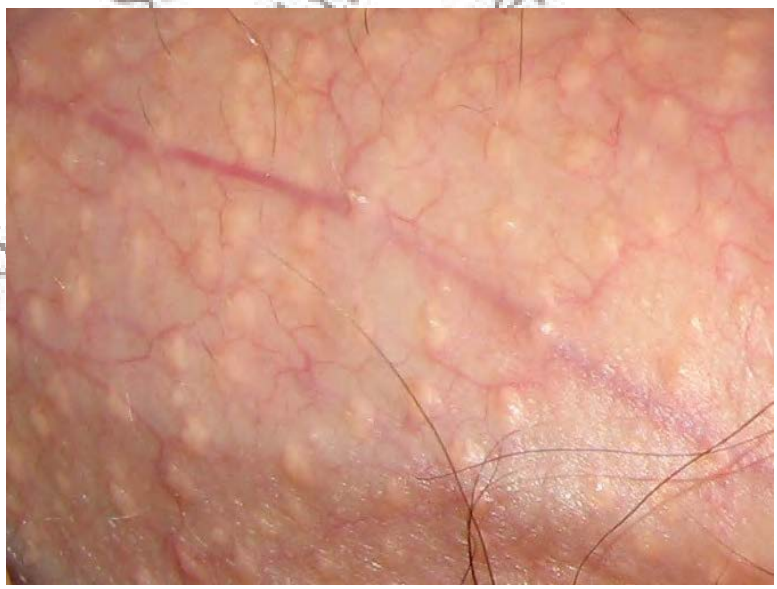
Solution to Question 16:

Fordyce spots occur most commonly on the upper lip >buccal mucosa.

Solution to Question 17:

The image shows pearly, penile papules. These are exclusively found in males. They consist of flesh-coloured, smooth papules most commonly on the coronal margin of the glans penis. They are benign and asymptomatic and treatment involves reassuring the patient.

*Note: Pearly, penile papules are commonly mistaken for Fordyce spots (Tyson's glands). Fordyce spots are commonly seen on the shaft of the penis and are ectopic sebaceous glands. Image below depicts Fordyce spots on the penile shaft:



Solution to Question 18:

The image shows clear, thin■walled, superficial vesicles 1–2 mm in diameter, without associated erythema, resembling drops of water in a newborn. It is suggestive of miliaria, a disorder of eccrine sweat glands.

Solution to Question 19:

In miliaria crystallina, the obstruction is at the level of stratum corneum.

The image shows the histological appearance of the epidermis of the skin. The structures marked are respectively:

• Stratum corneum

• Stratum granulosum

• Stratum spinosum

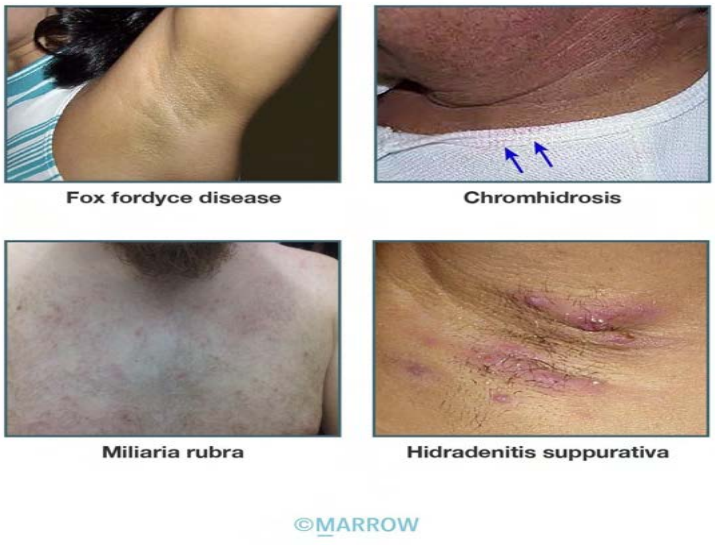
• Stratum basale

Solution to Question 20:

Miliaria (image 3) is a disorder of eccrine glands.

It is a common acute or subacute skin condition that arises due to the occlusion or disruption of eccrine sweat ducts in hot humid conditions, resulting in a leakage of sweat into the epidermis (miliaria crystallina and miliaria rubra) or dermis (miliaria profunda).

Other disorders of the eccrine sweat glands are anhidrosis and hyperhidrosis.



Disorders of the apocrine glands are:

• Bromhidrosis - abnormal sweat odor due to bacterial growth.

• Chromhidrosis - secretion of vividly colored apocrine sweat (blue, yellow, or green color). It is usually of apocrine origin and seen in the axilla, areola of the nipple, or face.

• Fox-Fordyce disease or apocrine miliaria- obliteration of the apocrine duct at the infundibulum.

Solution to Question 21:

The given image shows hidradenitis supurativa or inverse acne. Surgical excision is the best treatment that offers a cure.

Hidradenitis suppurativa is a chronic, inflammatory, recurrent, debilitating, follicular disease that usually presents after puberty.

There are painful, deep■seated inflamed lesions in the apocrine gland■bearing areas of the body, most commonly the axillary, inguinal, and anogenital regions.

This definition is based on the San Francisco modification of the Dessau criteria.

The following three criteria must be met for the diagnosis to be made:

• Typical lesions - deep■seated, painful nodules or 'blind boils'; abscesses, draining sinuses, bridged scars, and paired or multiheaded open pseudocomedones in secondary lesions.

• Typical topography - axillae, groin, perineal and perianal region, buttocks and infra■ and intermammary folds.

• Chronicity and recurrence of lesions.

More common in young women of ages 20-29 years. Obesity and smoking are the two main factors associated with hidradenitis suppurativa.

Treatment includes:

• Antibiotics - tetracycline, clindamycin

• Intralesional corticosteroids

• Immunosuppressants

• Acitretin

• Anti-TNF alpha therapy

• Surgery

Disorders of Hair and Nails

Question 1:

Which of the following structures demarcates the upper and lower hair follicles?

a) Sebaceous gland

b) Sweat gland

c) Arrector pili

d) Adamson's fringe

Question 2:

Which of the following is not true about hair cycle?

a) Anagen is responsible for final hair length

b) 50% of hair is in anagen at any point in time

c) Lower part of the follicle involutes during catagen

d) Kenogen is a state of latency

Question 3:

Identify the incorrect statement regarding the types of hair.

a) Melanin is absent in vellus hair

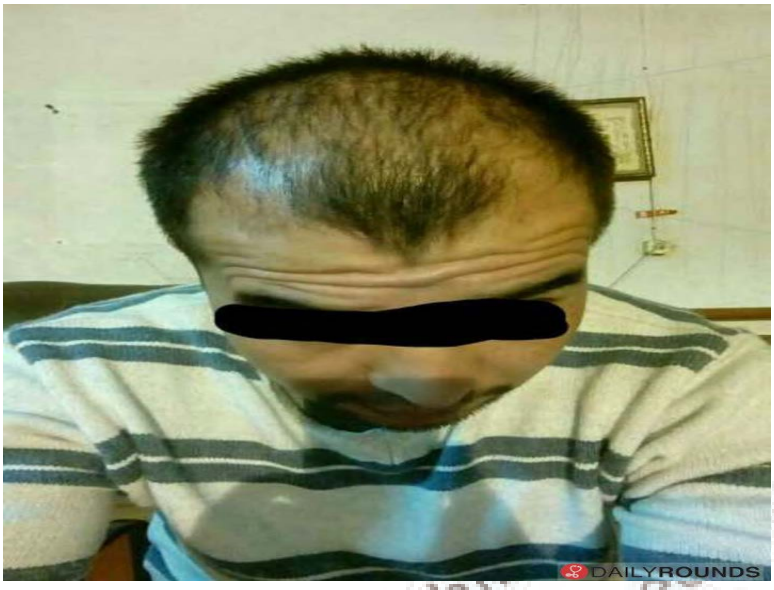
b) Vellus hair depth extends to the subcutis

c) The medulla is thicker in terminal hairs

d) Lanugo hair is unmedullated

Question 4:

A young man comes to you with hair loss as shown in the image given below. You prescribe finasteride to prevent his condition from worsening. Which isoform (s) of 5-alpha reductase does this drug inhibit?



a) Type 3

b) Type 2

c) Types 1 and 2

d) Types 2 and 3

Question 5:

Which is the primary site of action of androgen in hair follicle?

a) Hair follicle epithelium

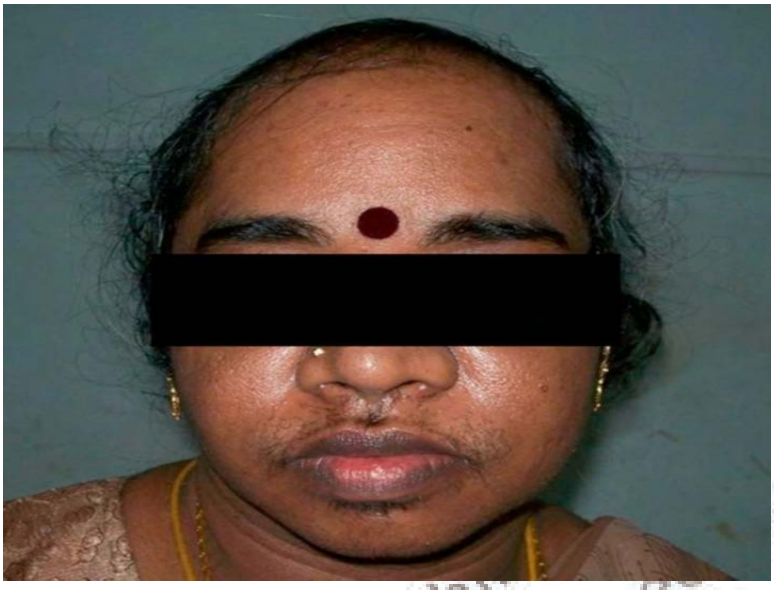
b) Dermal papilla

c) Bulb

d) Infundibulum

Question 6:

A 32 year old female patient with PCOS is worried that her hairline has shifted upwards exposing more of her forehead as shown below. Which of the following is incorrect about this type of hair loss and its treatment?



a) DHT(dihydrotestosterone) is responsible for follicular regression

b) Arao-Perkins bodies are seen within the follicular stelae

c) Minoxidil has vasodilatory action

d) Finasteride is the first line treatment

Question 7:

You see a male patient with diffuse hair loss over the crown and frontal scalp with maintenance of the hairline. What is this pattern of hair loss?

a) Female pattern hair loss

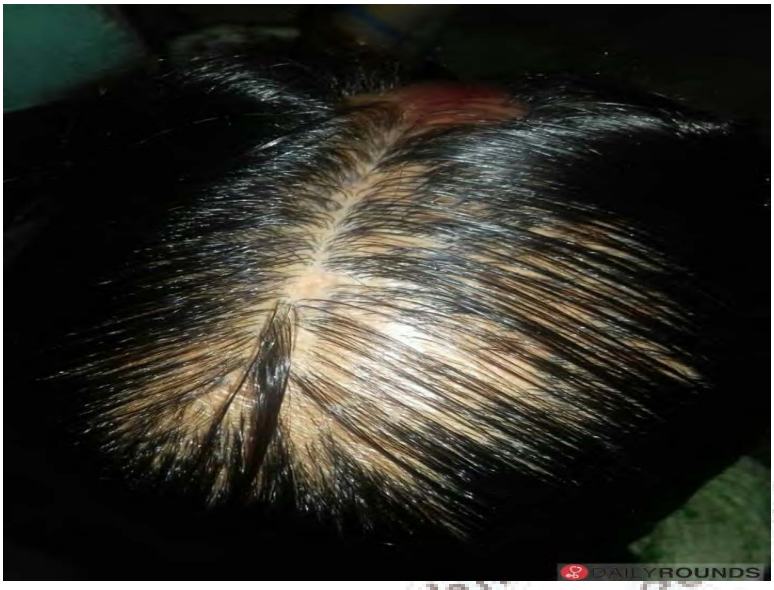
b) Male pattern hair loss

c) Alopecia areata

d) Mixed pattern hair loss

Question 8:

A patient comes to you with hair loss as shown below. How will you classify its severity?



a) Tanner staging

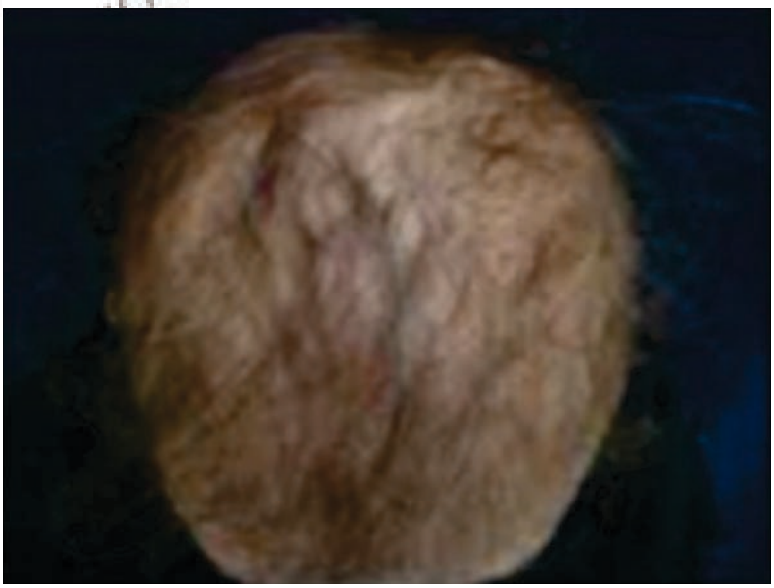
b) Hamilton-Norwood staging

c) Batts-Ludwig staging

d) Ludwig staging

Question 9:

A 50-year-old lady who underwent chemotherapy for breast carcinoma 3 weeks ago now presents with diffuse hair loss as shown below. On examination, she has a depressed affect. Name the condition causing her hair loss.



a) Alopecia areata

b) Telogen effluvium

c) Anagen effluvium

d) Trichotillomania

Question 10:

A 25-year-old woman in the first trimester of pregnancy presents to your clinic with hair loss. She gives a history of typhoid fever 3 months ago. What is the pattern of hair loss seen in this patient?

a) Anagen effluvium

b) Androgenetic alopecia

c) Telogen effluvium

d) Telogen gravidarum

Question 11:

While examining a patient with hair loss, you notice several thin, broken hairs that are thinner towards the scalp and easily pulled out. What is the diagnosis in this patient?

a) Alopecia areata

b) Telogen effluvium

c) Netherton syndrome

d) Cicatricial alopecia

Question 12:

Which of the following statements about alopecia areata is true?

a) Spontaneous remission is seen in 20% of patients

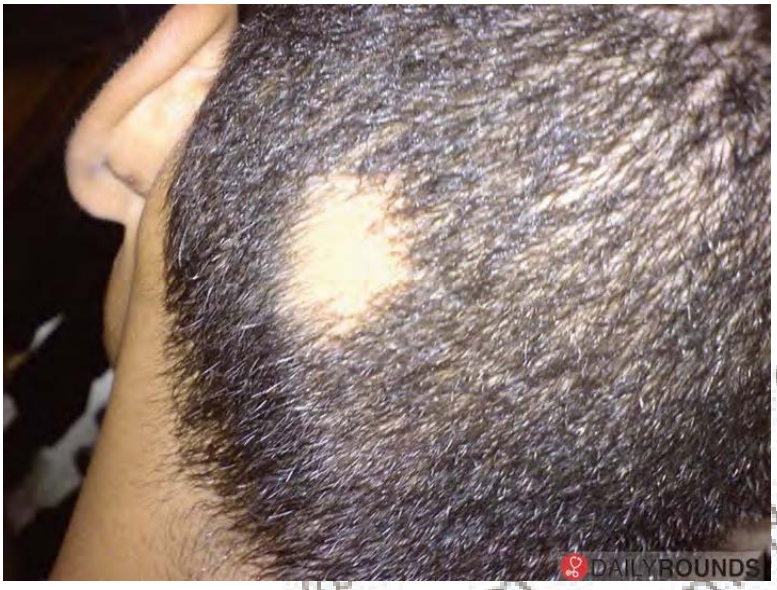
b) Alopecia universalis denotes loss of all scalp hair

c) Ophiasis means loss of hair along the back of scalp

d) Alopecia totalis denotes loss of all body hair

Question 13:

A 10-year old boy presents with the following type of hair loss. Which of the following is the most likely expected nail finding?



a) Fine stippled pitting of nail

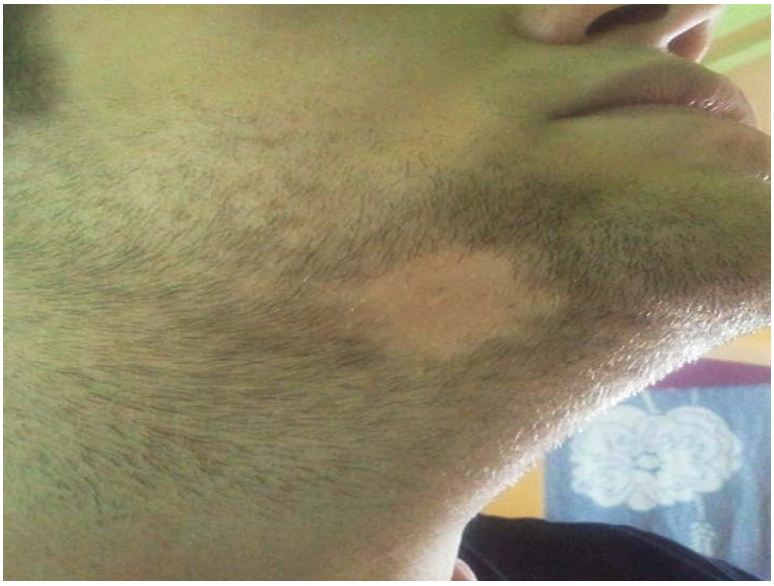
b) Thinning of nail with pterygium

c) V-shaped nicks on the distal edge

d) Greenish discoloration with onychonychia

Question 14:

You are treating a college student for acne. While examining him, you observe the following finding. What initial treatment will you recommend for this finding?



a) Intralesional steroids

b) Contact immunotherapy

c) Oral steroids

d) Cyclosporine

Question 15:

A woman brings her 46-year-old sister to the dermatology OPD. Over the last 4 weeks, following the death of her husband, her head has become full of thin white hair which was previously black. She has also lost about 7kgs. What is the cause of this finding?

a) Hyperthyroidism

b) Alopecia areata

c) Telogen effluvium

d) Psychological stress

Question 16:

Which of the following conditions cause non-cicatricial alopecia?

a) 1, 3, 4

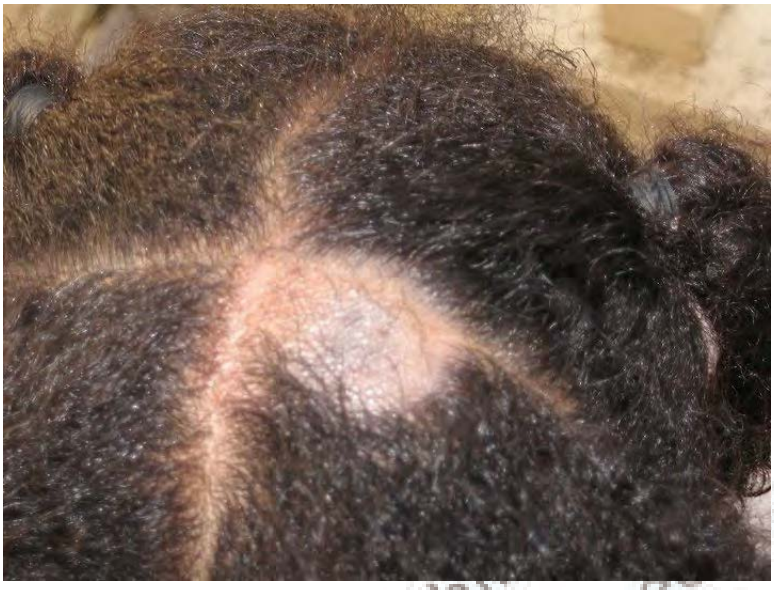
b) 2, 4, 5

c) 3, 5

d) 3

Question 17:

A patient presented with hair loss and itching of the scalp along with mild discharge. Which of the following is useful for diagnosis?



a) Tzanck smear

b) Gram stain

c) Slit skin smear

d) KOH mount

Question 18:

A dermatologist is consulted regarding a 20-year old patient who underwent surgery for intestinal obstruction last week. Which of the following is the cause of hair loss in this patient?

a) Alopecia areata

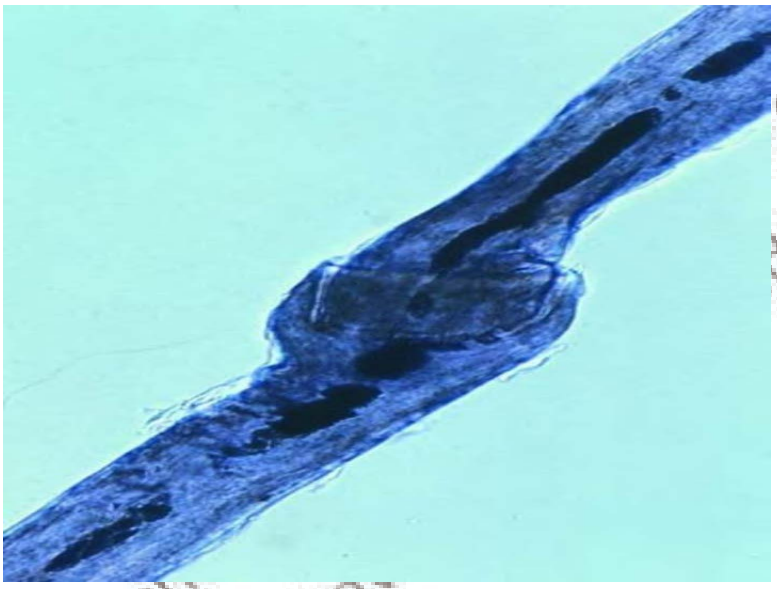
b) Pseudopelade of Brocq

c) Telogen effluvium

d) Trichotillomania

Question 19:

Which of the following conditions causes bamboo hair as seen in the image below?



a) Trichorrhexis nodosa

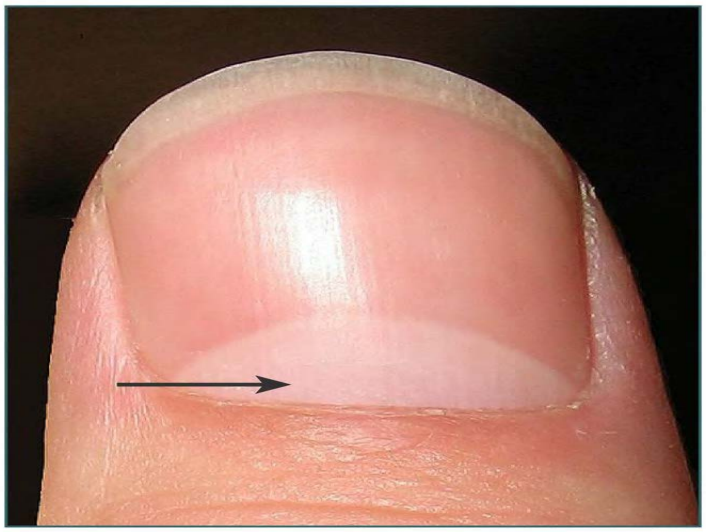
b) Netherton syndrome

c) Kinky hair syndrome

d) Uncombable hair syndrome

Question 20:

Identify the structure marked in the following image.



a) Cuticle

b) Lunula

c) Hyponychium

d) Nail matrix

Question 21:

In a patient with the given nail finding, you would suspect all of the following diagnoses except __

a) Iron deficiency anaemia

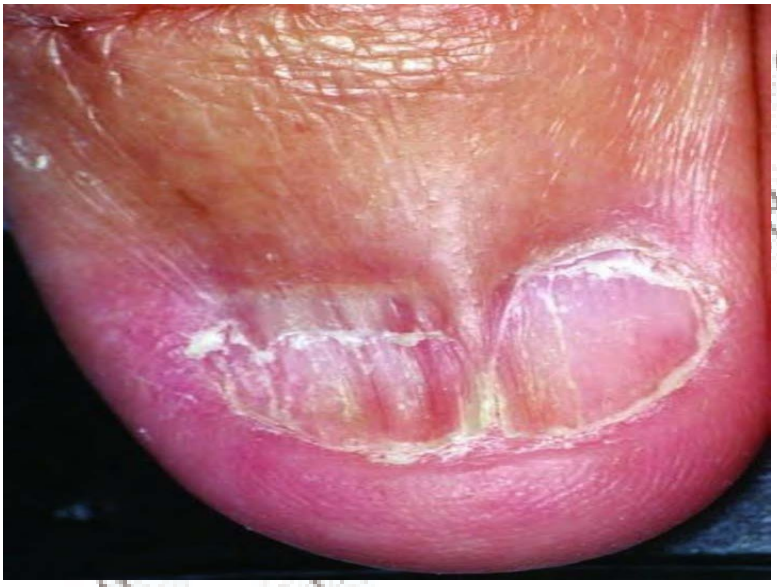
b) Hemochromatosis

c) Raynaud's disease

d) Megaloblastic anaemia

Question 22:

On examining a patient with a history of a long-standing rash, you notice that one of her nails has the following appearance. What condition does this patient suffer from?



a) Lichen planus

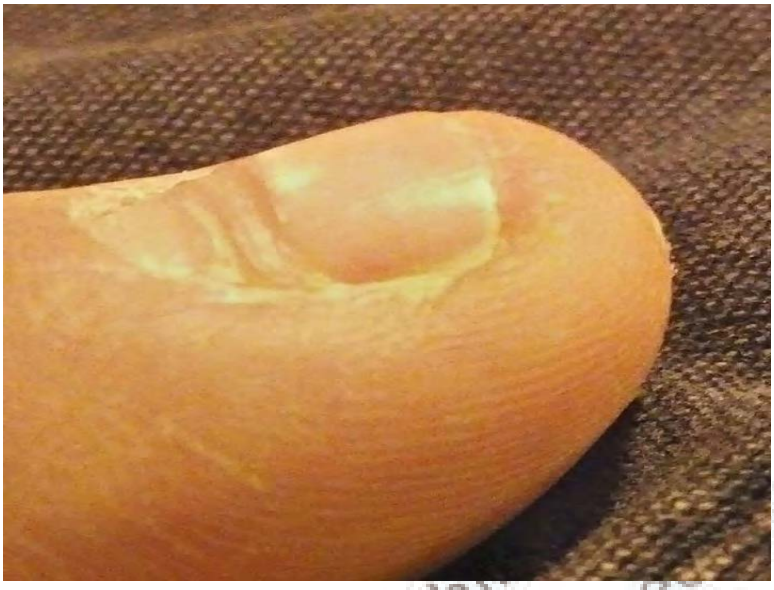
b) Scleroderma

c) Psoriaisis

d) Systemic Lupus Erythematosus

Question 23:

A medical student is visiting her grandmother, who is recovering from heart surgery. She decides to cheer her up by painting her nails. She notices that her nails look odd as seen below. What is this finding called?



a) Beau's lines

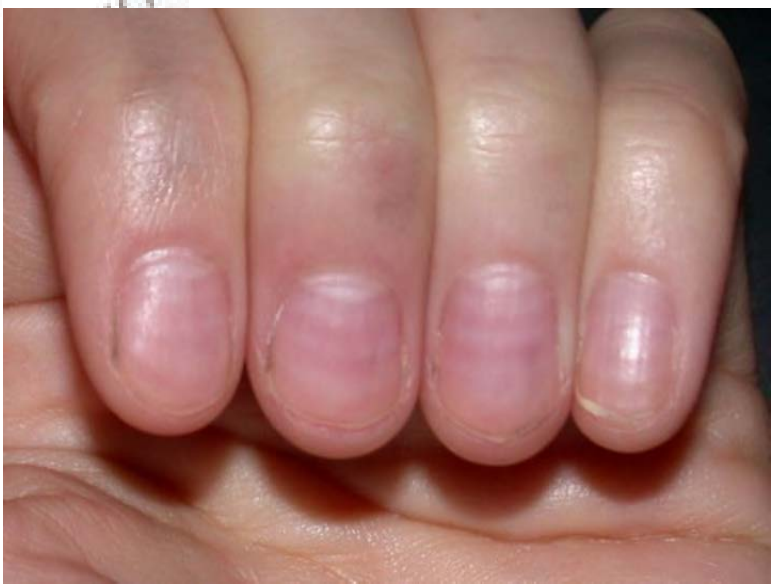
b) Mees lines

c) Lindsay nail

d) Trachyonychia

Question 24:

A 45-year old woman presents to the OPD with complaints of tiredness. On general examination, she is found to have facial puffiness, pedal edema and her nails appear as follows. What is the most likely diagnosis?



a) Congestive heart failure

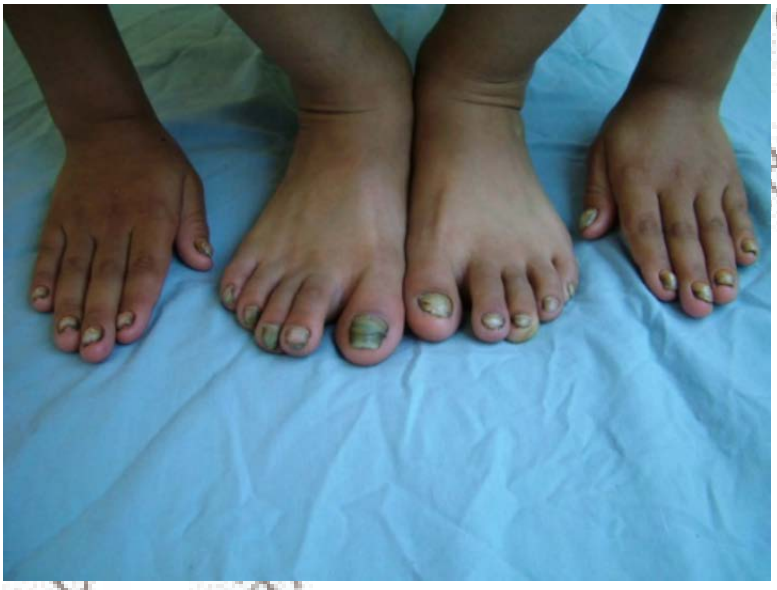
b) Renal failure

c) Hypoalbuminemia

d) Iron-deficiency anemia

Question 25:

A 30-year-old man with a history of chronic rhinosinusitis is referred to the dermatology OPD for abnormal-looking nails as shown in the image. Which of the following is not a feature of this patient's condition?



a) Pleural effusion

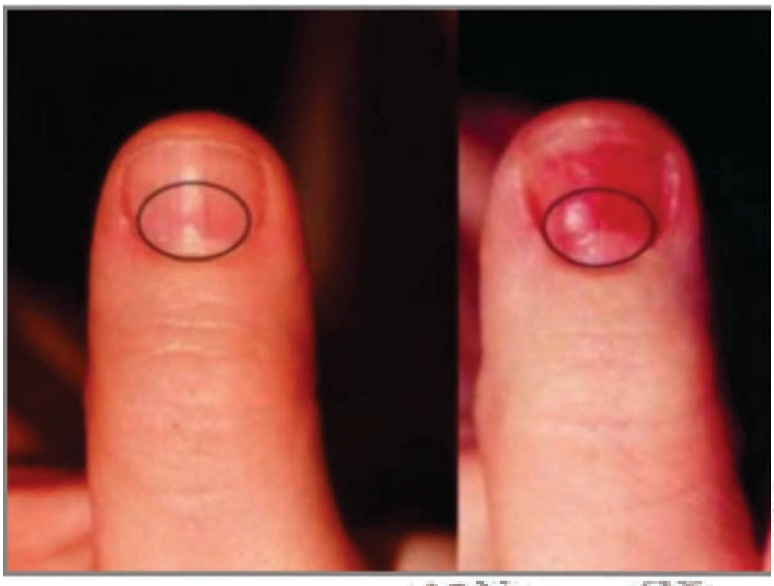
b) Malignant neoplasms

c) Bronchiectasis

d) Pitting edema

Question 26:

A woman presents with severe pulsating pain in her right index finger, which increases on exposure to cold. The following examination findings are seen before and after the removal of the nail plate. What is the diagnosis?



a) Subungual hematoma

b) Herpetic whitlow

c) Subungual exostosis

d) Glomus tumor

Question 27:

Which of the following statements is false about nail-patella syndrome?

a) It is an autosomal recessive condition.

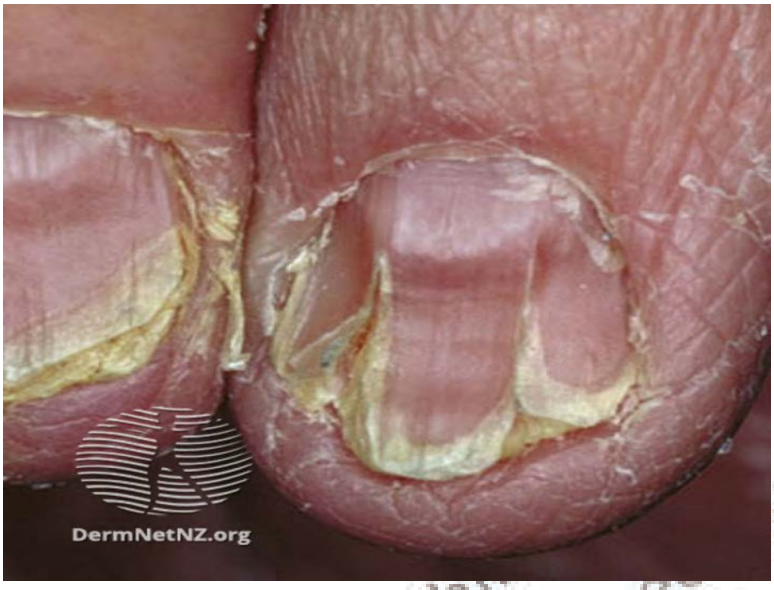
b) Nail dysplasia occurs with triangular lunula.

c) Patella is small, irregular, or absent.

d) Iliac horns are present.

Question 28:

An unkempt and restless woman is brought to the ER after a road accident. She claims that ‘aliens are trying to kill her’. She has a fractured wrist and the following findings are noted in her nails. What condition is this patient suffering from?



a) Darier's disease

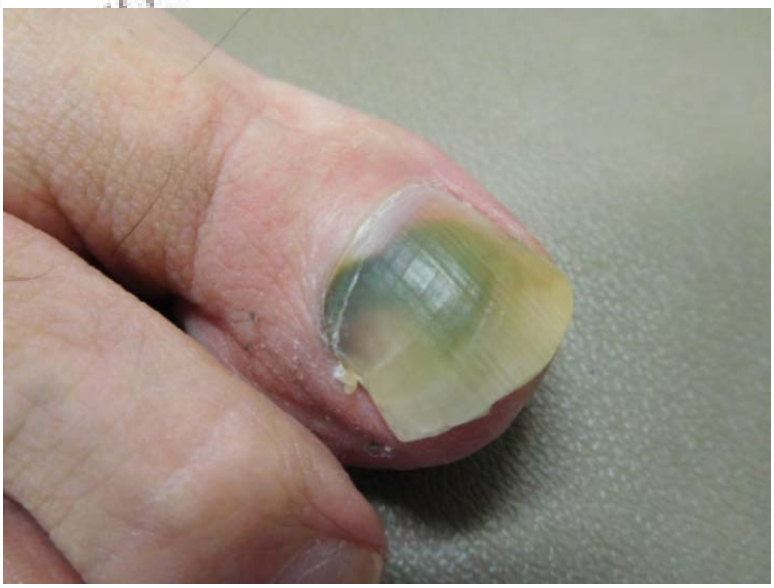
b) Hailey Hailey disease

c) Lichen Planus

d) Psoriasis

Question 29:

A nursing student goes to the OPD for review of acne. An oral antibiotic had been added to her regimen 3 weeks back. She asks the dermatologist about the strange appearance of her nails as shown below, though she has no pain. What is the cause?



a) Klebsiella infection

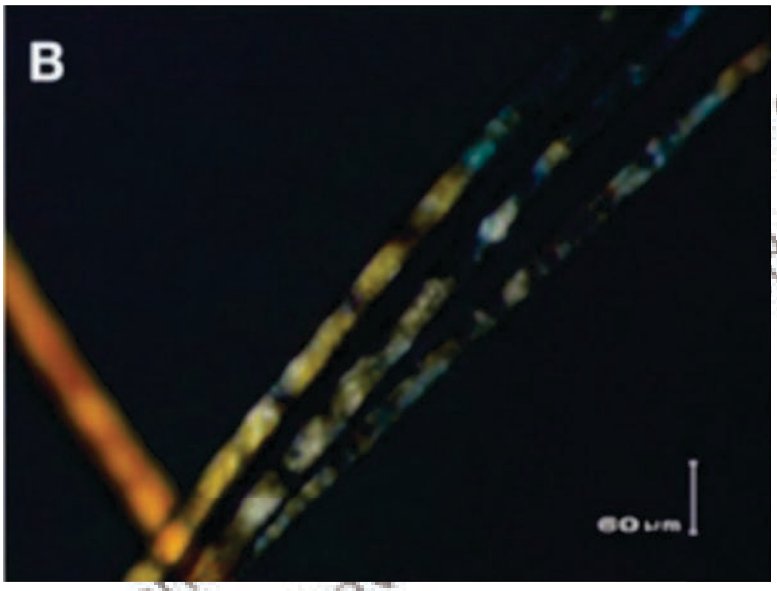
b) Minocycline intake

c) Onychomycosis

d) Pseudomonas infection

Question 30:

What is the probable diagnosis of this condition affecting hair?



a) Trichorhexis nodosa

b) Trichorexis invaginata

c) Trichothiodystrophy

d) Monilethrix

Answer Key

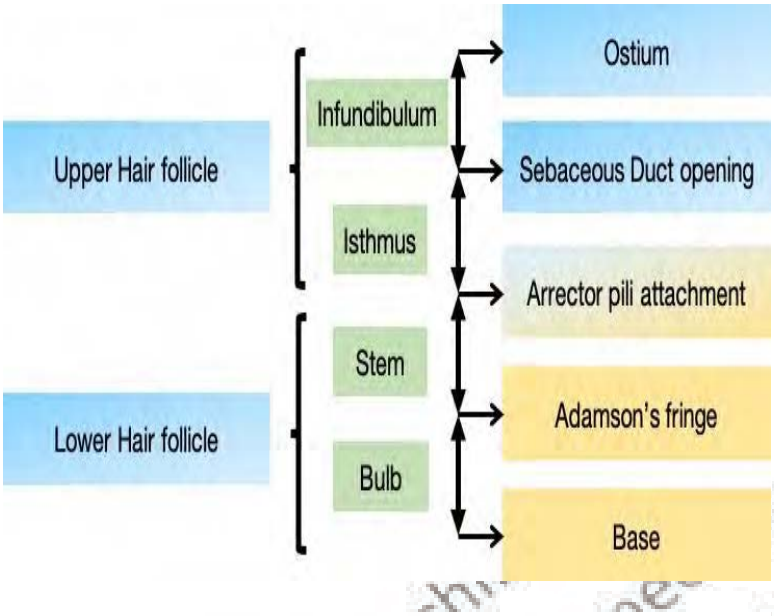
Question No.	Correct Option
1	c
2	b
3	b
4	b
5	b
6	d

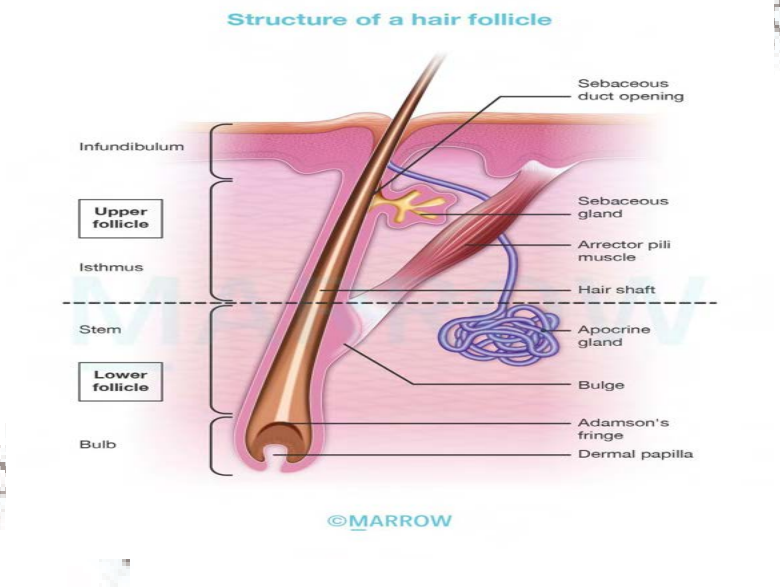
7	a
8	d
9	c
10	c
11	a
12	c
13	a
14	a
15	b
16	c
17	d
18	d
19	b
20	b
21	d
22	a
23	a
24	c
25	d
26	d
27	a
28	a
29	d
30	c

Detailed Explanations

Solution to Question 1:

Arrector pili demarcates the upper and lower hair follicles. The portion above arrector pili constitutes the upper hair follicle while the portion below constitutes the lower hair follicle.

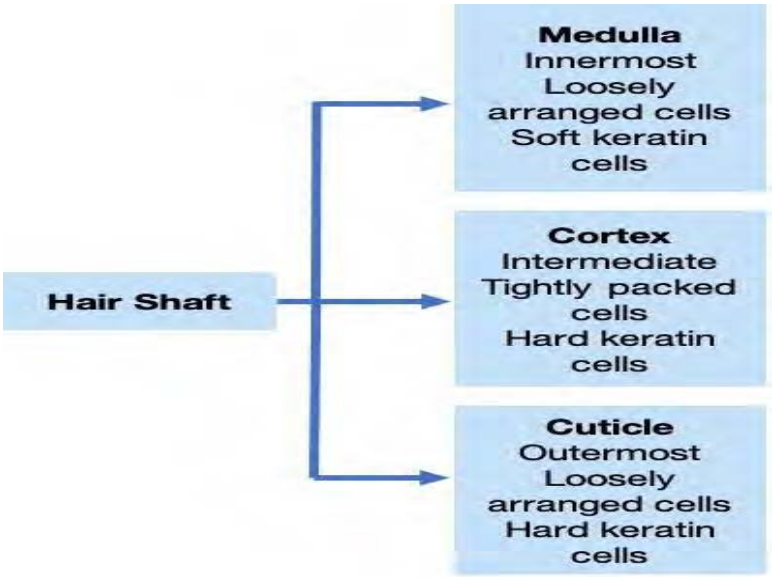




Option A: Sebaceous gland divides the upper segment into infundibulum and isthmus

Option B: Apocrine sweat glands open into the hair follicle above the opening of the sebaceous gland.

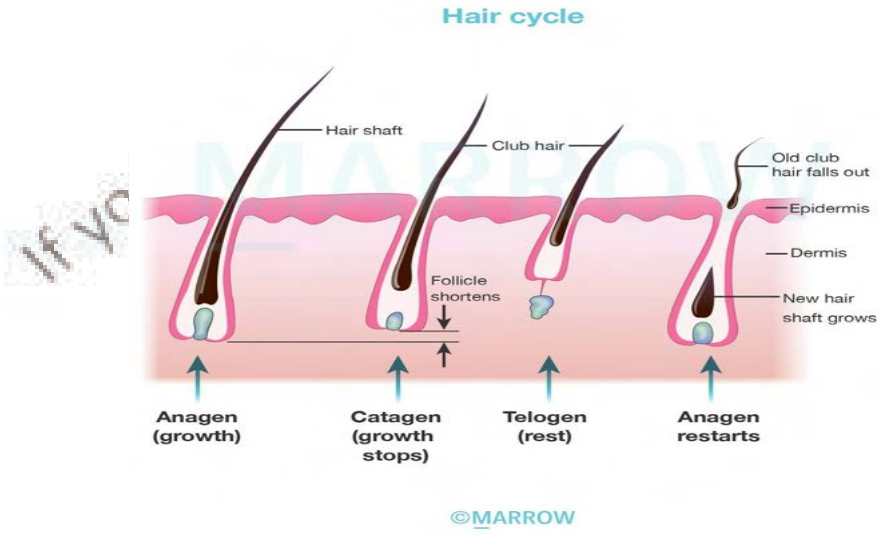
Option D: Adamson's fringe is an inverted V-shaped area in the upper keratogenous zone of the hair follicle and divides the lower segment into stem and bulb.



Solution to Question 2:

80-90% of hair follicles at a given time are in the anagen phase.

The hair cycle has three phases:



Anagen:

It refers to the period of active hair growth. Anagen can continue for several years and the duration of this phase is responsible for determining the final length of the hair. Normally, 80–90% of hair follicles on the human scalp are in anagen at any one time. It can be identified by the presence of angulated roots.

Catagen:

At the end of anagen, epithelial cell division slows and stops, and the follicle enters an involutionary phase known as catagen. The proximal end of the hair shaft keratinizes to form a club-shaped structure and the lower part of the follicle involutes by apoptosis. It lasts for about 3 weeks.

Telogen:

It is the resting phase between catagen and the next anagen. Clubbing becomes more prominent. It lasts for about 3 months. Club hair is eventually shed through an active process called exogen.

In the human scalp, hair follicles may remain in a state of latency, also known as kenogen, for a prolonged period after the club hair is shed.

Solution to Question 3:

Vellus hair extends to the dermis and not the subcutis.

Lanugo refers to the fine, soft, unmedullated and usually unpigmented hair of the prenatal period. It is normally shed in utero in the eighth to ninth months of gestation.

Postnatal hair is of two kinds: vellus and terminal.

	Vellus Hair	Terminal Hair
Image		
Features	Thin and weak	Thicker, coarser, stronger
Site	Arms, legs, stomach	Scalp, brows, lashes, sexual hair
Melanin	Absent (light colour)	Present (dark colour)
Medulla	Absent	Present - thick
Depth	Dermis	Subcutis
Length	< 2 cm	> 2 cm

©MARROW

Solution to Question 4:

This man has male-pattern hair loss. Finasteride selectively inhibits type 2 5° ■reductase within the hair follicle. Hence, it is used in the treatment of male-pattern hair loss.

The 5° ■reductase enzyme converts testosterone to the more potent form of dihydrotestosterone (DHT). 5° ■Reductase exists in 3 isoforms. Type 1 and 3 are widely distributed in the skin and not involved in hair growth.

Type 2 is present in androgen-responsive tissues such as the dermal papillae of the hair follicle, prostate, epididymides, and seminal vesicles. Type 2 5° ■reductase also plays a key role in regulating androgen-dependent hair growth.

Hair growth in the following areas is androgen dependent:

• Beard, chest, and extremity hair in males

• Scalp, pubic, and axillary hair in both sexes

Male-pattern hair loss:

Male-pattern hair loss causes thinning of the vertex and an M-shaped receding hairline, as shown below. High levels of circulating androgens stimulate hair loss in certain sites by a process called miniaturization. Finasteride reverses this process.

Solution to Question 5:

The dermal papilla is the primary target of the action of androgen in the hair. This is because the dermal papillae have two important features, namely

• Androgen receptors which are present only in dermal papillae

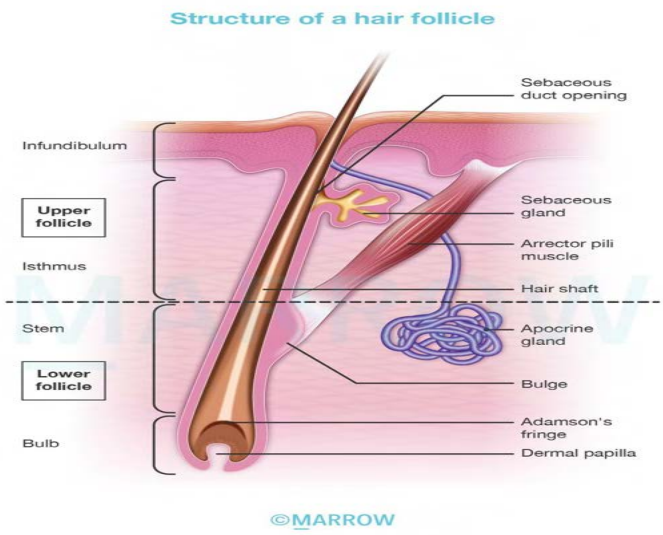
• Expression of 5° ■reductase type 2 which regulates androgen-dependent hair growth.

Androgens have the following effects on hair growth.

• It increases the number of cells in the dermal papilla which causes hair follicle growth and results in pubertal hair growth.

• It causes miniaturization of the follicle in other susceptible sites which leads to male pattern hair loss.

Finasteride inhibits conversion of testosterone to dihydrotestosterone in the dermal papillae. This prevents miniaturization and further development of alopecia.



Solution to Question 6:

This clinical scenario is suggestive of male pattern androgenetic alopecia. Finasteride is not the first line treatment in women.

Finasteride use in pregnancy can lead to teratogenic effects on male fetuses.

Androgenetic alopecia is a disorder characterized by a reduction of hair fiber production by follicles and miniaturization. It is of two types , male pattern and female pattern hair loss. Male pattern hair loss may occur in female & vice versa is also true. Male pattern hair loss causes frontal hairline recession and thinning of the vertex.

Miniaturization refers to a reduction in the size of follicles until it leaves behind a remnant called stelae or streamers. Elastic staining of the stelae shows Arao-Perkin's bodies.

DHT is a more potent form of testosterone. It is responsible for follicular regression and thus causes androgenic alopecia. Finasteride inhibits the enzyme that converts testosterone to DHT and hence is used for treatment.

Minoxidil is a potent vasodilator. It is used orally to treat severe hypertension. When used as a hair lotion, it prolongs the anagen phase and slows down or prevents hair loss. Drugs used to treat male pattern baldness:

• Minoxidil lotion

• 5-alpha reductase antagonist - Finasteride

Drugs used to treat female pattern baldness:

• Minoxidil lotion

• Anti-androgens - spironolactone, flutamide, and cyproterone acetate

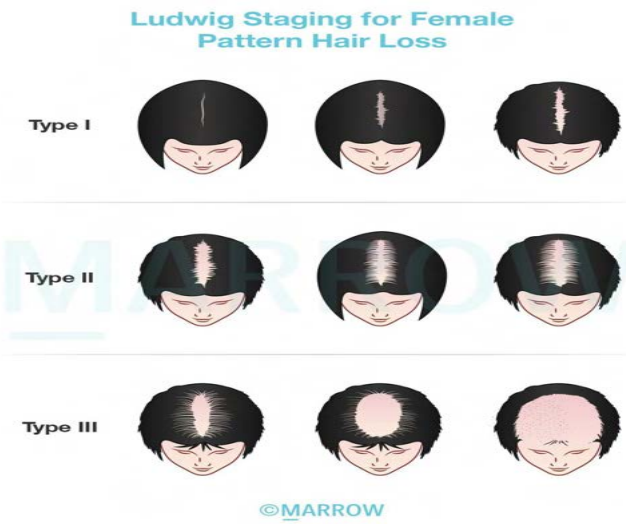
Solution to Question 7:

Female pattern hair loss (FPHL) presents with diffuse thinning of hair over the mid■frontal scalp with minimal or no bitemporal recession. Usually, vertex baldness is absent and frontal hairline is maintained.

Male pattern hair loss (MPHL) involves vertex baldness and frontal hairline recession.

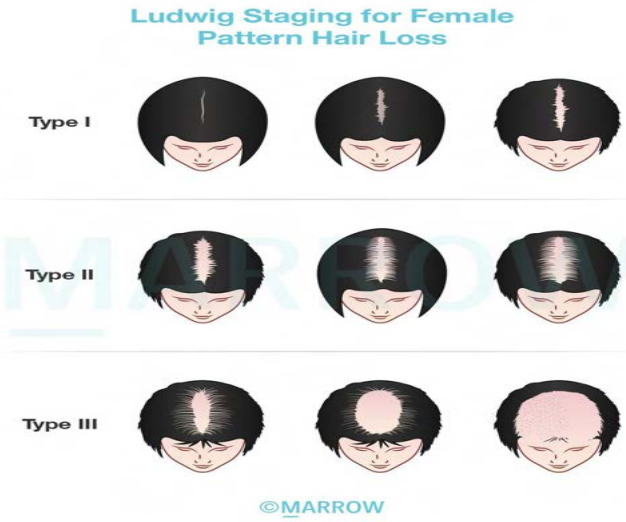
There is no entity called mixed pattern hair loss.

Currently, the Hamilton-Norwood classification system for MPHL and the Ludwig system for FPHL are most commonly used to describe patterns of hair loss.



Solution to Question 8:

The above picture shows female pattern hair loss with frontoparietal thinning and maintenance of the frontal hairline. Female pattern hair loss staging is done using the Ludwig staging.



Option B: Hamilton Norwood staging is used for male pattern hair loss (MPHL).

Option C: Tanner staging is used to assess sexual maturity.

Option D: Batts-Ludwig staging is used for staging chronic hepatitis.

Solution to Question 9:

Chemotherapy causes hair loss known as anagen effluvium.

It is due to the disruption of the anagen or proliferating phase of the hair cycle. Hair shedding typically occurs within 1–3 weeks and it is complete within 1–2 months after the initiation of chemotherapy.

Most important drugs implicated in the order of decreasing frequency of association causing anagen effluvium:

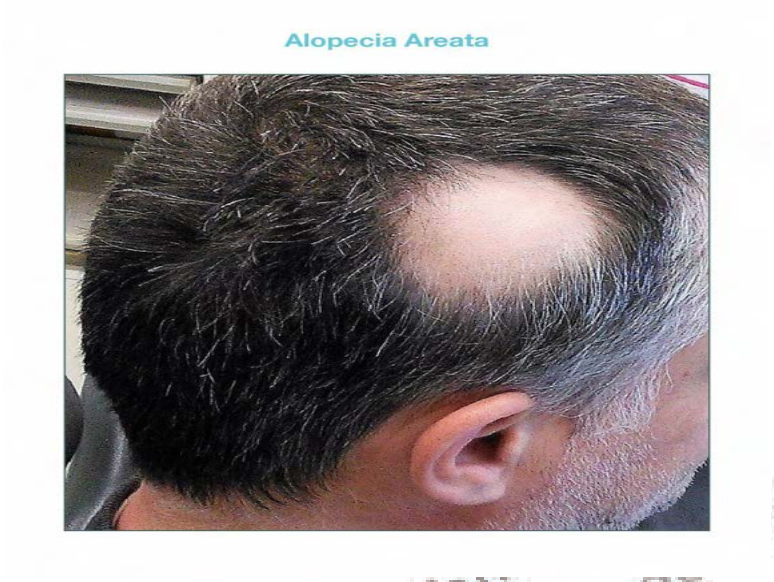
• Anti-microtubule agents (e.g., paclitaxel)

• Topo-isomerase inhibitors (e.g., doxorubicin)

• Alkylating agents (e.g., cyclophosphamide)

• Anti-metabolites (e.g., 5-fluorouracil)

Option A: Alopecia areata causes patchy, well-circumscribed hair loss, as shown below.



Option B: Telogen effluvium is an acute-onset diffuse hair loss that occurs 2–3 months after a triggering event such as high fever, surgical trauma, sudden starvation or haemorrhage.

Option D: Trichotillomania is a behavioural disorder characterised by compulsive hair pulling which causes patchy hair loss. It shares some features with obsessive-compulsive disorder and may be associated with other psychiatric conditions.

Solution to Question 10:

The pattern of hair loss in this clinical scenario is telogen effluvium. It is an acute-onset scalp hair loss that occurs 2–3 months after a triggering event such as high fever, surgical trauma, sudden starvation, or hemorrhage.

It refers to an increase in the shedding of telogen club hairs due to premature termination of the anagen (proliferative) phase of the hair cycle following a period of stress.

Chronic diffuse telogen hair loss refers to telogen hair shedding persisting > 6 months. Causes of chronic diffuse telogen hair loss are:

• Thyroid disorders (Both hyper- and hypothyroidism)

• Severe iron deficiency anemia, acrodermatitis enteropathica, and malnutrition.

Telogen gravidarum refers to telogen hair loss seen 2–3 months after childbirth. The circulating placental estrogen during pregnancy prolongs anagen phase. After delivery, the estrogen withdrawal pushes all the hair simultaneously into catagen and then telogen phase.

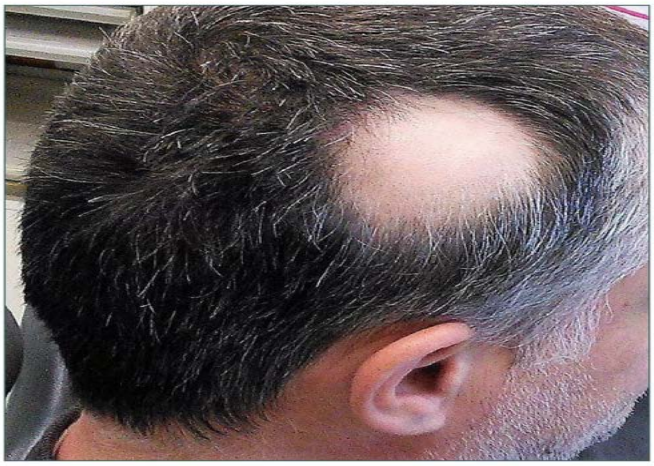
Solution to Question 11:

This patient has alopecia areata. The characteristic finding described in this vignette is called exclamation mark hair.

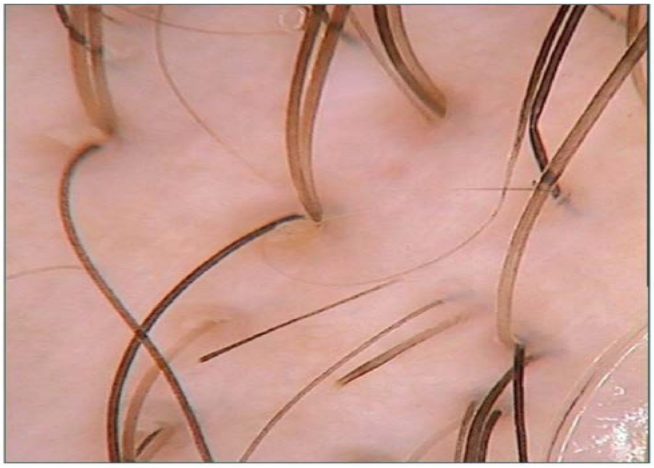
Alopecia areata is a chronic inflammatory disease that causes non-scarring patches of hair loss. It is a T-cell mediated inflammatory disease that occurs in genetically predisposed patients.

The lesions of alopecia areata are characterized by a smooth circumscribed patch of alopecia. Exclamation mark hair refers to short extractable broken hairs which are thinner towards the base, as shown in the image below.

Alopecia Areata



Exclamation mark hair



Solution to Question 12:

Hair loss over the back of the head is called ophiasis because it creeps like a snake towards both ears.

Alopecia areata causes non-scarring hair loss in well-circumscribed patches. It peaks between 20-40 years but can occur at any age.

In case of limited patchy hair loss present for < 1 year, spontaneous remission is seen in 80% of patients. Sometimes the patches can coalesce to cause complete loss of hair.

Alopecia totalis means loss of all scalp hair and alopecia universalis means loss of all body hair.

Solution to Question 13:

The given scenario suggests alopecia areata in which geometric fine-stippled pitting of the nail is the most likely expected finding, as shown below.

Option B: Thinning of the nail with dorsal pterygium is seen in lichen planus.

Option C: V-shaped nicks on the distal edge of the nail are a feature of Darier disease.

Option D: Green nails are associated with Pseudomonas infection.

Solution to Question 14:

This patient has limited alopecia areata as seen by the well-circumscribed patch of hair loss. Intra-lesional steroids are the first-line treatment.

The following treatment options are used in alopecia areata.

• First line: Intra-lesional corticosteroids - Depot steroid (hydrocortisone acetate 25 mg/mL or triamcinolone acetonide 5–10 mg/mL)

• Second line: Oral corticosteroids are used if initial treatment fails.

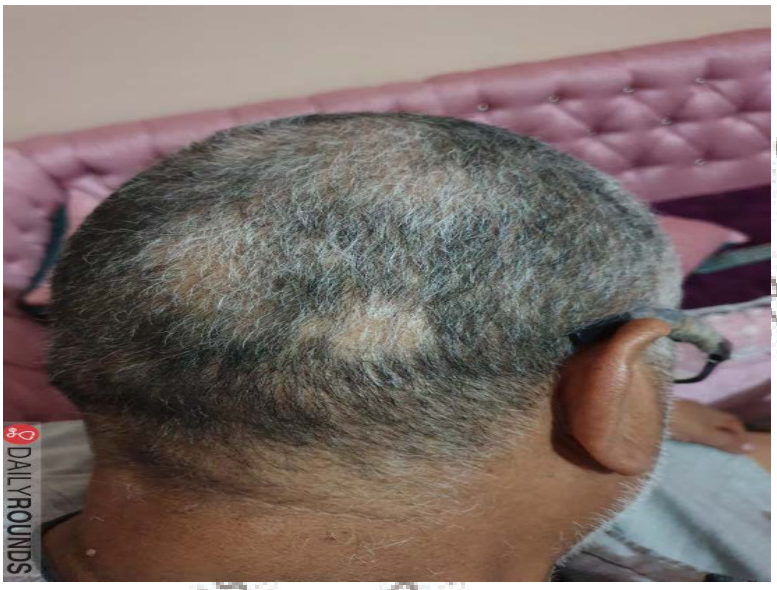
• Third line: Contact immunotherapy. It works by inducing mild contact dermatitis on the scalp by applying an allergen.

Solution to Question 15:

The finding described is called going white overnight and is characteristic of alopecia areata.

Alopecia areata preferentially targets pigmented hair. Older patients with grey hair have a mixture of white and pigmented hair. If the disease progresses rapidly, only pigmented hair will be affected, sparing the white hair. This leads to a dramatic change in overall hair color that is called going white overnight.

The following image shows patches of hair loss with sparing of white hair.



Option A: Hyperthyroidism can cause weight loss and diffuse hair thinning but a change in hair color is not a feature.

Options C and D: Telogen effluvium and psychological stress (which also causes telogen effluvium) lead to diffuse hair loss that affects all hair equally, not just pigmented hairs. So, overall hair color will not be affected.

Solution to Question 16:

Alopecia areata and secondary syphilis cause non-scarring (non-cicatricial) alopecia.

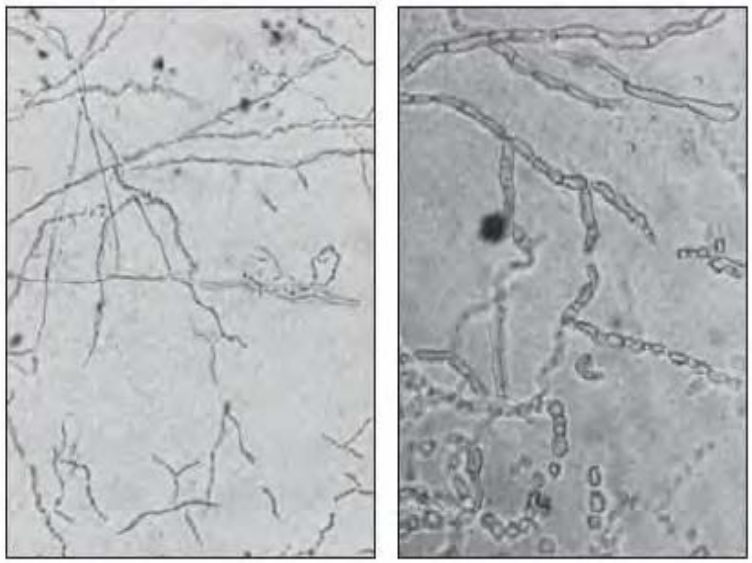
Common conditions causing scarring (cicatricial) alopecia include:

- Discoid lupus erythematosus (DLE)
- Pseudopelade of Brocq
- Scleroderma
- Favus
- Kerion
- Lichen planopilaris
- Folliculitis decalvans.

Solution to Question 17:

The patient has a history of itching and mild discharge and examination shows a well-demarcated patch of alopecia, with scaling and broken hair shafts. This is characteristic of tinea capitis. Though the diagnosis is clinical, a KOH mount is used for confirmation.

Scrapings from the edge of a lesion are transferred to a slide, to which KOH is added. It is then examined under the microscope for the presence of hyphae, as shown below.



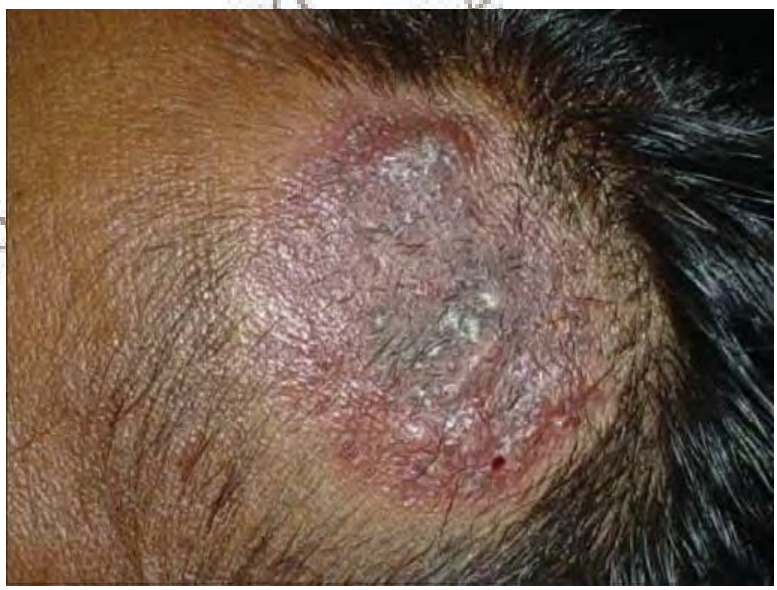
Tinea capitis is a dermatophyte infection primarily occurring in children. Clinical features of tinea capitis are patchy hair loss, scaling, tender lymphadenopathy, and in severe cases, there might be pustules and crusting of the affected area along with sinus formation.

The clinical variants of tinea capitis are:

• Endothrix - a non-inflammatory type in which multiple black dots are present within the areas of alopecia. It is most commonly caused by T. tonsurans and T. violaceum.

• Ectothrix - a mild inflammatory type in which single or multiple scaly patches with hair loss are seen. Microsporum audouinii, M.canis, M.equinnum, and M.ferrugineum cause ectothrix infection.

• Kerion - a severe inflammatory type that presents with an inflammatory mass with thick crusting and matting of hair with pus and sinus formation. It is commonly caused by T. verrucosum and T. mentagrophytes.



• Favus - is characterized by the presence of yellowish, cup■shaped crusts known as scutula that develop around hair follicles. It is caused by T. schoenleinii

Treatment:

• Terbinafine: <10 Kg- 62.5 mg; 10-20 kg - 125 mg; >20 kg- 250 mg, all given daily for 4 weeks.

• Itraconazole: 2-4 mg/kg/day for 4-6 weeks.

Solution to Question 18:

The given image is characteristic of trichotillomania. It is an obsessive-compulsive disorder characterized by compulsive hair pulling. Ingestion of the plucked hair is called trichophagia. Rarely, the resulting hairball called trichobezoar can cause intestinal obstruction.

The characteristic features are,

• Varying lengths of hair and absence of complete hair loss in the patch

• Orentreich or Friar Tuck or Tonsure sign: Loss of central area (easier to pull) and sparing of margins of the scalp.

• Broken hair shafts

• No scarring.

Histopathological examination shows,

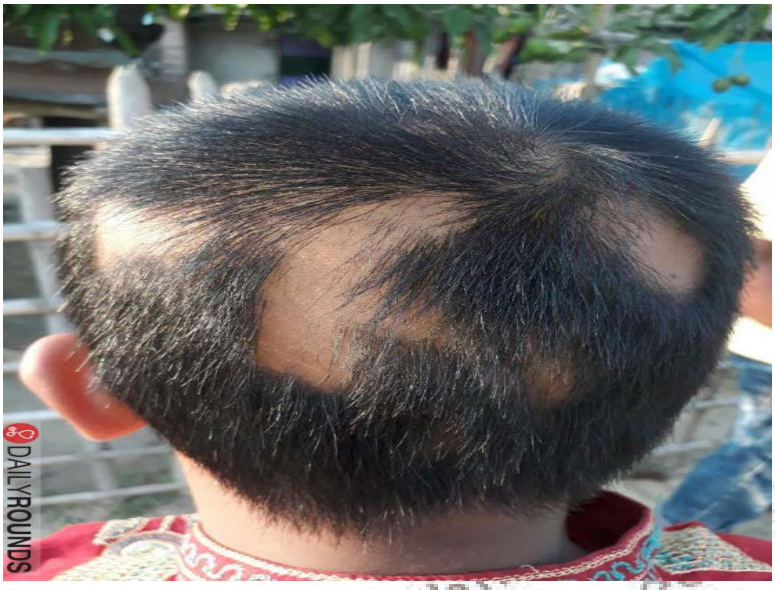
• No inflammation

• Peribulbar, intraepithelial and perifollicular hemorrhages

• Intrafollicular pigment casts.

Trichotillosis is the newer term as it is not a 'mania'. It shares some features with the OCD spectrum of disorders. It is usually associated with other psychiatric conditions.

Option A: Alopecia areata shows well-circumscribed patches of complete hair loss with sparing of white hair, as shown below.



Option B: Pseudopelade of Brocq is a scarring alopecia that produces small round or oval patches of smooth alopecia, described as footprints in the snow.

Option C: Telogen effluvium can occur 2-3 months after systemic stress such as surgery or illness, but it causes diffuse hair loss, not patchy as in this patient.

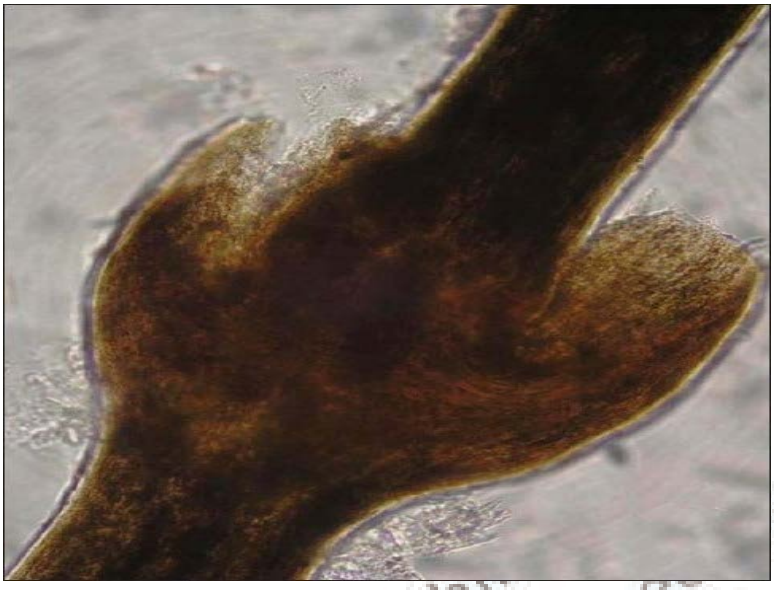
Solution to Question 19:

Bamboo hair is seen in Netherton syndrome.

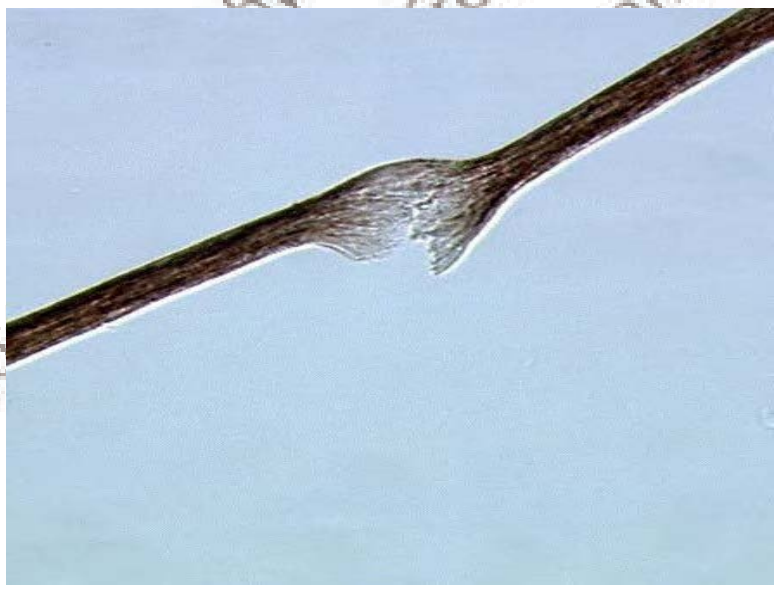
It presents with atopy, recurrent skin infection, and an increased risk of skin cancer. It has two characteristic features, namely:

• Ichthyosis linearis circumflexa - a rare form of ichthyosis with scaling and plaques.

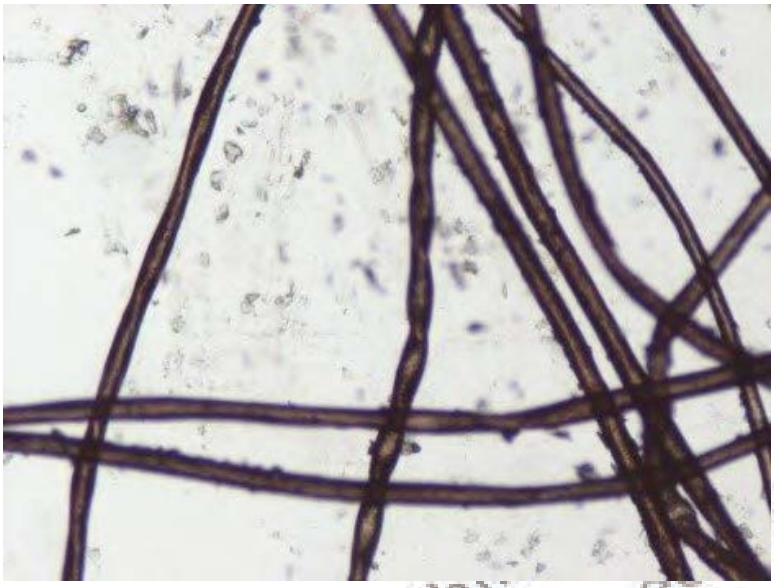
• Trichorrhexis invaginata or bamboo hair - characterized by invagination of the distal hair shaft into the proximal portion. It is also called golf-tee or ball and socket appearance as seen below.

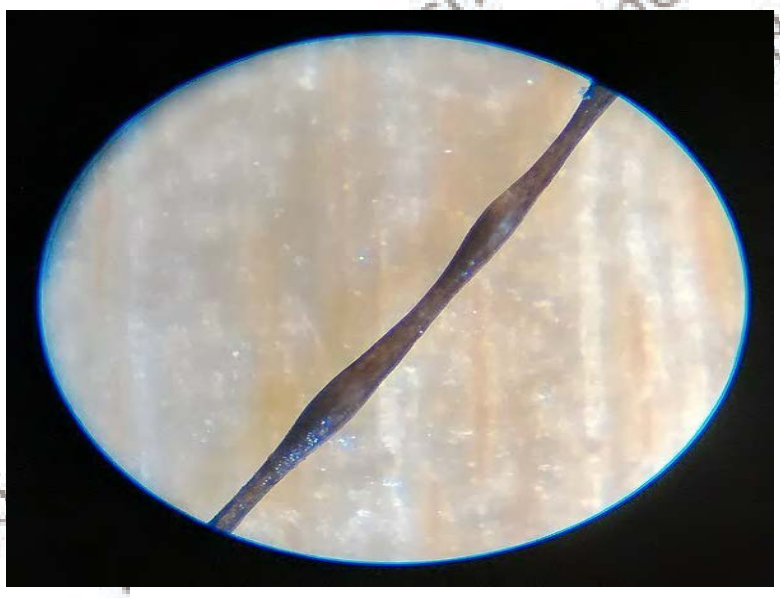


Option A: Trichorrhexis nodosa is associated with trauma to the hair shaft and arginosuccinic aciduria. It causes node formation and fractures which results in the thrust paintbrush appearance seen below as if two paintbrushes are rubbing against each other.

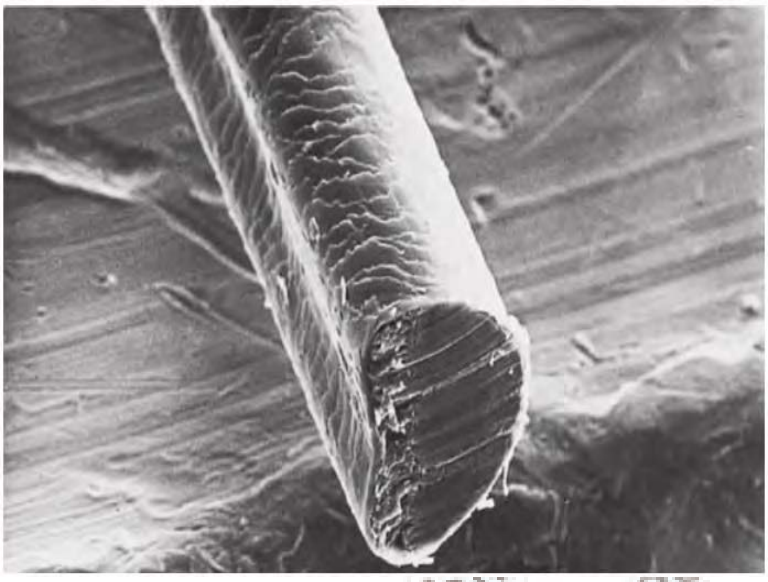


Option C: Menkes kinky hair syndrome is an X-linked recessive disorder of copper metabolism. It is associated with pili torti or twisted hairs, seen in the first image, and monilethrix or beaded hair, seen in the second image.





Option D: Uncombable hair syndrome produces a characteristic triangular cross-section of hair and longitudinal groove along one side which contributes to its hair stiffness.



Solution to Question 20:

The marked structure is the lunula, which is the whitish half-moon-shaped structure between the free margin of proximal nail fold and nail bed.

The various parts of the nail include:

• Nail plate: Durable, chemically resistant, partially translucent keratinized structure which grows throughout life.

• Proximal nail fold: Cutaneous folded structure providing a visible proximal border of nail fold, continuous with the cuticle.

• Lateral nail fold: Cutaneous folded structures providing the lateral borders to the nail.

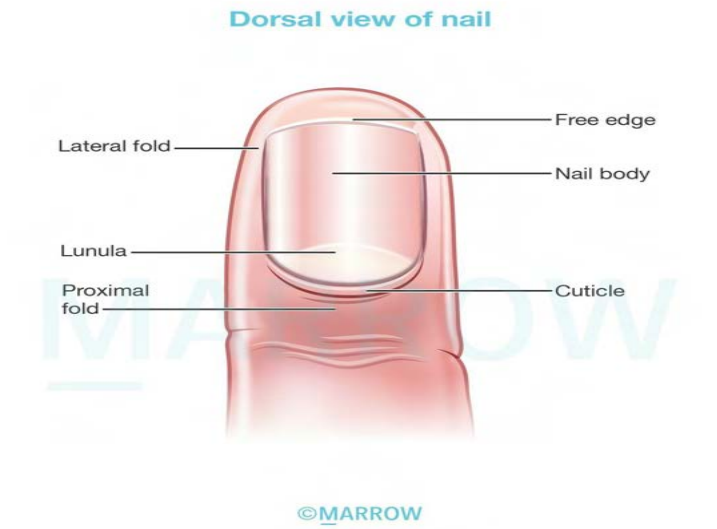
• Lunula: Convex margin of intermediate nail matrix seen through the nail.

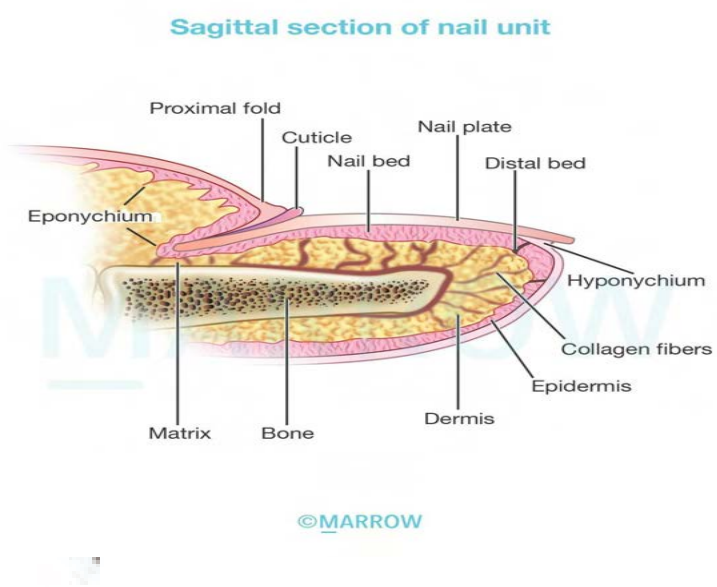
• Eponychium: Small band of epithelium extending from the proximal nail fold and adhering to the dorsal aspect of the nail plate.

• Cuticle: Thin layer of dead tissue which forms a seal between the nail plate and eponychium to prevent pathogens from infecting the matrix area.

• Nail Bed: The vascular bed upon which nail rests extending from the lunula to the hyponychium.

• Hyponychium: Cutaneous margin underlying free nail, bordered distally by the distal groove.





Solution to Question 21:

Koilonychia is not seen in megaloblastic anemia. It refers to a flattening or concavity of the dorsal part of the nail producing a spoon shape. It can occur in the following conditions

- Iron-deficiency anemia
- Hemochromatosis
- Raynaud's disease.

Psoriasis and dermatophytes also can mimic koilonychia

The following image also shows koilonychia or spoon-shaped nails:

Solution to Question 22:

The given image shows dorsal pterygium, which is a characteristic nail finding in lichen planus.

It is a wing-shaped deformity of the dorsal nail due to a central fibrotic band that divides the nail into two parts in the proximal area.

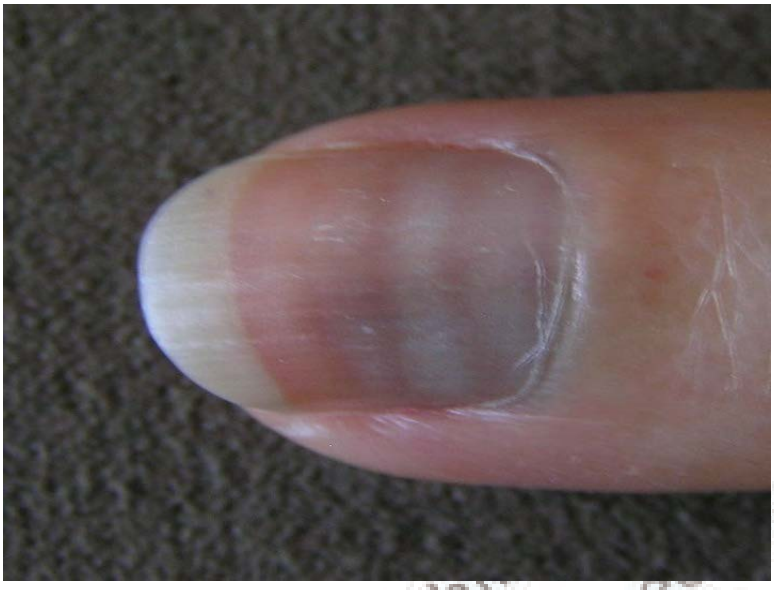
Ventral pterygium or pterygium inversum unguis refers to the adherence of the distal portion of the nail bed to the ventral surface of the nail plate. It can be idiopathic or due to trauma, systemic sclerosis, Raynaud phenomenon. It makes the trimming of nails very painful.

Solution to Question 23:

This image shows Beau's lines which are generalized transverse grooves on the nail which may be full or partial thickness. They usually occur a few weeks after a precipitating systemic event like MI, measles, mumps, or pneumonia.

Isolated transverse grooves in individual nails may occur due to trauma, inflammation, or neurological events.

Option B: Mees or Aldrich–Mees lines or Leukonychia striata are white lines that occur as a 1–2 mm wide transverse band is in the arcuate form of the lunula. They are associated with arsenic and lithium poisoning as well as renal failure.



Option C: Lindsay nails or half-and-half nails are a rare finding where the proximal portion of the nail is white and the distal half is pink, with a sharp line of demarcation between the two halves. They are specific for renal failure.

Option D: Trachyonychia is roughening of nails observed in alopecia areata.

Solution to Question 24:

The given image shows paired white bands parallel to the lunula called Muehrcke's lines, which are a specific finding of hypoalbuminemia. They are reversible with albumin infusion.

Option A: In congestive heart failure, leukonychia or Terry's nails are seen.

Option B: In renal failure, half and half nails are seen.

Option D: In iron-deficiency anemia, koilonychia is seen.

Solution to Question 25:

The condition shown in the above image is yellow nail syndrome. It is associated with lymphedema, which is non-pitting.

It is a rare disease characterized by the classical triad of:

• Yellow dystrophic nails, due to thickening of nails

• Primary lymphedema (due to underdevelopment of the lymphatic vessels)

• Pleural effusion

Other common manifestations include chronic rhinosinusitis, chronic bronchitis, bronchiectasis, increased risk of malignancy.

It is also associated with D-penicillamine therapy and nephrotic syndrome. Hypothyroidism and AIDS may show yellow nails, but it is unclear whether this is due to yellow nail syndrome or simply due to retarded growth.

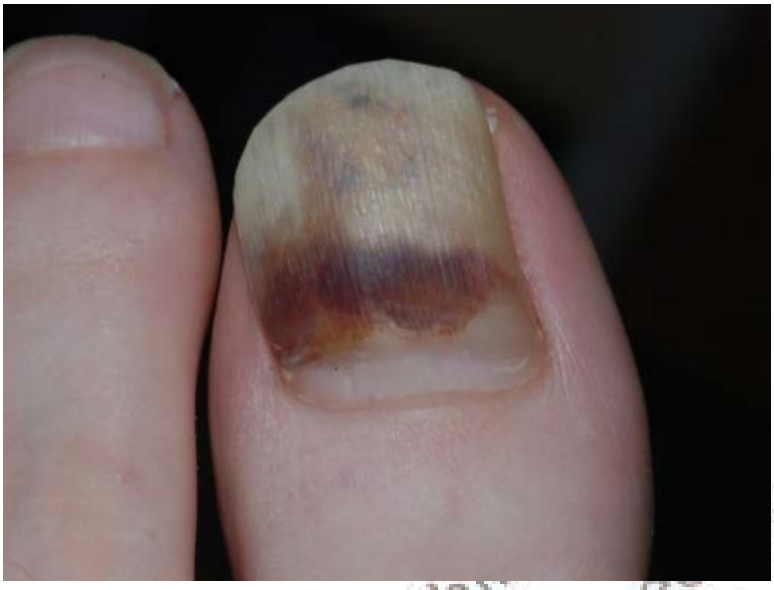
Solution to Question 26:

The woman is suffering from a glomus tumor. It is a benign tumor of the myoarterial glomus.

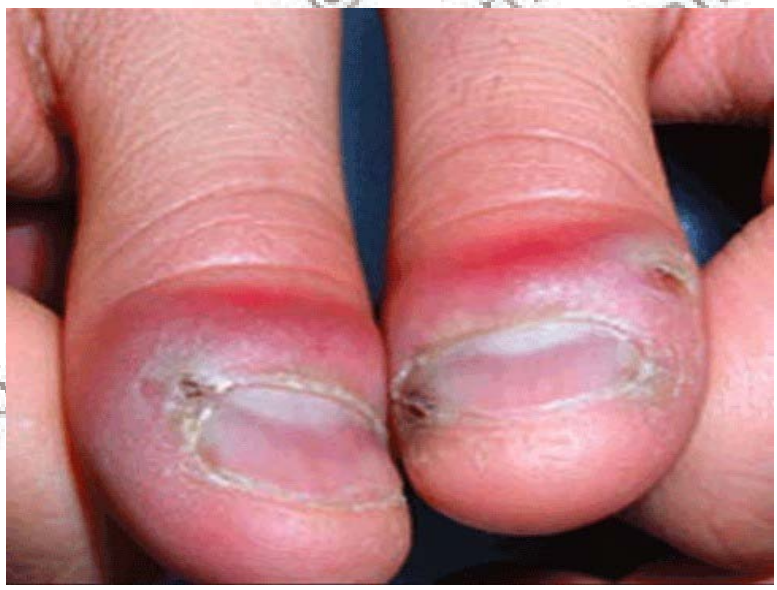
It is seen at 30-40 years of age in adults. Multiple tumors are more common in children than adults. It can occur in the hands, head, neck, penis or even internal organs.

It presents as a pink or purple nodule. Pain is the predominant feature, especially in nail tumors. It is provoked by temperature change and direct pressure. On examination, a bluish-red hue is seen in the following image. Surgical excision is curative as recurrence is rare.

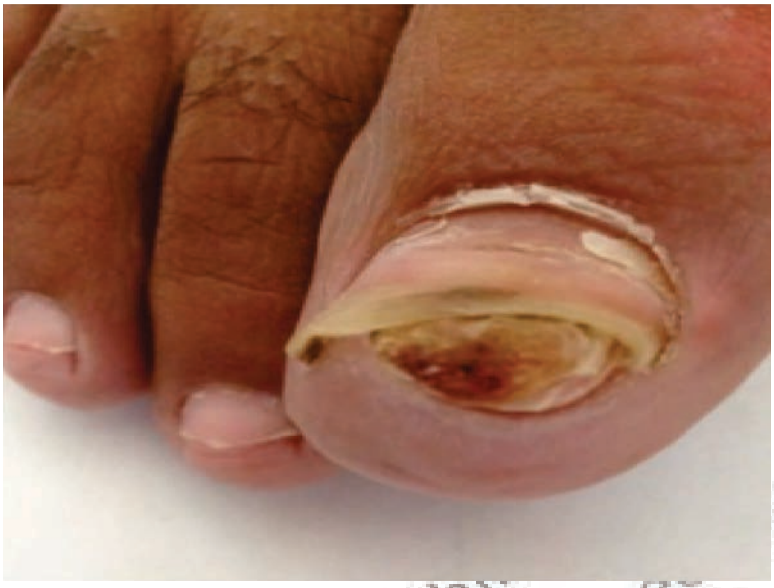
Option A: Subungual hematoma is caused by acute heavy injury or chronic repeated trauma. It causes brownish-grey discoloration of the nail, as seen below.



Option B: Herpetic whitlow is an HSV infection that occurs following minor trauma. It affects the nail and periungual region, as seen below.



Option C: Subungual exostosis is a benign tumor that causes reddish onycholysis of the nail with variable pain, as seen below.



Solution to Question 27:

Nail patella syndrome (NPS) is an autosomal dominant condition causing nail and bone dysplasia.

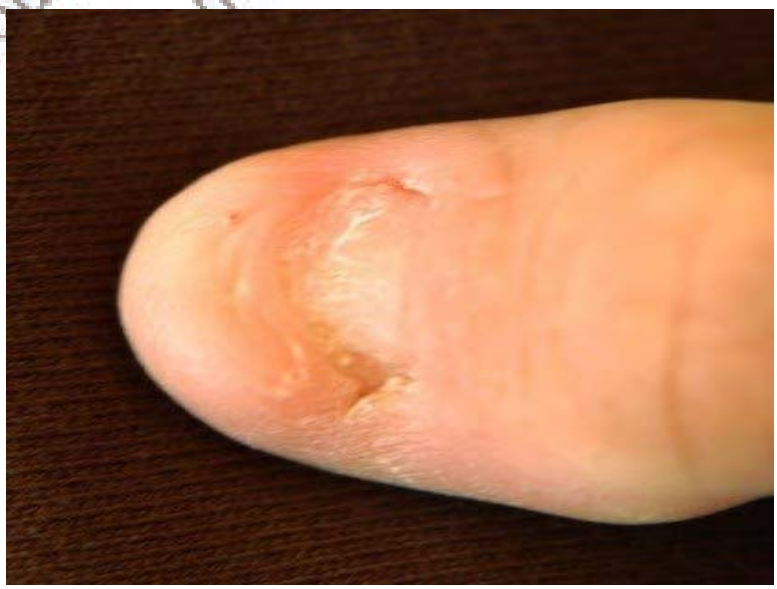
It is characterized by the following:

• Triangular lunula instead of a crescent-shaped lunula

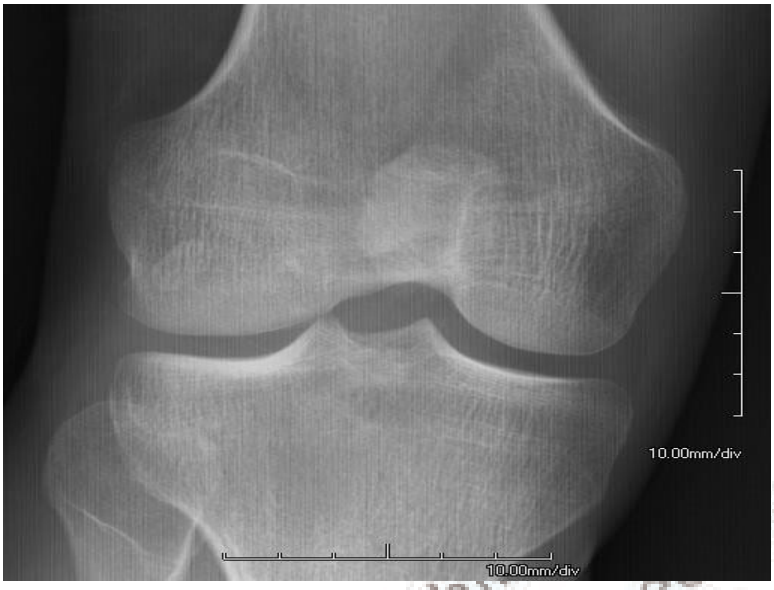
• Patella is small, irregular, or absent

• Iliac horns are bony protrusions from the iliac bone laterally and posteriorly.

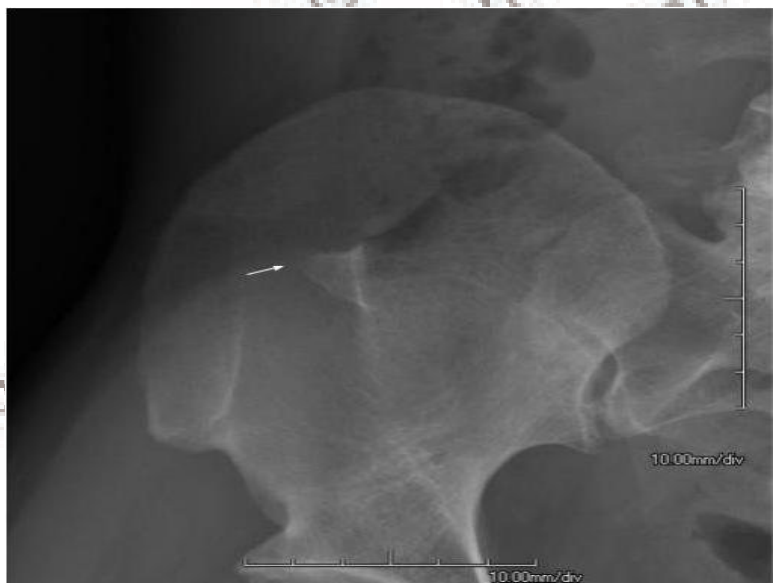
The following image shows a dysplastic nail with triangular lunula.



The following AP radiograph shows a hypoplastic patella in a patient with NPS.



The following AP radiograph of the right iliac crest shows a bony exostosis or posterior iliac horn (white arrow), which is pathognomonic of NPS.



Solution to Question 28:

The shown nail findings are characteristic of Darier's disease. They include:

• Longitudinal erythronychia

• Longitudinal leukonychia

• Distal V■shaped nicks.

Darier's disease or keratosis follicularis or dyskeratosis follicularis, is an autosomal dominant condition arising from mutations in the ATP2A2 gene which affects the SERCA2 calcium pump. It presents with greasy hyperkeratotic papules and plaques in seborrheic regions. Neuropsychiatric

features such as depression, psychosis and mental retardation may also occur.

Option B: Hailey-Hailey disease presents with longitudinal leukonychia.

Option C: Lichen planus presents with dorsal pterygium.

Option D: Psoriasis causes the pathognomonic oil drop sign. It is a yellow-red discoloration in the nail bed resembling a drop of oil.

Solution to Question 29:

This patient has green nails or chloronychia, a painless condition caused by infection with Pseudomonas aeruginosa.

Pseudomonas may colonize the nail following onycholysis (painless separation of the nail from bed) which occurs due to frequent wetting or wearing of gloves causing maceration and minor trauma due to long nails or manicures. The green color is due to pyoverdin and pyocyanin, produced by P. aeruginosa.

Though it is harmless for the patients, it may spread to other immunosuppressed individuals. Hence, these patients should not work in hospitals, kitchens and other places where they are likely to spread the infection to others.

Treatment is with fingertip bath in white vinegar, bleach, or topical gentamicin.

Option A: Klebsiella colonization can cause greyish discoloration of nails.

Option B: Minocycline is one of the most common antibiotics used by dermatologists due to its anti-inflammatory properties. It causes a bluish-grey discoloration of nails.

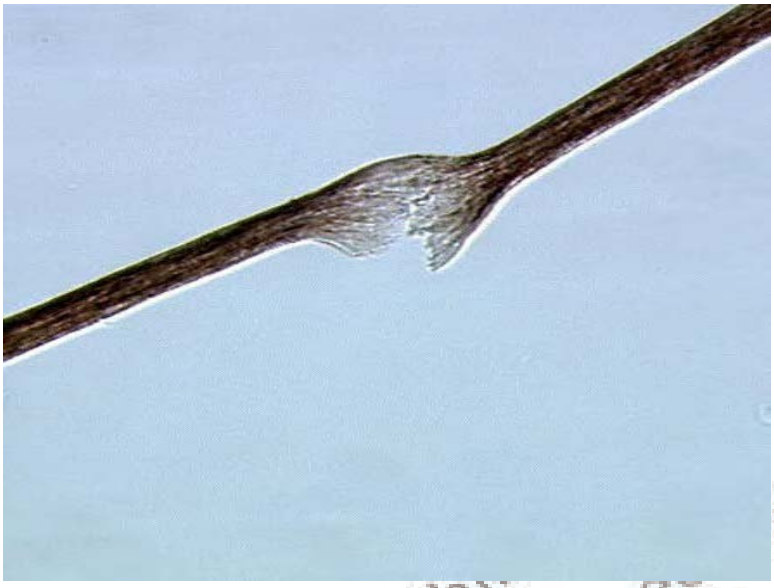
Option C: Onychomycosis causes whitish-yellow discoloration and is painful in later stages.

Solution to Question 30:

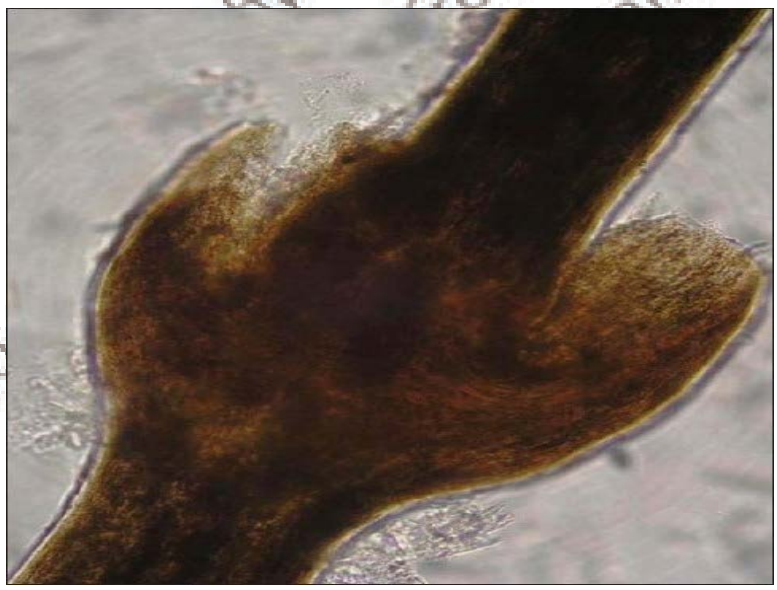
The given clinical image of hair seen under polarising microscopy reveals tiger tail banding (alternating light and dark bands) characteristic of trichothiodystrophy.

Trichothiodystrophy is an autosomal recessive condition causing defective DNA repair. It causes brittle sulfur-deficient hair, photosensitivity, ichthyosis and systemic involvement. Unlike xeroderma pigmentosum (a similar condition with defective DNA repair), there is no risk of skin cancer.

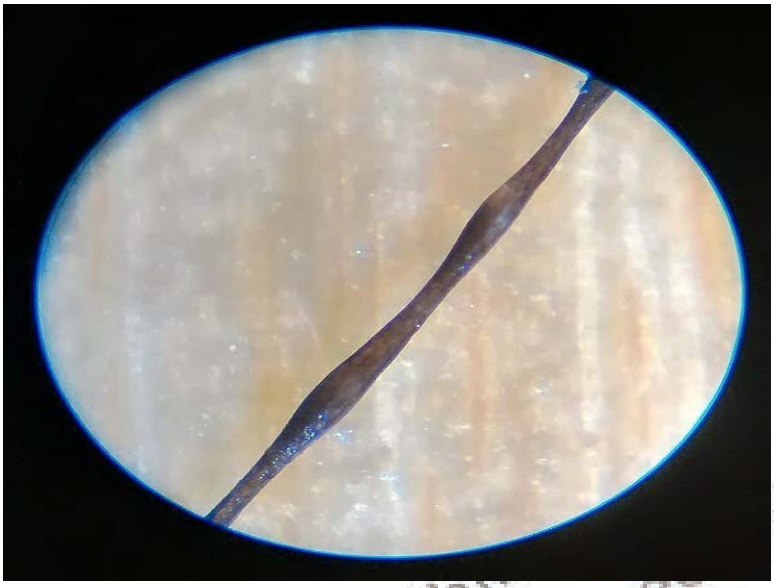
Option A: Trichorrhexis nodosa is associated with node formation and fractures. The classic appearance, shown in the image below, is known as thrust paintbrush appearance as if two paintbrushes are rubbing against each other. It is associated with trauma to the hair shaft and arginosuccinic aciduria.



B- Trichorrhexis invaginata or bamboo hair is characterized by invagination of the distal hair shaft into the proximal portion. It is seen in Netherton's syndrome. It is also called golf-tee or ball and socket appearance as seen below.



Option D: Monilethrix, seen in the image below, is characterized by beaded hair and is fragile at the constricted sites. It occurs as an isolated condition or can occur in Menkes disease.



Disorders of Skin Pigmentation

Question 1:

Which of the following is not responsible for the color of the human skin?

a) Amount of melanin inside melanocytes

b) Number of melanocytes

c) Number and size of melanosomes

d) Degree of transfer of melanin into keratinocytes

Question 2:

What is the ratio of the epidermal melanin unit?

a) 28 keratinocytes : 1 melanocyte

b) 36 keratinocytes : 2 melanocytes

c) 28 keratinocytes : 2 melanocytes

d) 36 keratinocytes : 1 melanocyte

Question 3:

Which of the following statements is not true regarding piebaldism?

a) Autosomal dominant inheritance

b) Well-defined hypopigmented macules are seen

c) White forelock is rare

d) Small spots of hyperpigmentation can also be seen

Question 4:

A child with sensorineural hearing loss is brought to the OPD with the following skin findings. What is the most likely diagnosis?

a) Waardenburg syndrome

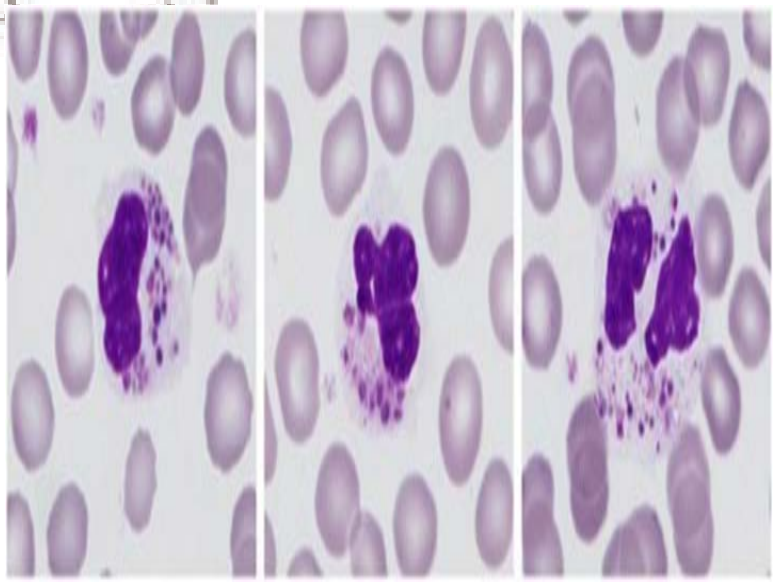
b) Hermansky-Pudlak syndrome

c) Chediak-Higashi syndrome

d) Oculocutaneous albinism

Question 5:

A patient presented with hypopigmentation of the skin and iris. Peripheral smear done is shown below. Which of the following is false regarding this condition?



a) Autosomal recessive

b) Neurological abnormalities

c) Pyogenic infections

d) Gain-of-function mutation of LYST

Question 6:

The pediatrician refers the child shown below for dermatology and ophthalmology opinions. Oculocutaneous albinism is suspected. Which of the following is false regarding this condition?

[Image unavailable]

a) Tryptophan deficiency

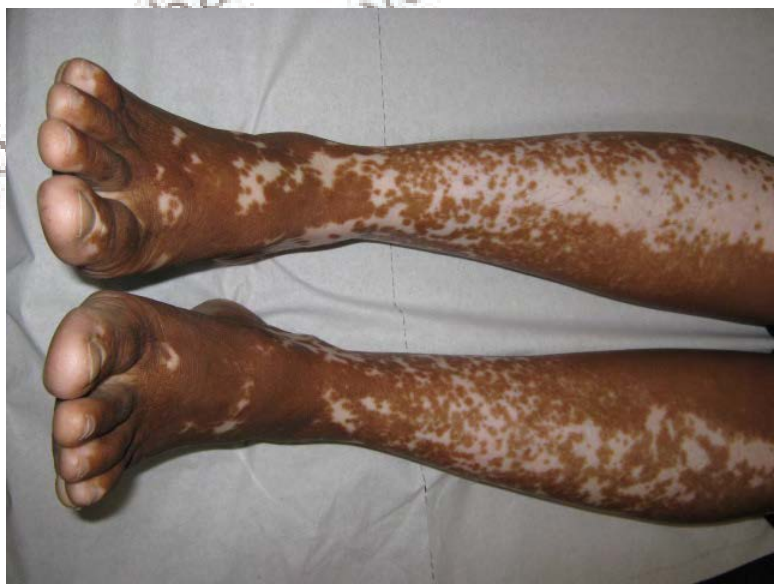
b) Photophobia present

c) Autosomal recessive

d) Melanocytes are normal

Question 7:

What is the pathological basis for the given skin finding?



a) Lack of melanin

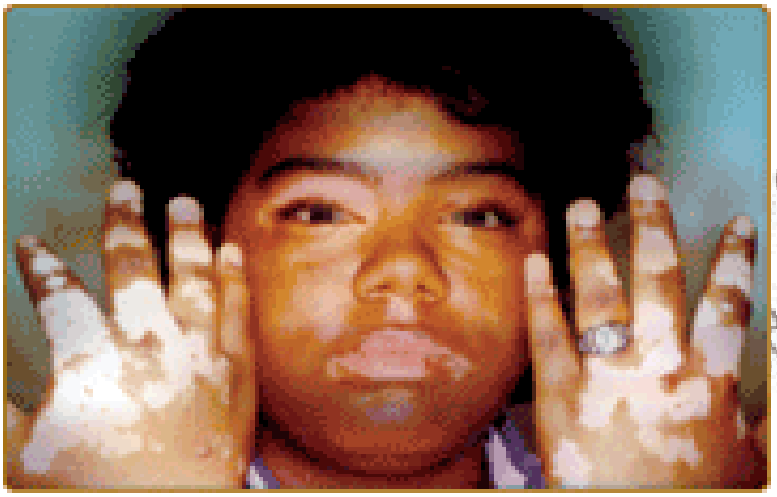
b) Loss of melanocytes

c) Loss of melanosomes

d) Melanocyte senescence

Question 8:

A lady comes to the clinic with the given findings. Which disease has the strongest association with this condition?



a) Thyroid disorders

b) Pernicious anemia

c) Diabetes type 1

d) Addison's disease

Question 9:

A 22-year-old college student presented to the OPD with hypopigmentation on his face. The lesions have been stable for the past year. Wood's lamp examination showed milky white fluorescence. Which of the following would you not offer as a treatment option for his condition?

a) Topical steroids

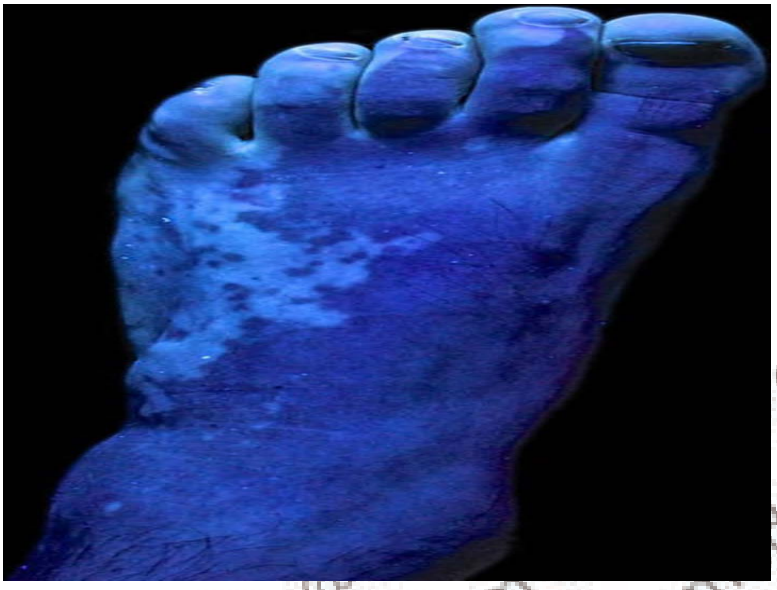
b) Tacrolimus

c) Cyclosporine

d) Surgical grafting

Question 10:

Which of the following is not a mechanism of action of the therapeutic modality shown below?



a) Cross■linking of DNA by psoralen

b) Langerhans cell depletion

c) Activation of T lymphocytes

d) Stimulation of melanogenesis

Question 11:

Which of the following cases of vitiligo are likely to have a poor prognosis?

a) 1, 3, and 5

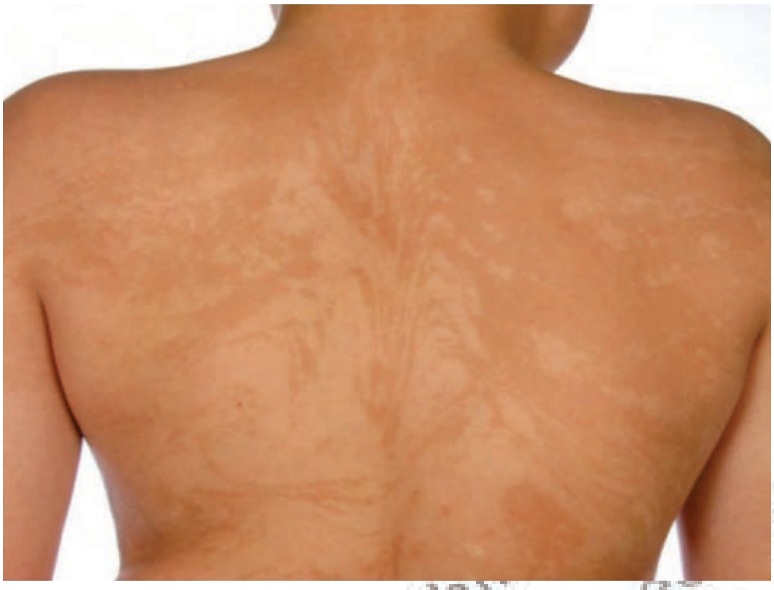
b) 1, 2, and 4

c) 3, 4, and 5

d) 1, 2, and 5

Question 12:

A child is brought to the OPD with the following skin finding. Which of the following statements is incorrect regarding this condition?



a) Eye and skeletal defects are seen

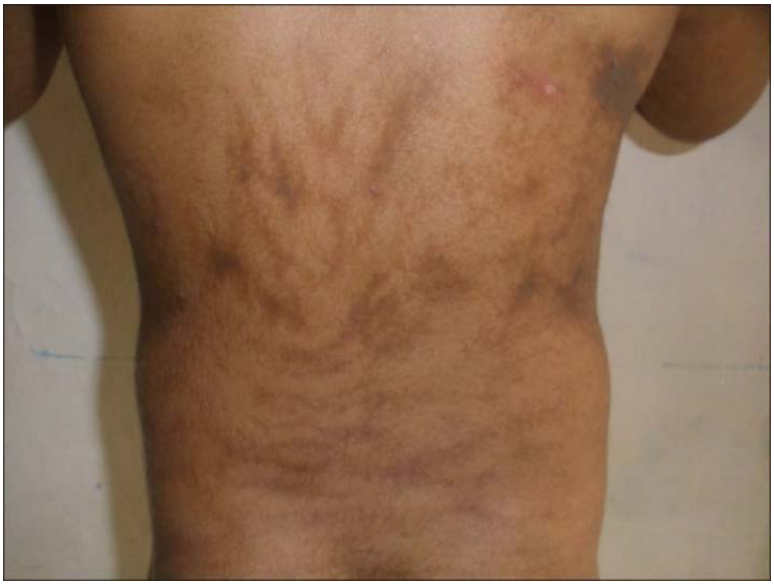
b) Epilepsy can occur

c) Mental retardation is present

d) Lesions corresponds to Langer lines

Question 13:

A girl was brought to the clinic by her parents for treatment of alopecia. They gave a history of erythematous vesicular rashes that evolved into verrucous growths a few months after birth. The lesions gradually resolved and left linear pigmentation as shown below. On examination, dental dystrophy was also noted. What is the inheritance pattern of this condition?



a) Autosomal dominant

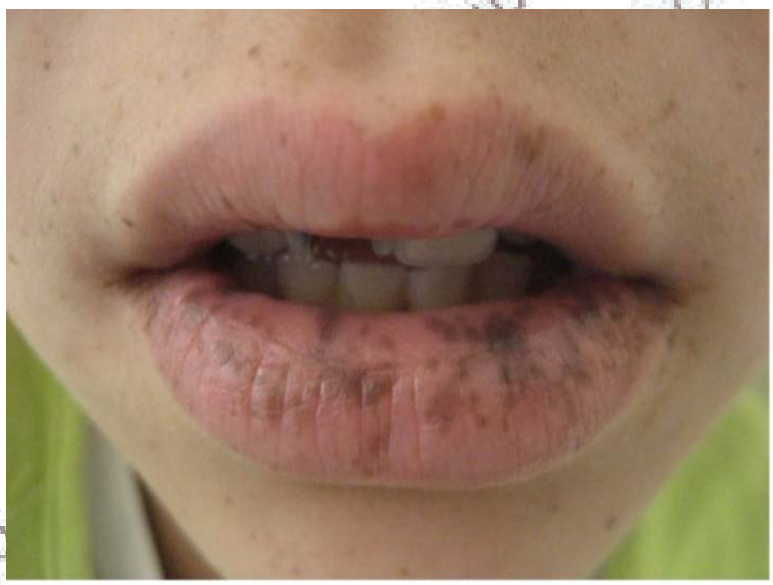
b) Autosomal recessive

c) X-linked recessive

d) X-linked dominant

Question 14:

In a 6-year-old boy who presented with black stools, the following finding was noted. Endoscopy showed multiple polyps in the GI tract. Which of the following is false about this condition?



a) Autosomal dominant condition

b) Patients need to undergo lifelong screening

c) Malignant transformation of polyps is common

d) Due to mutation of STK11 gene

Question 15:

All of the following drugs can cause hyperpigmentation in patients except:

a) Amiodarone

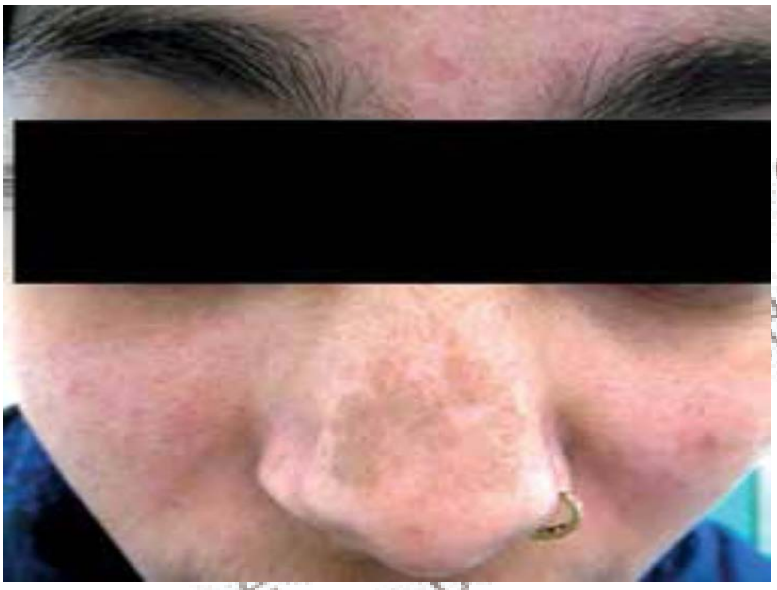
b) Chloroquine

c) Minocycline

d) Beta-blockers

Question 16:

A patient with fever and joint pain developed pigmentation on the nose after a few days of taking NSAIDs as shown below. What is the diagnosis?



a) Melasma

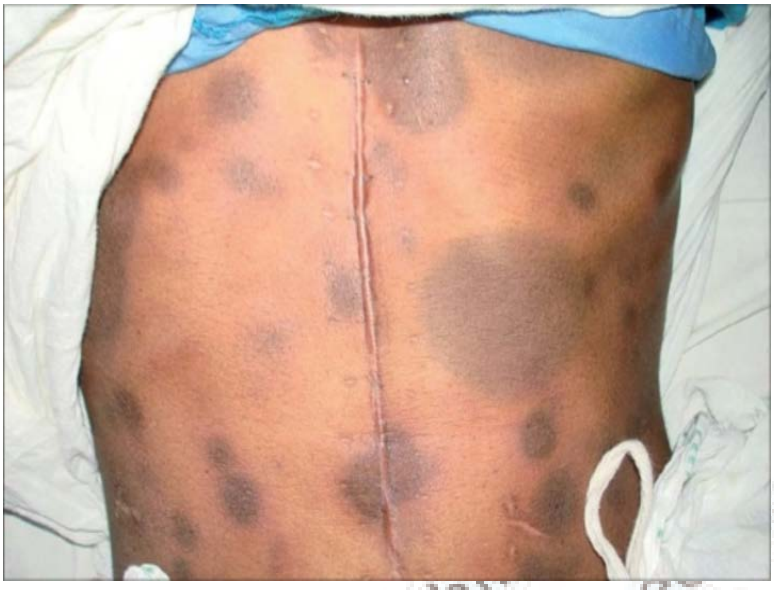
b) Fixed drug eruption

c) Lichen planus

d) Chikungunya

Question 17:

A 40-year-old man presents with the given rash after he had taken NSAIDs for his knee pain. He reported that he developed the same rash in the same location 6 months ago when he took the same drugs for back pain. What is the most likely diagnosis?



a) Drug hypersensitivity

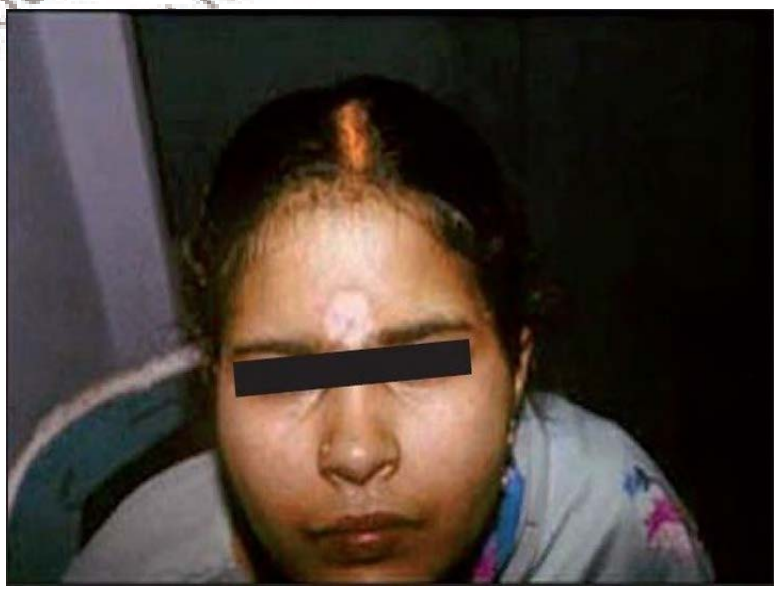
b) Postinflammatory hyperpigmentation

c) Fixed drug eruption

d) Drug-induced hypermelanosis

Question 18:

A lady developed hypopigmentation on her forehead as shown below. Which of the following chemicals is responsible for this condition?



a) Mono-benzyl ether of hydroquinone

b) Crocein scarlet MOO and solvent yellow 3

c) p-phenylenediamine

d) Para-tertiary butylphenol

Question 19:

During your dermatology posting, you see a case of naevus of Ota in the clinic. Which of the following is false about this condition?

a) It mostly appears at birth or early childhood

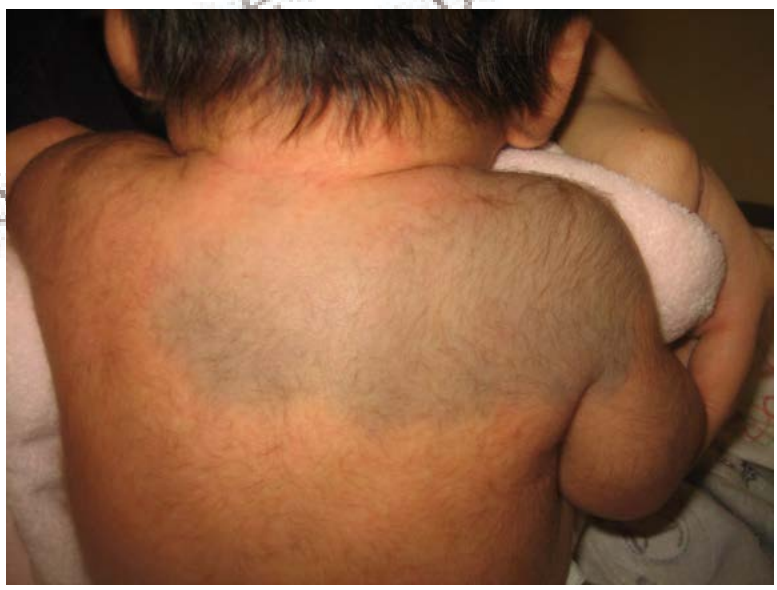
b) It is distributed along trigeminal nerve

c) Bluish patchy dermal melanocytosis

d) It is commonly seen in males

Question 20:

A Chinese woman brought her son to the clinic with the given finding. What is the most likely diagnosis?



a) Nevus of Ota

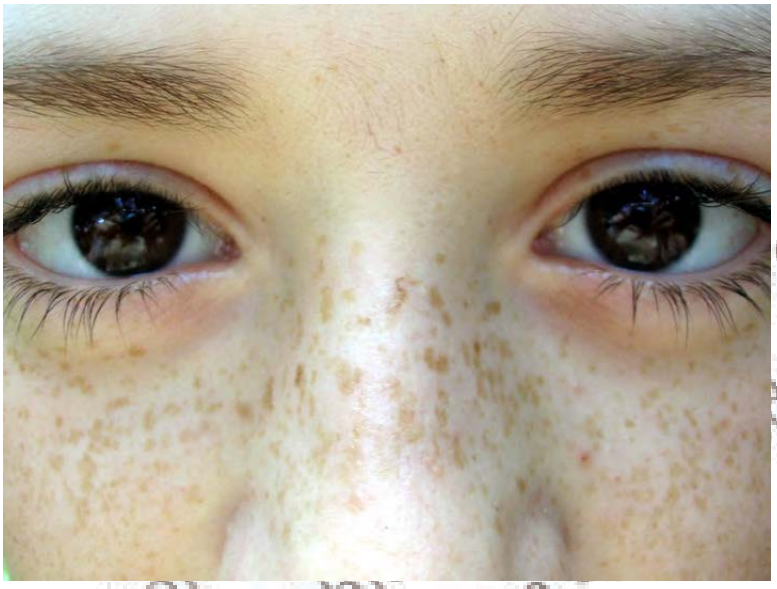
b) Nevus of Ito

c) Nevus spilus

d) Becker nevus

Question 21:

A mother brought her daughter to the dermatologist with multiple spots on her face. The spots were increased after they came back from a vacation in Hawaii. Which of the following statements is false regarding this condition?



a) It has an autosomal dominant inheritance

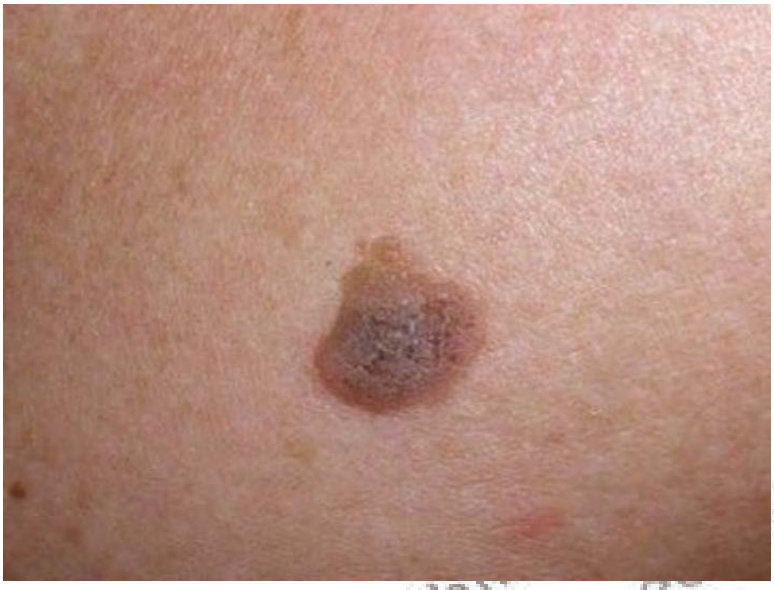
b) Increased number of melanocytes are seen

c) It is associated with xeroderma pigmentosa

d) It is caused by increased melanin

Question 22:

A child is brought to the clinic with the following pigmented lesion. What is the most likely diagnosis?



a) Junctional naevus

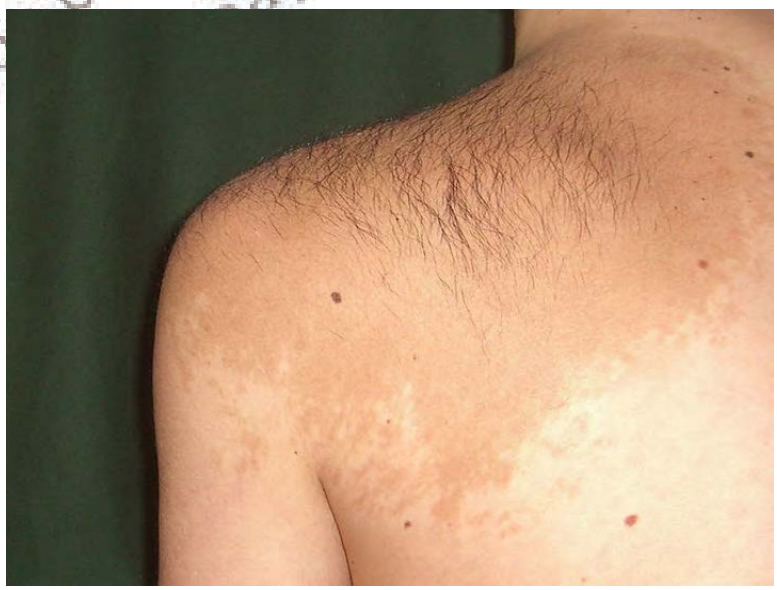
b) Compound naevus

c) Dermal naevus

d) Nevus spilus

Question 23:

Identify the pigmentation abnormality in the image shown below.



a) Mongolian spot

b) Naevus of Ito

c) Congenital melanocytic naevus

d) Becker's naevus

Question 24:

A patient who presented with the given skin finding was diagnosed with nevus anemicus. Which of the following statements is incorrect regarding this condition?

[Image unavailable]

a) A congenital vascular anomaly

b) Results from defective transfer of melanosomes

c) Rubbing the lesion induces no change

d) Also known as pharmacologic nevus

Question 25:

Which of the following is the reason for the development of a simple lentigo?

a) Increased melanin

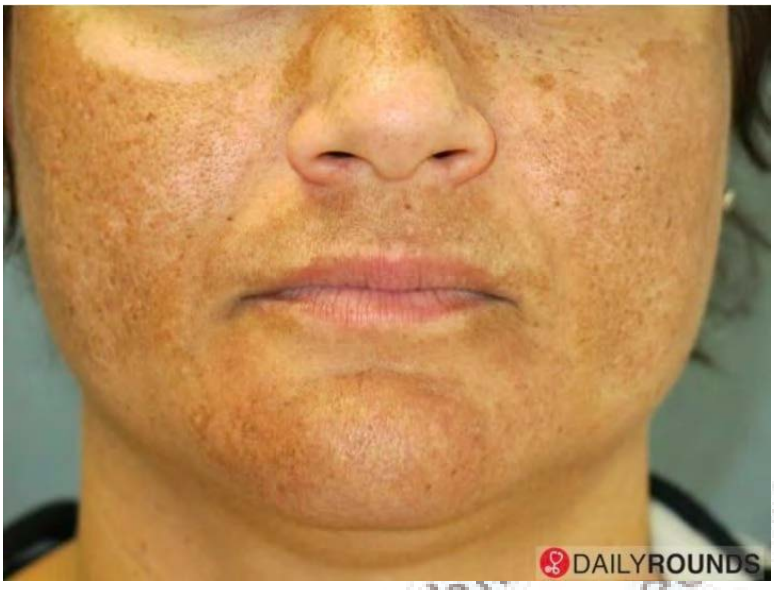
b) Increased melanocytes

c) Increased melanosomes

d) Decreased melanophages

Question 26:

A 30-year-old pregnant lady is referred to the dermatology OPD with the given condition. What is the likely diagnosis?



a) Systemic lupus erythematosus

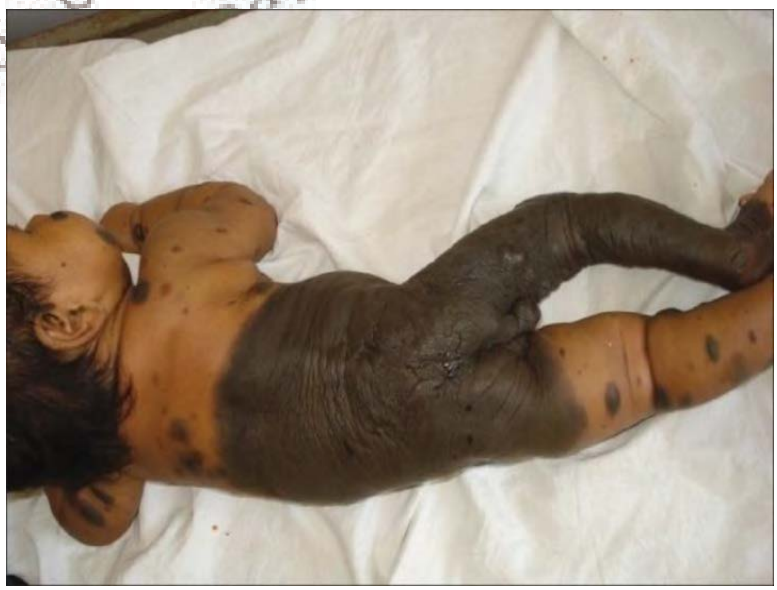
b) Melasma

c) Vitiligo

d) Chloasma

Question 27:

Which of the following statements is incorrect regarding the condition this baby suffers from?



a) Associated with leptomeningeal melanocytosis

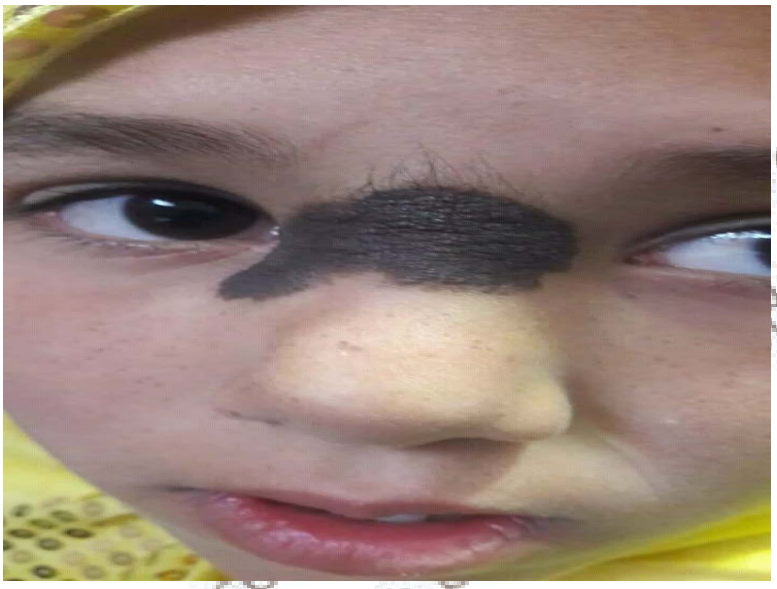
b) Coarse hair can develop on the lesion

c) No malignant potential

d) Treatment is surgical excision

Question 28:

Identify the condition shown below:



a) Epidermal verrucous nevus

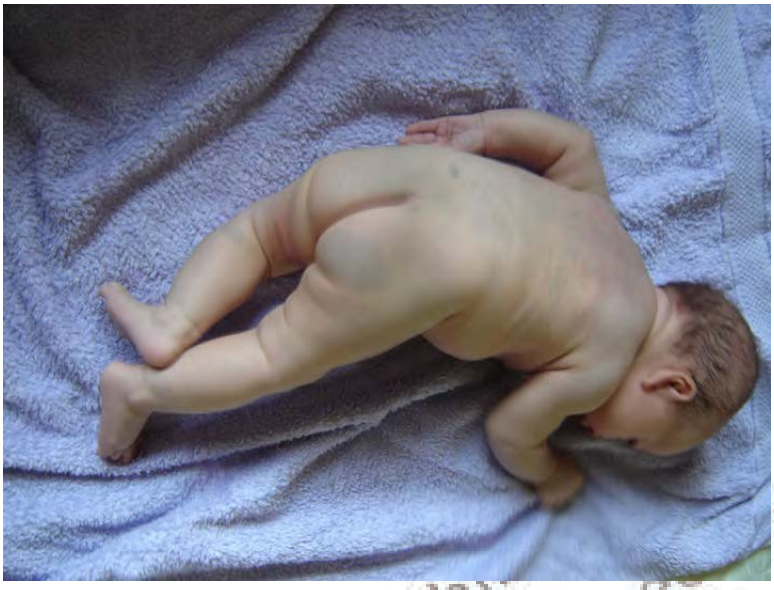
b) Congenital melanocytic nevus

c) Melanoacanthoma

d) Malignant melanoma

Question 29:

A new mother brings her 2-day-old baby to the pediatric OPD with the following skin findings on his back. Which of the following statements is false regarding this condition?



a) Lesions develop in utero

b) Due to increased melanocytes

c) Associated with Down syndrome

d) Spontaneous regression usually occurs

Question 30:

Which of the following is not a systemic cause of generalized hyperpigmentation?

a) Addison's disease

b) Hemochromatosis

c) Hypothyroidism

d) Vit B12 deficiency

Answer Key

Question No.	Correct Option
1	b
2	d
3	c
4	a
5	d

6	a
7	b
8	a
9	c
10	c
11	d
12	d
13	d
14	c
15	d
16	d
17	c
18	d
19	d
20	b
21	b
22	b
23	d
24	b
25	b
26	d
27	c
28	b
29	b
30	c

Detailed Explanations

Solution to Question 1:

The color of the human skin does not depend on the number of melanocytes.

The color of the skin depends on the following:

• Amount of melanin inside melanocytes

• Number and size of melanosomes

• Degree of transfer of melanin into keratinocytes

Solution to Question 2:

The ratio of the epidermal melanin unit is 36 keratinocytes : 1 melanocyte.

The color of the skin is due to the pigment melanin synthesized by melanocytes. Melanocytes are dendritic cells derived from neural crest cells and are present in the epidermis' stratum basale. Each melanocyte synthesizes melanin and packs it in cell organelles to form melanosomes. These melanosomes are transferred through dendritic processes to 36 keratinocytes forming the 'epidermal melanin' unit.

Solution to Question 3:

White forelock is quite common in piebaldism.

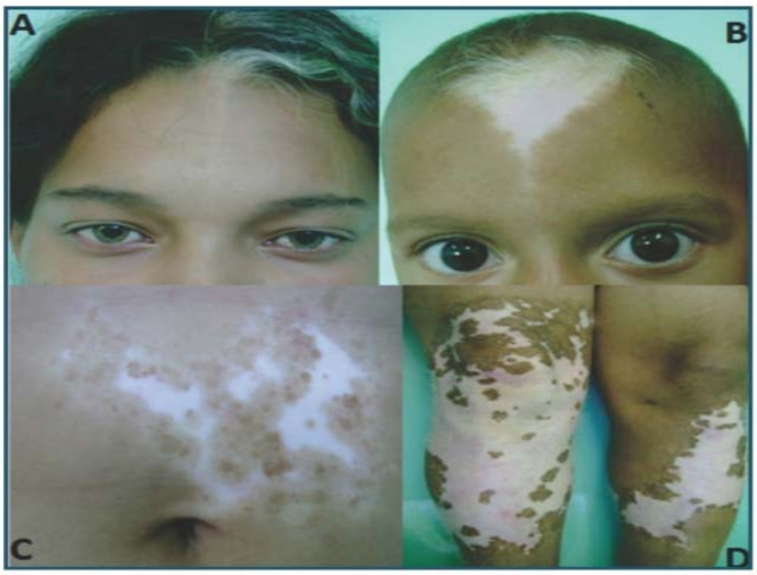
Piebaldism is an autosomal dominant benign condition. Mutations are in the c■KIT gene.

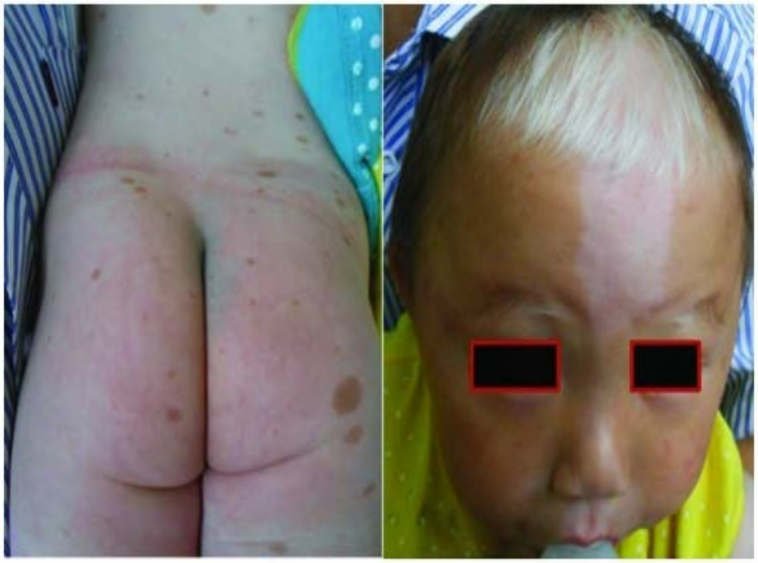
Well-defined irregular hypopigmented macules with an absence of melanocytes are seen. Leucotrichia is associated with the depigmented macules. Small spots of hyperpigmentation are also seen within hypopigmented patches or on normal skin. It is often associated with a V-shaped leucoderma on the mid-forehead.

Epidermal cell or skin grafting is the treatment.

Piebaldism can be distinguished from vitiligo because of the neonatal presence of white patches.

The images below show patients with piebaldism.





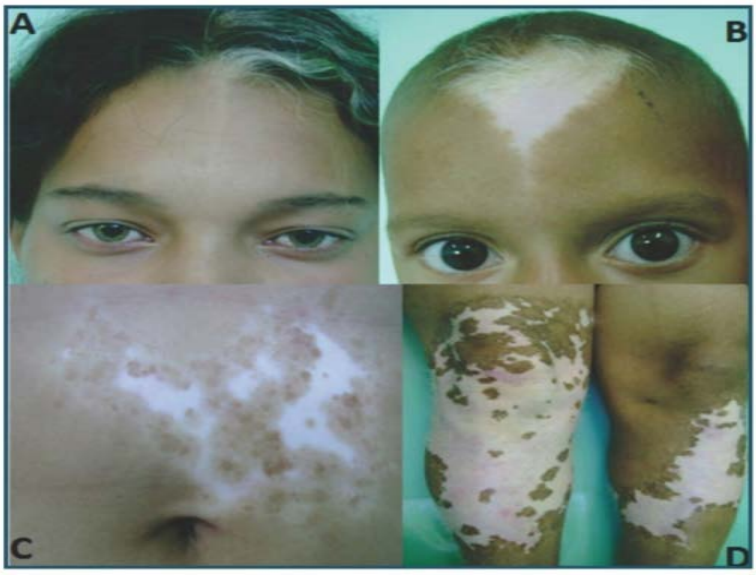
Solution to Question 4:

The child has skin findings suggestive of piebaldism, which along with sensorineural deafness point towards Waardenburg syndrome.

It is an autosomal dominant disorder that is characterized by:

- White forelock
- Hypopigmented patches
- Heterochromia iridis
- Sensorineural deafness.

The image below shows clinical associations of the Waardenburg syndrome.



Option B: Hermansky–Pudlak syndrome is a rare type of oculocutaneous albinism associated with a hemorrhagic diathesis. The disease results from abnormal biogenesis of lysosome-related organelles with impaired melanosome maturation and absent dense bodies in thrombocytes.

Option C: Chédiak–Higashi syndrome is a rare autosomal recessive disorder characterized by hypopigmentation of the skin and eye, immunodeficiency, and possibly neurological symptoms.

Option D: Oculocutaneous albinism (OCA) is a rare autosomal recessive genetic disorder characterized by generalized depigmentation of the skin, hair, and eye caused by a deficiency in melanin biosynthesis.

Solution to Question 5:

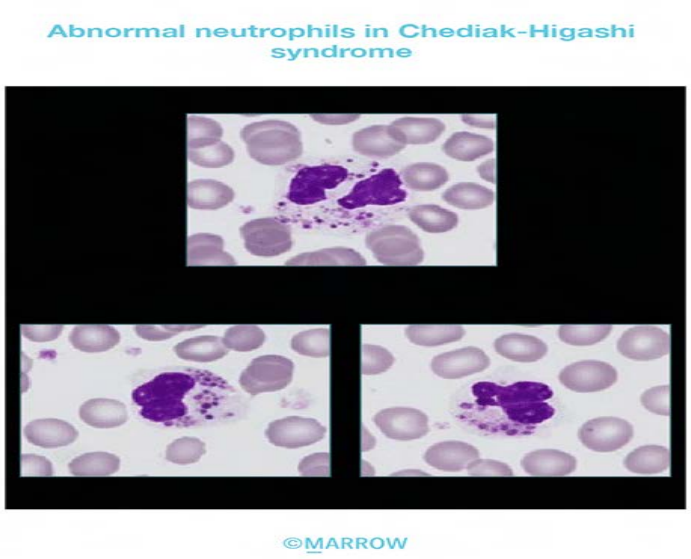
The peripheral smear shows giant inclusions in polymorphonuclear neutrophils, which along with oculocutaneous albinism is suggestive of Chediak-Higashi syndrome.

It is an autosomal recessive disorder due to loss-of-function mutation of the LYST gene encoding a protein known as lysosomal trafficking regulator.

Clinical features occur due to defective transport of cell products. These include:

- Significant pyogenic infections
- Albinism (due to abnormalities of melanocytes)
- Neurological abnormalities
- Progressive intellectual decline
- Cranial nerve palsies
- Decreased deep tendon reflexes
- Tremor
- Abnormal gait (nerve cell dysfunction),
- Bleeding (due to platelet dysfunction).

Peroxidase■positive giant inclusions are seen in leukocytes. The only curative treatment available for Chédiak–Higashi syndrome is bone marrow transplantation.



Solution to Question 6:

Oculocutaneous albinism is not due to tryptophan deficiency but is due to tyrosinase deficiency.

It is a rare autosomal recessive disorder characterized by generalized depigmentation of the skin, hair, and eye. Ophthalmological anomalies are also noted. It is caused by a deficiency in melanin biosynthesis, but melanocytes are normally present and distributed.

It is caused by mutations in TYR, encoding the tyrosinase gene.

Significant photophobia may be present. Iris translucency is demonstrable by slit-lamp examination.

Sun protection is mandatory to avoid skin sunburns and skin cancers with a special emphasis on patients living in high UV risk environments. Early referral to an ophthalmologist is mandatory. Dark glasses are important to protect the eyes and prevent photophobia.

Solution to Question 7:

The image is suggestive of vitiligo. The pathological basis of vitiligo is the loss of melanocytes.

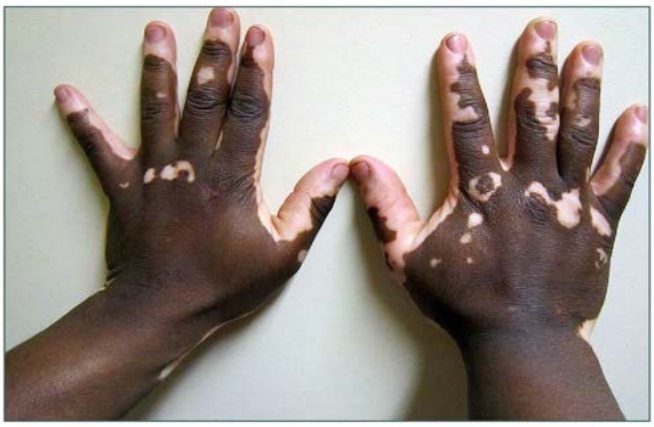
Vitiligo is a common form of localized depigmentation. It is characterized by milky■white sharply demarcated macules. It is an acquired condition resulting from the autoimmune destruction of dopa-positive melanocytes in the basal layer of the epidermis.

Vitiligo can begin at any age but in the majority of cases becomes apparent in the third decade. The prevalence is most probably the same in both sexes or a slight female preponderance.

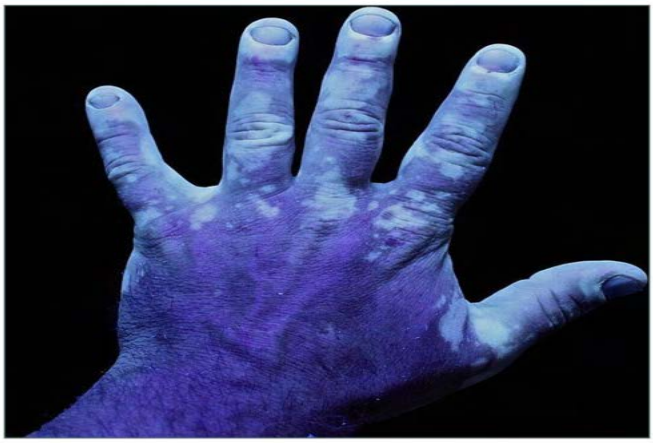
Electron microscopy studies confirm the loss of melanocytes. Wood's lamp examination shows milky-white fluorescence.

Koebner phenomenon defined as the development of lesions at sites of trauma to uninvolved skin of patients with cutaneous diseases is a well■known phenomenon in vitiligo.

Vitiligo



Milky white inflorescence of vitiligo under wood's lamp



Solution to Question 8:

The patient has vitiligo. Amongst autoimmune diseases, the strongest association of vitiligo is with thyroid disorders (hyperthyroidism and hypothyroidism).

Other disorders associated with vitiligo are:

• Pernicious anemia

• Addison's disease

• Diabetes type I

• Myasthenia gravis

• Alopecia areata

• Uveitis

• Chronic mucocutaneous candidiasis

• Autoimmune polyendocrine syndromes (types I and II)

Solution to Question 9:

The clinical scenario suggests a diagnosis of vitiligo. Cyclosporine is not a treatment option for vitiligo. There is not enough evidence of its benefits and more potential side effects.

Treatment options for vitiligo:

• Topical agents:

• Topical corticosteroids

• Calcineurin inhibitors - tacrolimus

• Vitamin D analogs - calcitriol

• Systemic agents:

• Corticosteroids

• Azathioprine

• Phototherapy:

• PUVA

• PUVASol - sunlight

• NBUVB - narrow band UV B radiation at 311nm

• Targeted phototherapy using excimer laser 308nm

• Surgical treatment:

• Ultrathin partial thickness skin grafting

• Non-cultured autologous melanocytic transfer

• Cultured autologous melanocytic transfer

Note: Surgical treatment is usually reserved for patients with stable (a period of disease inactivity ranging from six months to two years) vitiligo who failed to respond to non-surgical treatment.

Solution to Question 10:

The image shows photochemotherapy (PUVA therapy), used for the treatment of vitiligo. It causes suppression of T lymphocyte action.

The UVA spectrum is 320-400 nm. When it is used in combination with an oral or topical psoralen photosensitizer, it is known as PUVA therapy. The most frequently-used oral

psoralens are 8■methoxy psoralen (8■MOP) and 5■methoxy psoralen (5■MOP).

The mechanisms of action of PUVA:

• Inhibition of DNA replication - DNA cross■linking by psoralen photoadducts

• Langerhans cell depletion

• Immunosuppressive effects on T■lymphocyte function

• Stimulation of melanogenesis

• Migration and the restoration of Th17/regulatory T-cell imbalance in psoriasis

Indications of PUVA therapy:

• Psoriasis

• Atopic eczema

• Vitiligo

• Polymorphic light eruption

• Cutaneous T cell lymphoma

The UVB part of the spectrum is 280-320 nm. Lamps utilizing the 311-313 nm frequencies are called narrow■band UV (NBUVB). UVB phototherapy has anti■inflammatory, immunosuppressive, and cytotoxic properties.

Vitiligo may respond both to NB■UVB and PUVA. NBUVB is more effective than PUVA but the response is variable and treatment usually has to be prolonged, often over many months to a year or more.

Solution to Question 11:

Poor prognostic factors for vitiligo:

• Positive family history (patient 2)

• Mucosal vitiligo (patient 1)

• Lesions over bony prominences

• Isomorphic Koebner's phenomenon (patient 5)

• Non-segmental vitiligo

Leucotrichia, longer duration, and higher age at onset do not correlate significantly with progression.

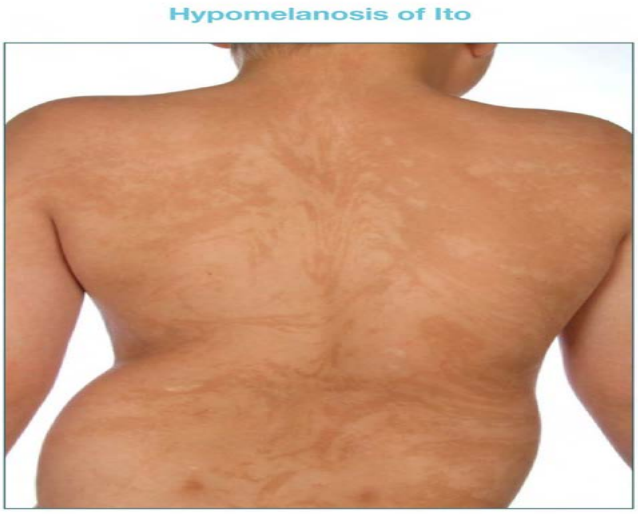
Non-segmental vitiligo is characterized by a bilateral and symmetrical distribution of depigmented macules.

Segmental vitiligo is characterized by macules in a linear or flag-like pattern of mosaicism with a dermatomal distribution.

Solution to Question 12:

The image shows cutaneous macular hypopigmented whorls, streaks, and patches, corresponding to the lines of Blaschko, suggestive of hypomelanosis of Ito.

It is a rare neuroectodermal disorder of pigmentation. It is associated with epilepsy and mental retardation. Extracutaneous findings include neurological, ophthalmological, and skeletal defects.

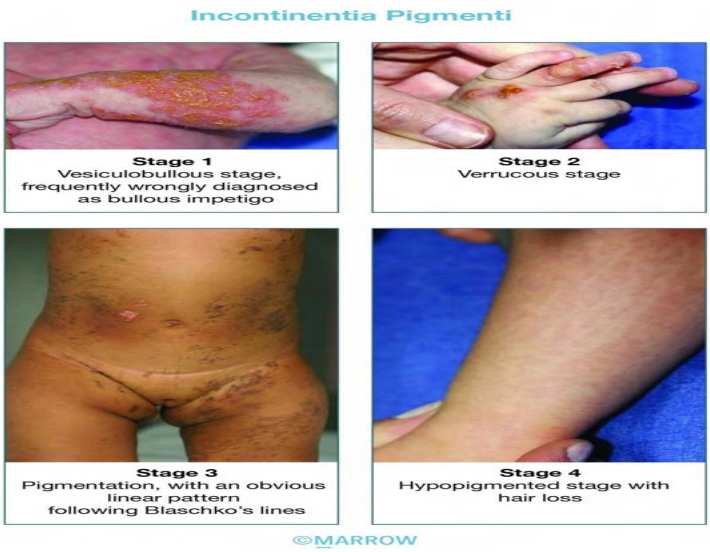


Solution to Question 13:

The given clinical scenario is suggestive of incontinentia pigmenti. It is a rare X-linked dominant disorder with multisystemic ectodermal dysplasia that is usually lethal in males and presents in females with skin lesions, teeth abnormalities, alopecia, nail dystrophy, and ocular and neurological findings.

The skin lesions evolve through the following characteristic stages:

- Vesicular
- Verrucous stage
- Hyperpigmented streaks and whorls
- Linear hypopigmentation



Solution to Question 14:

The presence of multiple polyps in the GI tract along with lentigines on the lips is suggestive of Peutz-Jeghers-Touraine syndrome. Malignant transformation of hamartomatous polyps is rare.

It is an autosomal dominant disease. It is due to the mutation of the serine/threonine kinase gene (STK11).

Typical cutaneous features include lentigines of the lips (early feature). Associated melanocytic macules of buccal mucosa and digits are common. Hamartomatous polyps are present mainly in the jejunum but can occur throughout the GI tract.

Patients require lifelong screening as they are at high risk for carcinomas of the breast, ovary, colon, and stomach.

Solution to Question 15:

Beta-blockers do not cause hyperpigmentation.

Drugs causing hypermelanosis:

- Amiodarone
- Tetracyclines
- Chloroquine
- Clofazimine
- Phenytoin
- Cytotoxic drugs like busulfan, cyclophosphamide, bleomycin, etc.
- Psychotropic drugs (e.g., trifluoperazine, imipramine)

Solution to Question 16:

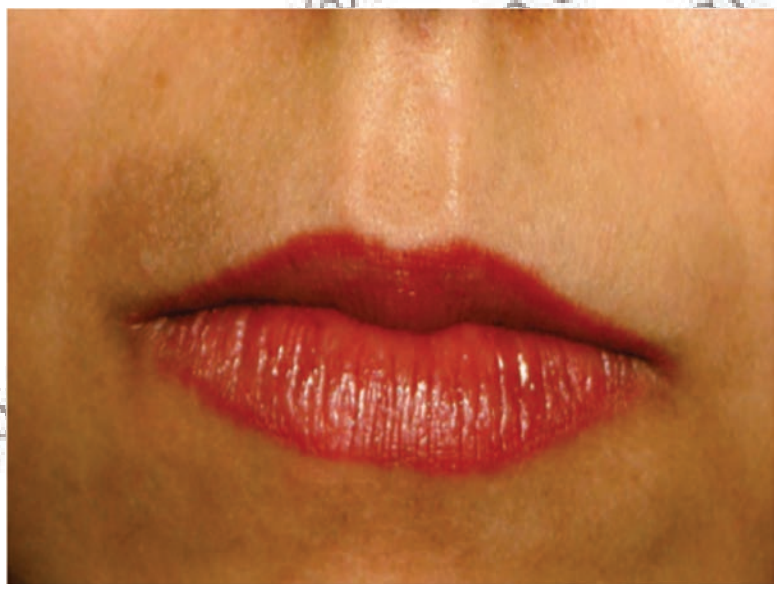
The given clinical history of fever and joint pain and the image showing hyperpigmented macules on nose (chik sign) is suggestive of Chikungunya.

Post-chikungunya pigmentation (PCP) most commonly affects the nose and cheeks. It often appears as the fever subsides and may persist for about 3-6 months.

PCP mimics melasma and may be misdiagnosed if proper history is not taken.

Another close differential is fixed drug eruptions (FDE). FDE is a type of delayed hypersensitivity reaction. It is characterized by well-defined brown, hyperpigmented plaques that may follow vesiculobullous lesions. They occur on lips, hands, legs, face, genitalia, and oral mucosa, and can cause a burning sensation.They usually present 30 min to 8 h after drug exposure and recur at the same location on re-exposure. NSAIDs, Paracetamol and Co■trimoxazole are the most common drugs causing FDE.

The image below shows FDE on upper lip area:



Solution to Question 17:

The recurrence of hyperpigmentation occurring at the same site with the use of the same drug is characteristic of fixed drug eruption.

Fixed drug eruption is one of the most common drug-induced exanthems. The acute erythematous and bullous stages of fixed eruption characteristically settle leaving residual slate-brown hyperpigmentation, especially in those with darker skin types. The genitalia and perianal area are often affected.

Option A: Drug hypersensitivity is an immune-mediated reaction to a drug of which symptoms ranging from mild to severe include rash, anaphylaxis, and serum sickness.

Option B: Postinflammatory hyperpigmentation (PIH) is an acquired hypermelanosis occurring after cutaneous inflammation or injury e.g., acne vulgaris, atopic dermatitis, and impetigo.

Option D: Drug-induced hypermelanosis is localized or generalized hyperpigmentation that can be caused by a wide range of medications and chemicals. eg. busulphan. It doesn't necessarily occur at the same site with the reintroduction of drugs.

Solution to Question 18:

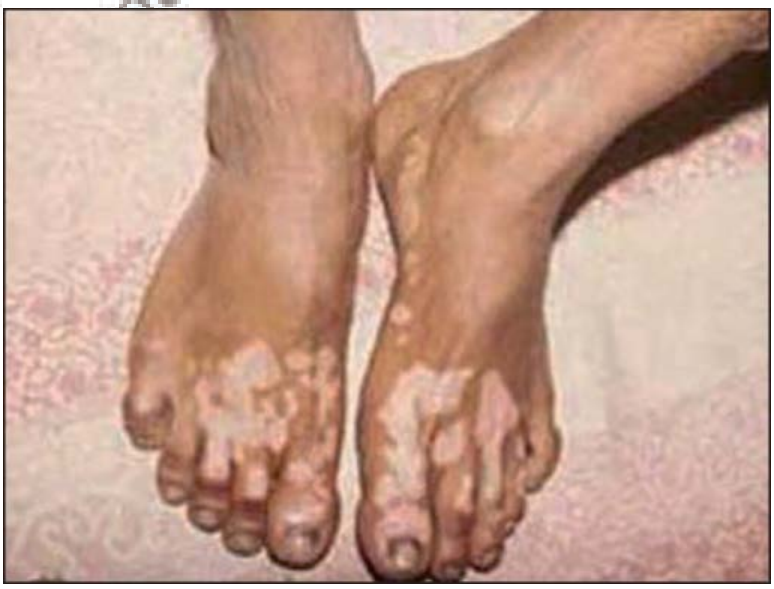
The lady has bindi leukoderma, which is caused by para-tertiary butyl-phenol (PTBP). It is present in adhesive sticker bindi.

This is called contact leukoderma or chemical leukoderma in which the chemical increases sensitivity and induces apoptosis of the melanocytes in the area of contact.

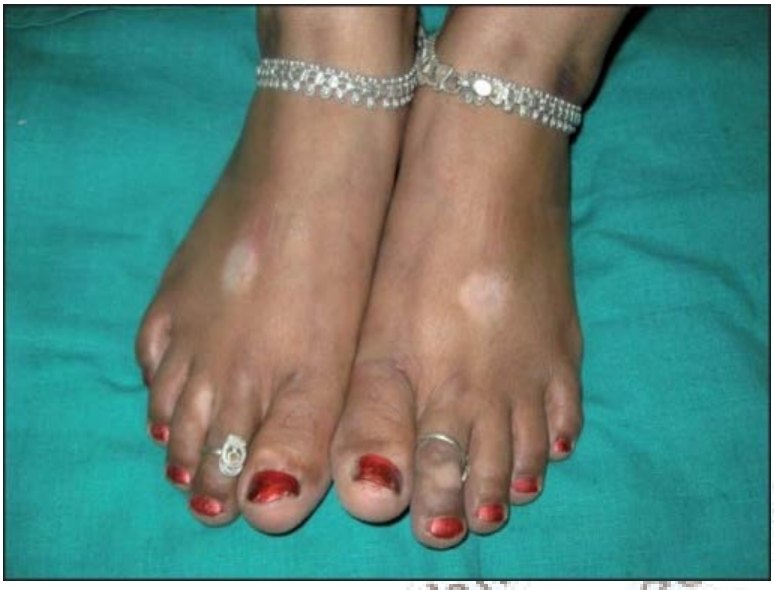
There is also evidence that azo dyes, by virtue of structural similarity to tyrosine, can directly inhibit melanogenesis by competing with that amino acid for binding with the tyrosinase enzyme.

The image below shows synthetic leather-/rubber-related leucoderma.

Chemical leukoderma	Causative chemicals
Bindi leukoderma	Para-tertiary butyl-phenol (P TBP)
Synthetic leather, rubber slip pers, latex condoms, rubber gloves	Mono-benzyl ether of Hydroq uinone (MBH)-Rubber antiox idant
Hair dye	p-Phenylenediamine (PPD)
Alta (red color like henna)	Crocein scarlet MOO and sol vent yellow 3 (azo dyes)



The image below shows Alta depigmentation.



The image below shows hair dye depigmentation.

Solution to Question 19:

Naevus of Ota is more commonly seen in females.

It is an extensive, bluish, patchy, dermal melanocytosis. A large number of elongated dendritic melanocytes can be seen scattered among collagen bundles mainly of the superficial dermis.

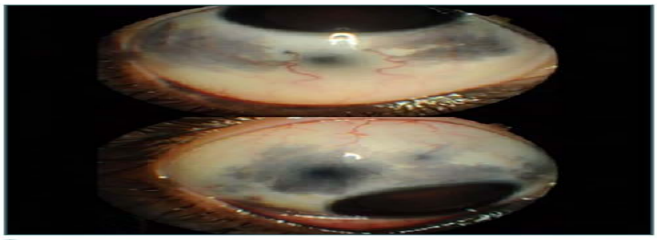
It affects the sclera and the skin adjacent to the eye. It is distributed along the first and the second branches of the trigeminal nerve.

Most lesions are present at birth or develop during the first year of life, increasing in size and number in subsequent years. Lesions are more common in Asians.

Pigment targeting Q■switched laser systems is the treatment of choice.

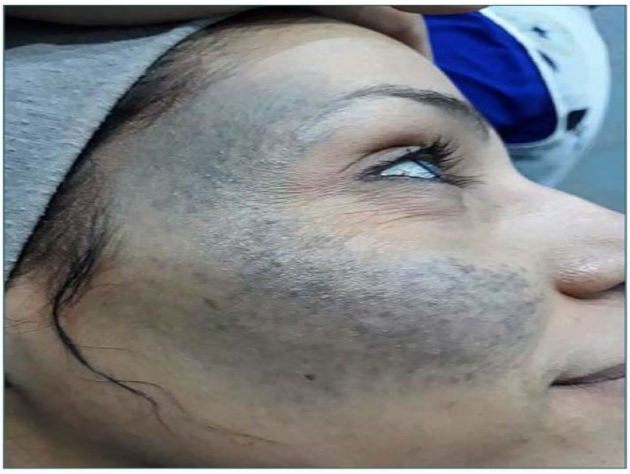
Oculopalpebral melanocytosis or nevus of Ota

A Oculopalpebral melanosis



B Hyperpigmented iris with scleral pigmented lesions

Naevus of Ota



Solution to Question 20:

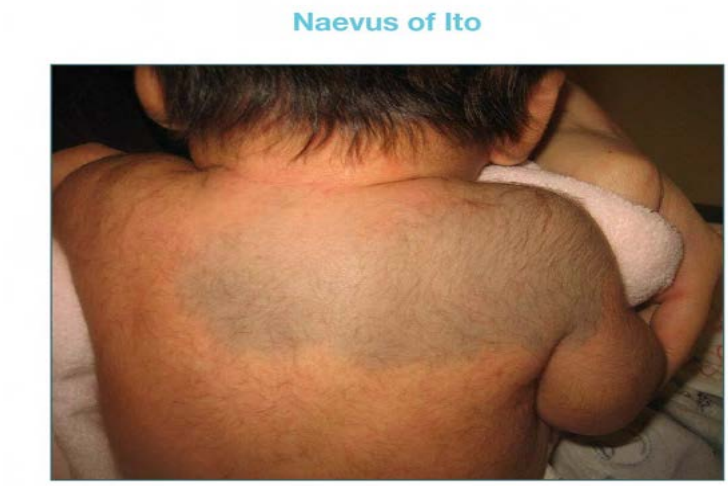
This Chinese patient has a unilateral blue-greyish hyperpigmented macule on his shoulder, which is suggestive of nevus of Ito.

It affects the acromioclavicular region and upper chest. It primarily occurs in Chinese and Japanese people.

It is rarer than nevus of Ota which affects facial skin and sclera. It is distinguished from the nevus of Ota by its location in the area innervated by the posterior supraclavicular and lateral cutaneous brachial nerves.

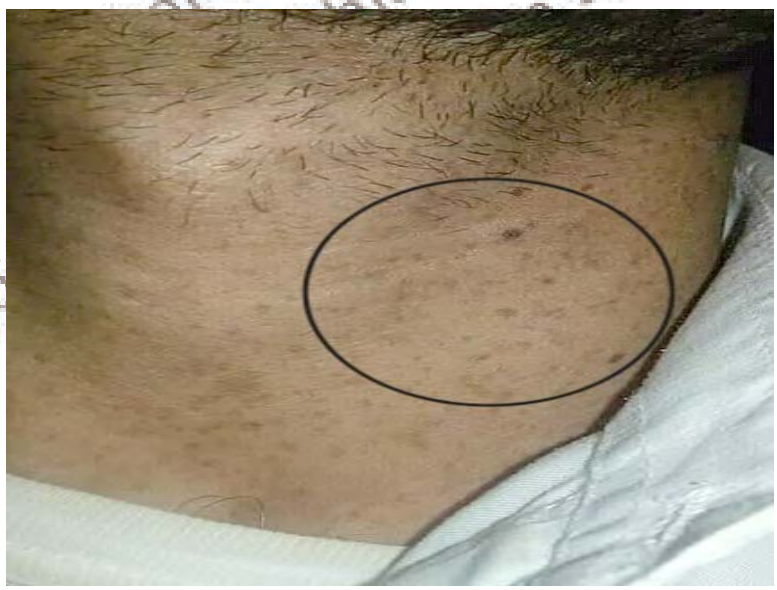
Complications of nevus of Ota include meningeal melanocytoma of the brain, and malignant melanoma involving the meninges, choroid, iris, or orbit. In some rare cases, cutaneous melanoma can develop.

Pigment targeting Q■switched laser systems is the treatment of choice.



Becker nevus is a large, pigmented hairy patch on the shoulder, chest, or back of young males.

Nevus spilus is a congenital nevus presenting as a lentiginous macule that develops into multiple macules in a speckled distribution (image below).



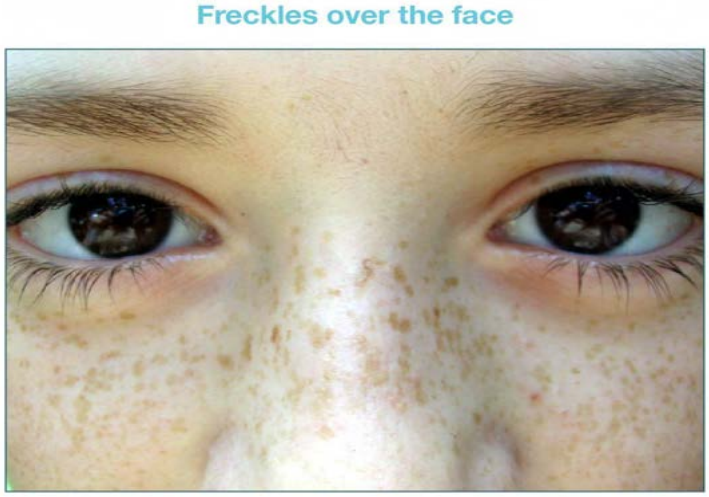
Solution to Question 21:

The patient has dark brown macules on her face, that increase on sunlight exposure. This is suggestive of freckles or ephelis, which are produced due to increased melanin production by melanocytes on exposure to UV rays (with a normal number of melanocytes).

It is transmitted in an autosomal dominant pattern. They are seen in a number of inherited and acquired disorders including xeroderma pigmentosum, neurofibromatosis, and progeria. Freckles

are common in type 1 and type 2 skin types of Fitzpatrick Classification.

First-line treatment is the use of a high SPF sunscreen.



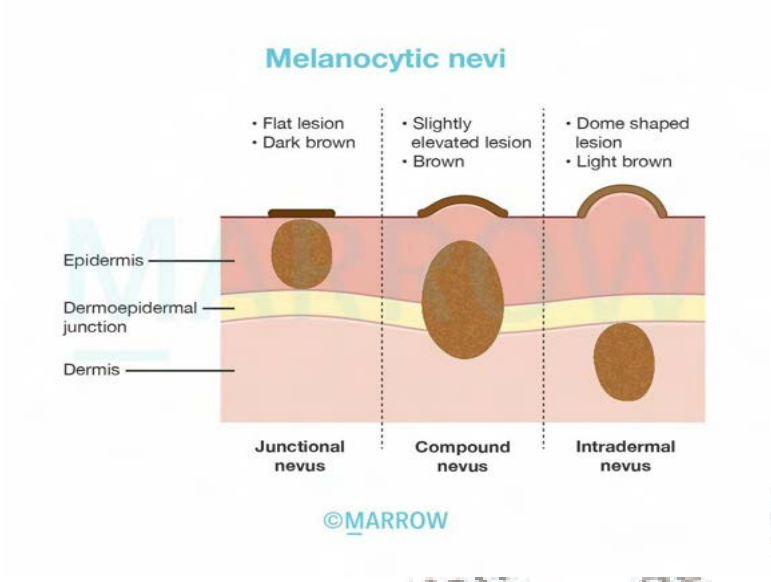
Solution to Question 22:

The given image suggests the most likely diagnosis to be compound naevus. It is characterized by a hyperpigmented papule surrounded by a symmetrical, lighter brown, macular area.

A compound naevus is a slightly raised, oval, or round papule with a symmetrical shape. This naevus is also pigmented, with shades of brown according to the patient's skin color.

Based on the position of melanocyte aggregates, the acquired melanocytic naevi can be classified into:

- Junctional - melanocytes in the dermo-epidermal junction
- Compound - melanocytes in the dermo-epidermal junction and dermis
- Dermal - melanocytes in the dermis



Solution to Question 23:

The given image showing hyperpigmented lesion on shoulder associated with hypertrichosis is suggestive of Becker's naevus.

It is an epidermal melanocytic naevus with aggregation of melanocyte clusters in the epidermis. It is often hairy. The onset is around adolescence when there is an increased sensitivity to androgens especially in the distribution of outer arms, scapular area and chest.

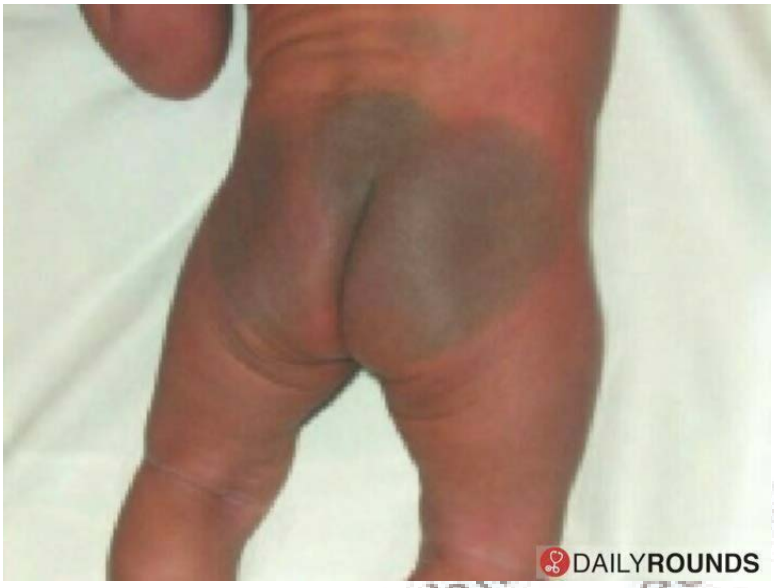
A triad of features can be seen:

• Hyperpigmentation

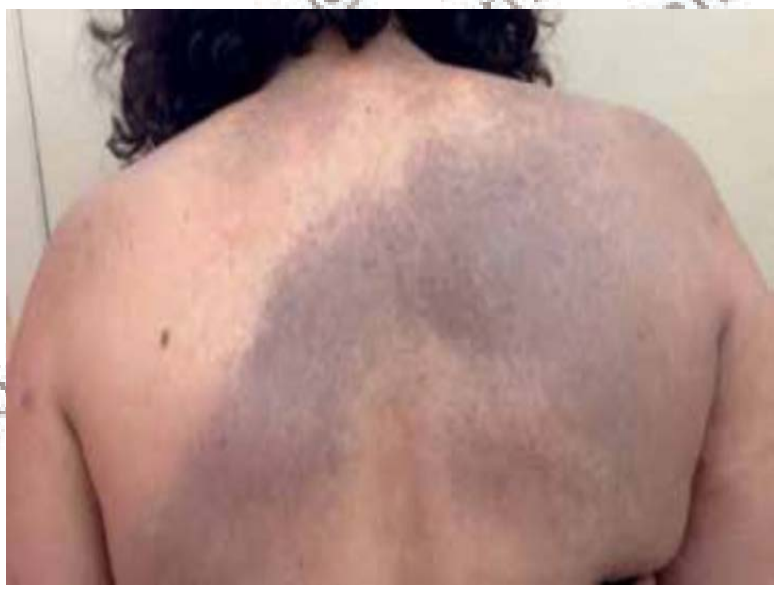
• Hypertrichosis

• Acne

Option A: Mongolian spots are slate blue areas in the lumbosacral region that spontaneously regress before puberty.



Option B: Naevus of Ito is unilateral hyperpigmentation in the acromioclavicular distribution. It is not known to have hypertrichosis or acne.



Option C: Congenital melanocytic nevi are common moles that become raised and have a cerebriform appearance and can be hairy. They can occur anywhere. The onset is at birth or soon after birth

Solution to Question 24:

Nevus anemicus occurs due to increased sensitivity of local cutaneous blood vessels to catecholamines such as epinephrine (adrenaline) and norepinephrine (noradrenaline). This hypersensitivity results in persistent vasoconstriction leading to hypopigmentation. Hence, it is also known as a pharmacologic nevus.

It is a congenital, localized, cutaneous vascular anomaly presenting as a pale, irregularly shaped patch on otherwise normal skin. Histology and electron microscopic examination show no abnormality in melanocytes or melanization.

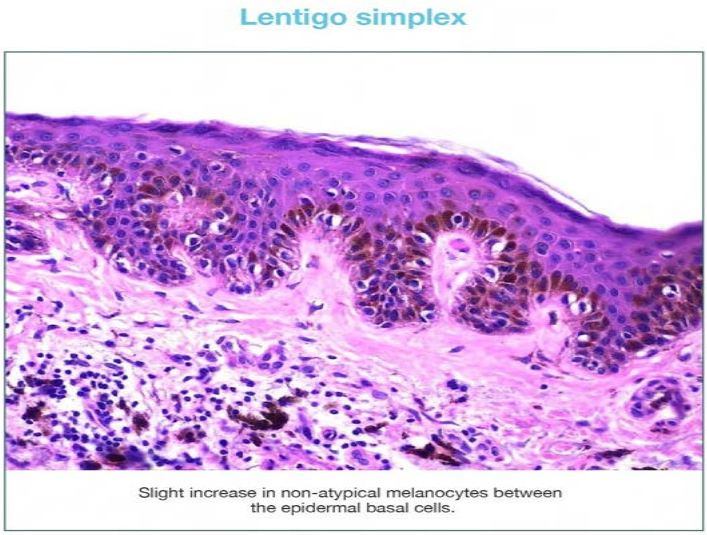
	Nevus anemicus	Nevus depigmentosus
Rubbing the lesion	No change	Lesion becomes red
Diascopy at the border of the lesion	The border between the lesion and the normal skin disappears due to the blanching of the normal skin	No change

Solution to Question 25:

Simple lentigo occurs due to an increase in melanocytes at the dermal-epidermal junction.

Simple lentigo or lentigo simplex is a light to dark-brown or black macule that does not fade away once it appears. They usually appear during childhood and increase in number until the age of 40. It is more common in individuals with red hair and fair skin.

The image shows lentigo simplex- hyperpigmentation is evident in the basal and squamous epidermal cells.



Solution to Question 26:

This pregnant lady has chloasma or a mask of pregnancy. In non-pregnant women, it is called melasma.

Chloasma is very common in the 3rd trimester of pregnancy and is most marked in brunettes.

It is due to increased levels of estrogen and progesterone, stimulating the activity of melanocytes. Histopathology shows no increase in number but hyper-functional melanocytes. It resolves on its own after pregnancy.

Melasma is the most common cause of chronic facial melanosis. It is manifested by hyperpigmented macules that become more pronounced after sun exposure. Hypermelanosis affects mainly the upper lip, the malar regions, forehead, and chin. It is more common in women between 20-40 years. It is frequently seen in women on oral contraceptives.

Wood's lamp examination is useful to differentiate the level of pigmentation and treatment response:

• Epidermal melasma- shows enhanced color contrast

• Dermal melasma- shows less color contrast (more resistant to treatment)

• Mixed melasma.

Melasma is more chronic and requires treatment with depigmenting agents like:

• Kligman's triple combination - topical hydroquinone + tretinoin + corticosteroid compound cream (first line)

• Hydroquinone (reduces tyrosinase activity)

• Kojic acid (tyrosinase inhibitor)

• Chemical peels

Solution to Question 27:

The given image is suggestive of giant congenital melanocytic naevus or bathing trunk naevus. It has an increased malignant potential.

It is a very rare condition present in 1:20,000 births. This lesion is usually brown to black in color with a rough, warty, rugose, or cerebriform surface. To classify it as giant naevi, it should be >20cm in size. Coarse hairs can develop on it in due course.

These naevi are associated with leptomeningeal melanocytosis or neurofibromatosis.

Surgical excision is the mainstay of treatment and a cultured epidermal autograft is used to cover large postoperative surface area defects.

Solution to Question 28:

The image shows a child with a well-circumscribed, black, heterogenous lesion covered with hair. This is characteristic of a congenital melanocytic nevus (CMN). They may be present at birth or develop shortly thereafter. They are benign and can be brown, black, purplish, or red, and are usually a palpable lesion.

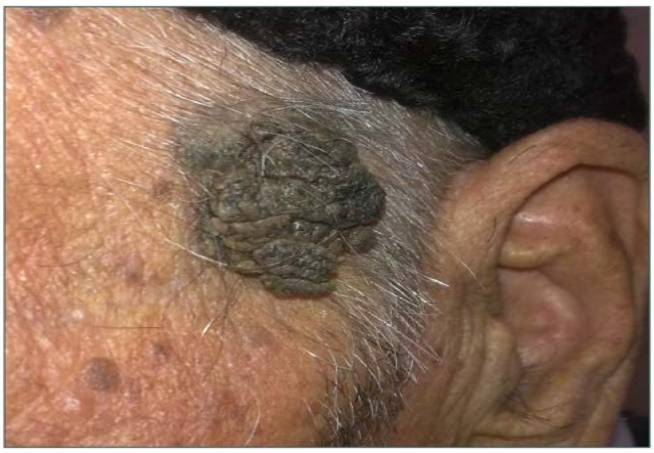
They can be classified based on size: small (<1.5 cm), medium (1.5-19.9 cm), and large or giant (>20 cm). Larger CMN have a higher risk of developing malignant melanoma.

Management of CMN depends on the size and location of the lesion. Smaller nevi may be observed, while larger nevi or those at a higher risk for complications may require surgical excision, particularly if there is a concern for malignant transformation.

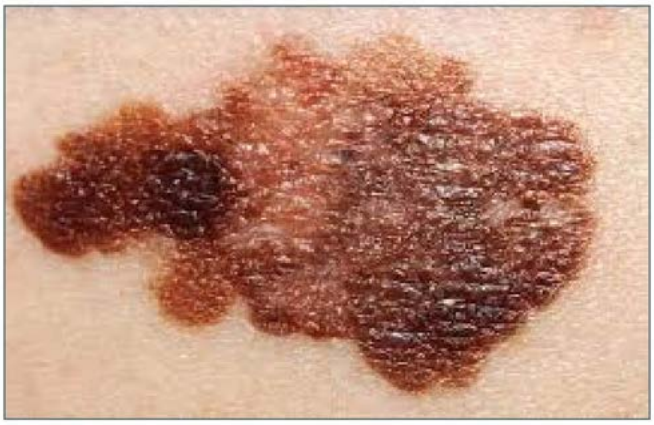
Complications of CMN include neurological abnormalities (intraparenchymal melanosis is the commonest finding), malignant melanoma, and other tumors like rhabdomyosarcoma.

The images below show different melanotic skin lesions:

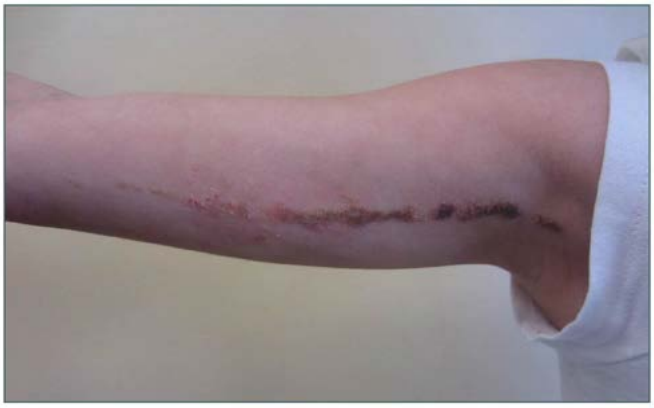
Melanoacanthoma



Malignant melanoma



Epidermal verrucous naevus



Solution to Question 29:

The given image shows Mongolian spots. The coloration is due to the arrested migration of melanocytes within the deep dermis and to the epidermis. It is not due to increased melanocytes.

These are congenital macular areas of blue■grey pigmentation of varying size and shape located on the lumbosacral area in normal infants. The lesion develops in-utero, increases during infancy, and then diminishes. Sometimes may occasionally persist into adult life.

These are associated with Down syndrome and congenital hemangioma. Extensive Mongolian spots have been associated with Hurler syndrome and GM1 gangliosidosis type 1.

Solution to Question 30:

Hyperthyroidism may cause generalized hyperpigmentation, not hypothyroidism.

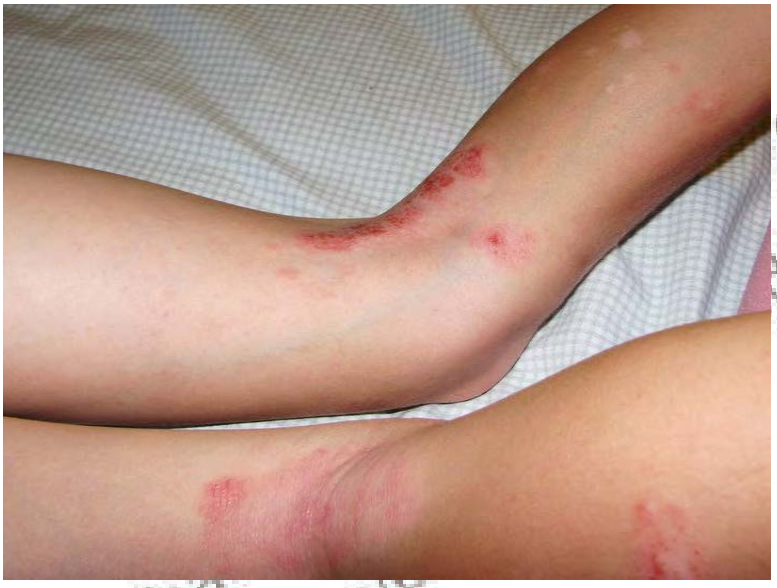
Generalized hypermelanosis or hyperpigmentation can be due to a variety of systemic diseases. A few common diseases are mentioned below:

- Addison's disease
- Cushing disease
- Hyperthyroidism
- Solid malignant tumor
- Pheochromocytoma
- Systemic sclerosis
- Renal Failure
- Hemochromatosis
- Folate and vitamin B12 deficiency
- Vitamin A deficiency
- Pellagra

Dermatitis

Question 1:

An asthmatic child presents with intensely pruritic lesions. He has no other symptoms. What is the most likely diagnosis from the given options?



a) Scabies

b) Staphylococcal infection

c) Pityriasis alba

d) Eczema

Question 2:

Identify the incorrect statement regarding eczema.

a) All eczema is dermatitis, but not all dermatitis is eczema

b) Pruritus is a hallmark clinical feature

c) Spongiosis is characteristic histopathological feature of chronic eczema

d) Acute eczematic eruption is typically oedematous, vesicular and may be exudative

Question 3:

A 27-year-old male presents with a well-demarcated, coin-shaped erythematous plaque on his left shin. What is the likely diagnosis?

a) Atopic eczema

b) Nummular eczema

c) Pompholyx

d) Asteatotic eczema

Question 4:

A 5-year-old child is brought to the OPD with a hypopigmented, finely scaly patch on her face. There is a history of atopy in the family. What is the clinical diagnosis?

a) Leprosy

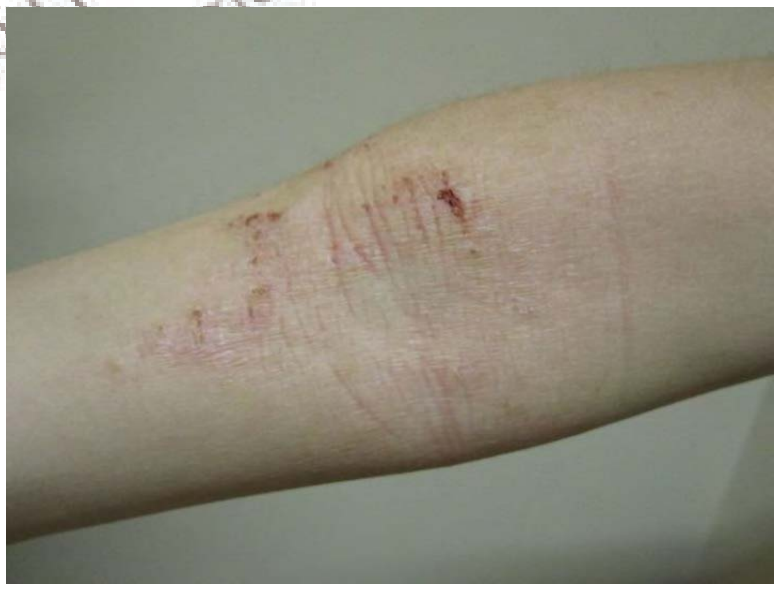
b) Pityriasis versicolor

c) Pityriasis alba

d) Atopic eczema

Question 5:

A 15-year-old girl presents with itchy lesions on her arm as shown. Her family history is positive for asthma. What could be the most probable diagnosis?



a) Seborrhoeic dermatitis

b) Atopic dermatitis

c) Allergic contact dermatitis

d) Erysipelas

Question 6:

The UK refinement of Hanifin and Rajka criteria is used in the diagnosis of which of the following conditions?

a) Atopic dermatitis

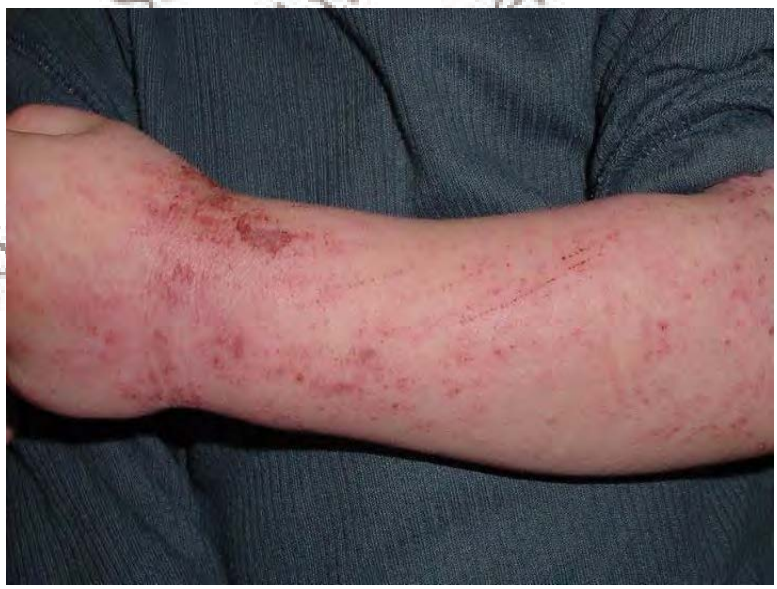
b) Nummular eczema

c) Eczema herpeticum

d) Contact dermatitis

Question 7:

An infant is brought to the dermatology clinic with the following lesions. Which is the incorrect statement regarding this condition?



a) Pruritus is the hallmark

b) Dennie Morgan fold can be found under lower eyelid

c) It has an extensor distribution in the adults

d) Allergic shiners may be present

Question 8:

Which is the first site of involvement in infantile atopic eczema?

a) Extensor aspect of knee

b) Flexures

c) Face

d) Extensor aspect of elbow

Question 9:

Choose the correct statement with respect to Hertoghe's sign.

a) Loss of lateral eyebrows

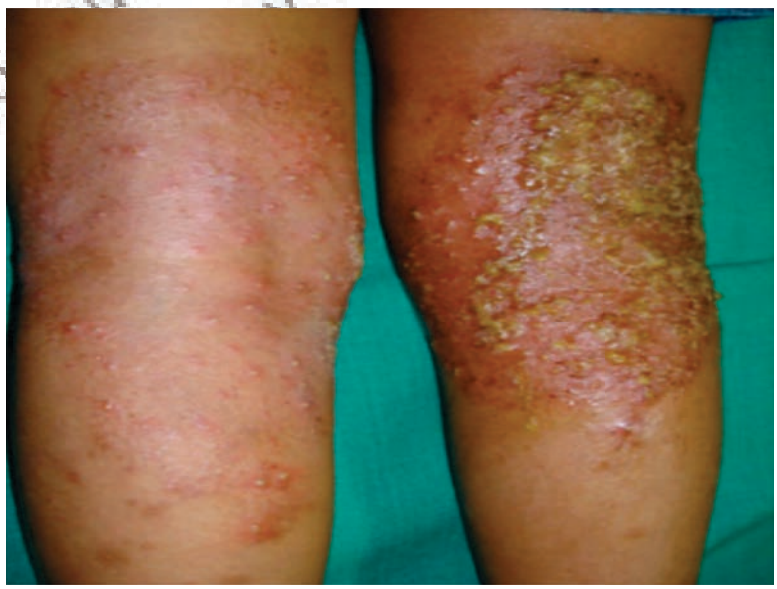
b) Anterior subcapsular cataract

c) Transverse crease across the bridge of the nose

d) Fold under lower eyelids

Question 10:

A 20-year-old girl who is a known case of atopic dermatitis presents with multiple, pruritic pustular lesions for 5 days. Which of the following organism is commonly responsible for her condition?



a) Staphylococcus aureus

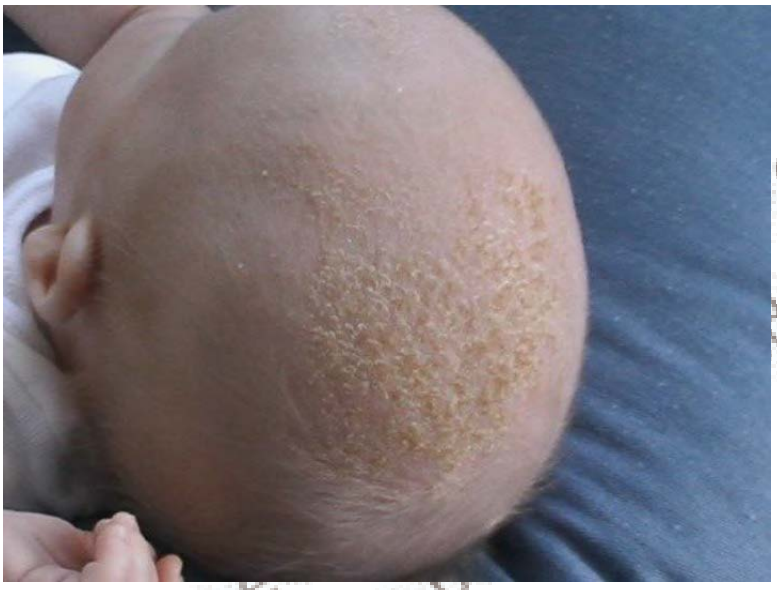
b) Herpes simplex virus

c) Streptococcus pyogenes

d) Dermatophytes

Question 11:

A 4-month-old infant was brought to the OPD with the following lesions on his scalp. What is the likely diagnosis?



a) Atopic dermatitis

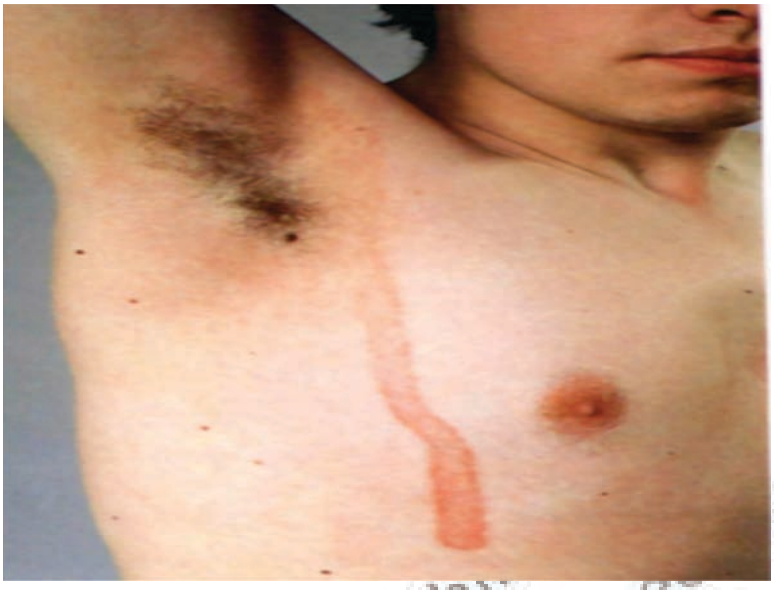
b) Seborrheic dermatitis

c) Berloque dermatitis

d) Nummular dermatitis

Question 12:

A 28-year-old lifeguard presents to the dermatology clinic with a mildly pruritic lesion as shown for 8 days. History reveals excessive use of perfumes. Which of the following can be the likely diagnosis?



a) Tinea corporis

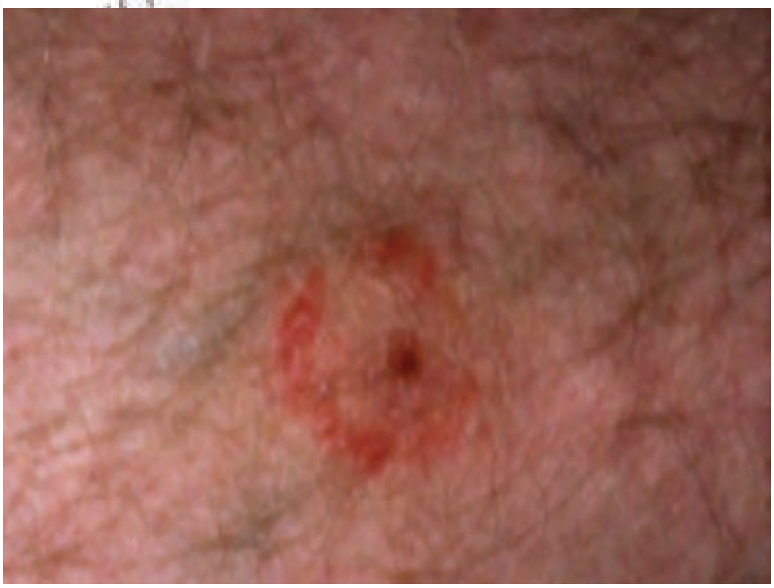
b) Dermatitis herpetiformis

c) Berloque dermatitis

d) Seborrheic dermatitis

Question 13:

A patient presents to the dermatology clinic complaining that a birthmark that was asymptomatic has now become pruritic with the following appearance. What is the most likely diagnosis?



a) Chronic superficial scaly dermatitis

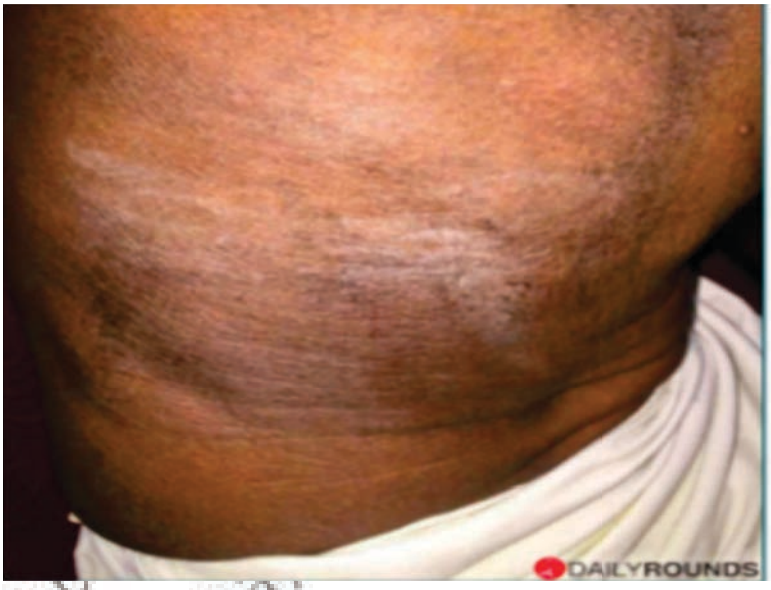
b) Nummular dermatitis

c) Melanoma

d) Halo dermatitis

Question 14:

A patient presents with the following intensely pruritic lesions that started 2 years back. History reveals that the lesions are more severe in winters and relatively milder in summers. Choose the incorrect statement regarding this condition.



a) Cimetidine can cause this condition

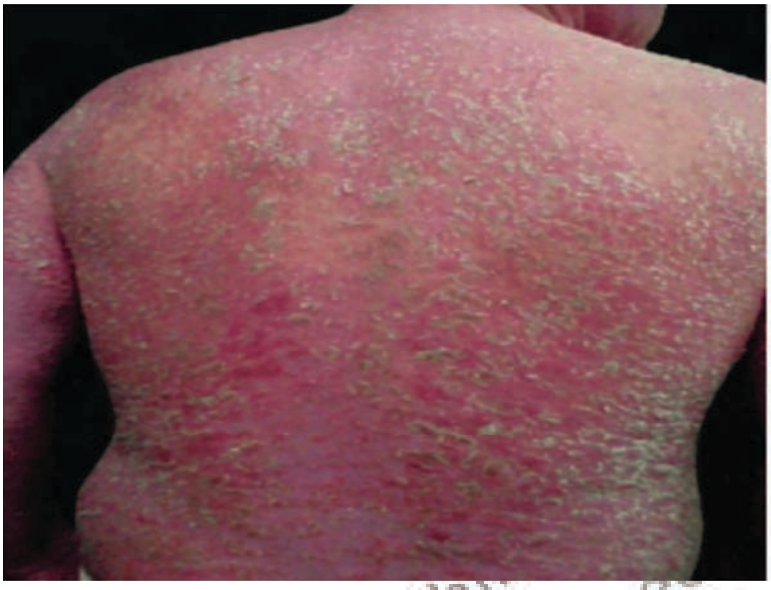
b) It is also known as eczema craquelé

c) Children are most commonly affected

d) It may occur due to zinc deficiency

Question 15:

What is the most common cause of the condition shown below?



a) Psoriasis

b) Eczema

c) Drugs

d) Cutaneous lymphoma

Question 16:

Which of the following is not a complication of erythroderma?

a) High output cardiac failure

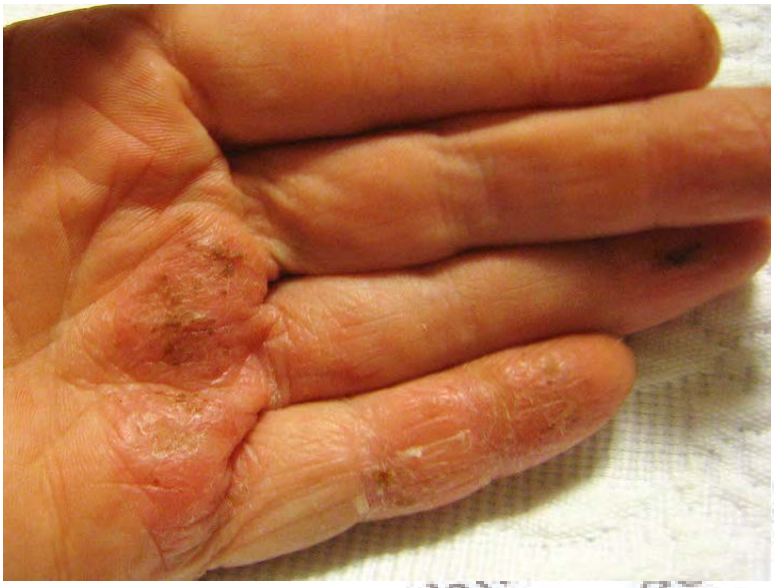
b) Hypoalbuminemia

c) Respiratory infections

d) Hyperthermia

Question 17:

The following are true about the condition given in the image except:



a) More common in people with history of atopy

b) Sago grain vesicles seen on palms and sides of hand

c) They are painful but not pruritic

d) Topical corticosteroids can be used for this condition

Question 18:

Which is the most common metal to cause allergic contact dermatitis?

a) Chromium

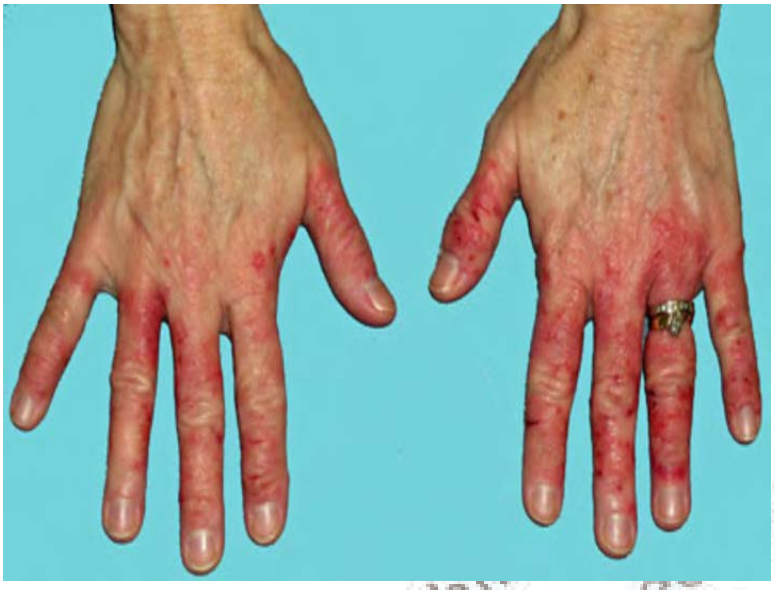
b) Nickel

c) Silver

d) Copper

Question 19:

A 30-year-old domestic help presents to the dermatology clinic with intensely pruritic lesions for 3 days. History reveals that the lesions started to develop after she recently changed the cleaning detergent. Choose the incorrect statement with respect to the likely diagnosis.



a) Sensitisation is not required

b) It can occur in anyone without predisposing factors

c) It is a Type-IV delayed hypersensitivity reaction

d) Due to direct toxic effects of a strong chemical

Question 20:

A 45-year-old male presents with itchy papules over the face, neck, and V area of the chest for the last 3 years which are exacerbated in summers and improved in winters. What test can be done to confirm the diagnosis?

a) IgE levels

b) Skin biopsy

c) Prick Test

d) Photopatch Test

Question 21:

What is the gold standard diagnostic test for airborne contact dermatitis?

a) Radioallergosorbent assay

b) Patch test

c) Serum IgE assay

d) Serum eosinophil count

Question 22:

All of the following are causes of erythroderma except _____

a) Pityriasis Rosea

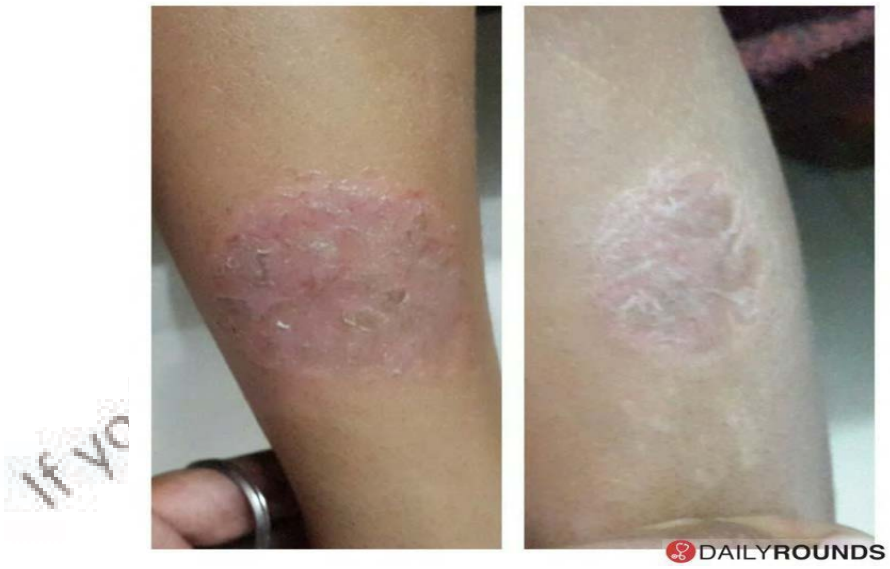
b) Psoriasis

c) Seborrheic Dermatitis

d) Cutaneous Lymphoma

Question 23:

What is the diagnosis?



a) Atopic dermatosis

b) Adenoma sebaceum

c) Rosacea

d) Ichthyosis

Answer Key

Question No.	Correct Option

1	d
2	c
3	b
4	c
5	b
6	a
7	c
8	c
9	a
10	a
11	b
12	c
13	d
14	c
15	b
16	d
17	c
18	b
19	c
20	d
21	b
22	a
23	a

Detailed Explanations

Solution to Question 1:

The above image showing erythematous, scaly lesions having a flexural distribution with the given scenario is suggestive of eczema.

Eczema is inflammation of the skin seen in a variety of skin conditions

Solution to Question 2:

Spongiosis is the characteristic histopathological feature of acute eczema. It refers to intercellular epidermal edema that leads to stretching and rupture of the intercellular attachments, with the formation of vesicles.

Eczema is inflammation of the skin seen in a variety of skin conditions. Dermatitis is used to include all types of cutaneous inflammation so:

'All eczema is dermatitis, but not all dermatitis is eczema'

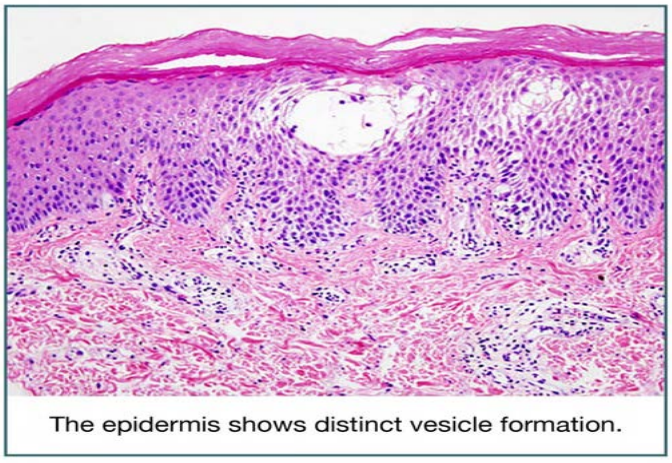
Aetiologically, eczema may be classified as:

The hallmark symptom of eczema is intense pruritus. Other findings are:

Endogenous	Exogenous
Atopic eczema	Allergic contact eczema
Asteatotic eczema	Irritant eczema
Venous eczema	Post-traumatic eczema

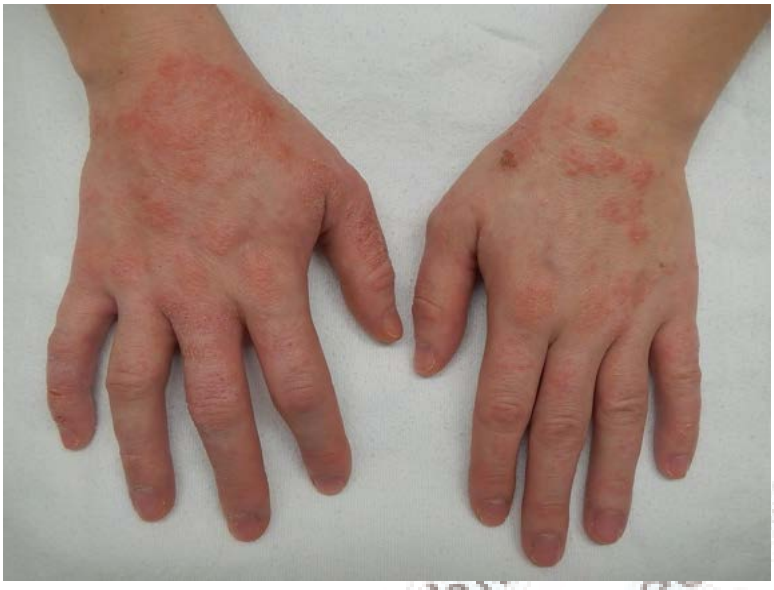
Acute eczema	Chronic eczema
Vesicular eruption	Erythema and scaling
Exudative	Excoriation
Edematous	Lichenification

Spongiosis in acute eczema



The epidermis shows distinct vesicle formation.

The image below shows eczema.



Solution to Question 3:

The above scenario is suggestive of nummular dermatitis or nummular eczema.

The diagnostic lesion of nummular dermatitis is a well-demarcated coin-shaped erythematous plaque with vesicles surrounding it. Later central clearing (resolution) and peripheral extension lead to annular or ring-shaped lesions. Initially, it is red and pruritic but later, it becomes more scaly and less exudative.

Common locations involved are:

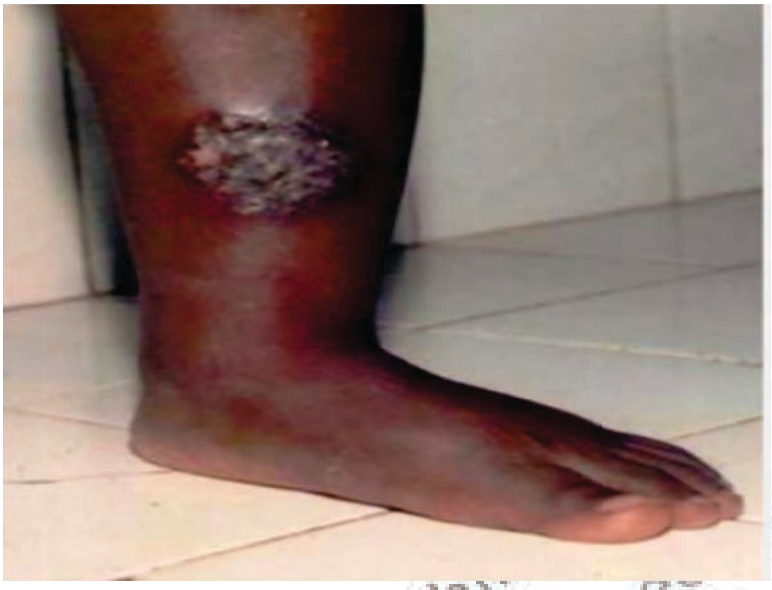
• Trunk

• Extensor surfaces of extremities:

• Men - Pretibial areas

• Women - Dorsal aspects of hand

The image below shows nummular dermatitis. Note the typical shape and demarcation of the lesion.



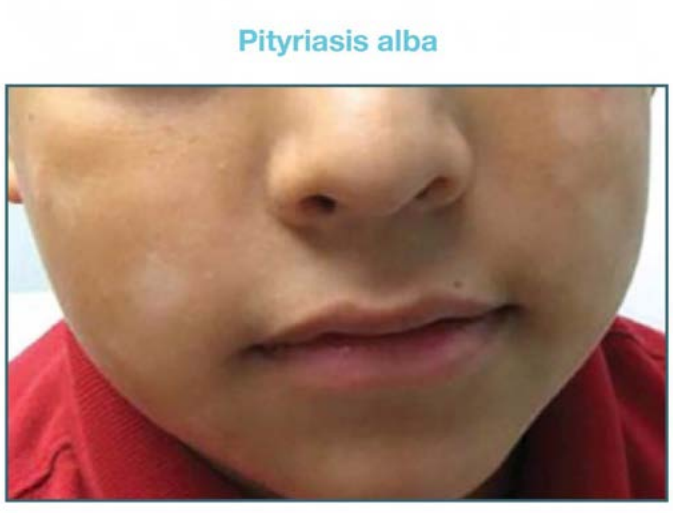
Solution to Question 4:

The above scenario of a hypopigmented, scaly patch is suggestive of pityriasis alba.

It is a pattern of dermatitis in which hypopigmentation is the most conspicuous feature. It is seen in the age group of 3-16 years.

Lesions have scaling and are usually not well marginated. In children, the lesions are often confined to the face and are most common on the cheeks and around the mouth and chin.

It is often a manifestation of atopic eczema but it is not confined to atopic individuals.



Option A: In leprosy, the hypopigmented patch is often associated with atrophy, loss of sensation, and loss of sweating. The lesion is not scaly.

Option B: In pityriasis versicolor the hypopigmented macules are perifollicular in distribution. Fine, powdery branny scaling is present. Scratch sign positive. No relation to atopy.

Option D: Atopic eczema is characterized by itchy papules, hypopigmentation is not a feature.

Solution to Question 5:

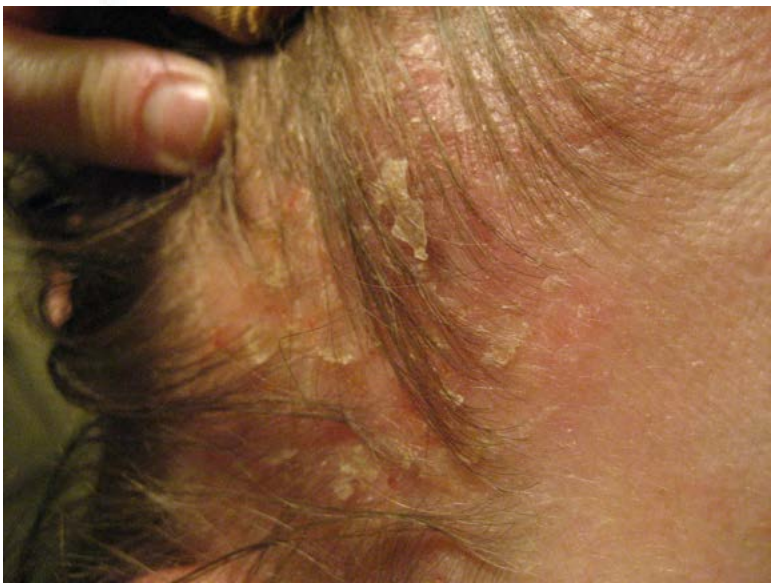
The clinical scenario depicting pruritic lesions at a flexural site along with a family history of atopy (asthma) is suggestive of atopic dermatitis (AD) or atopic eczema (AE). The scratch marks and excoriations shown in the image are due to pruritis, which is the hallmark feature of AD.

AD is a chronic relapsing inflammatory condition. It presents with erythematous macules, papules and vesicles that often start in early childhood, usually less than 2 years old. The lesions later become excoriated and lichenified. It is frequently associated with dryness of the skin and secondary infections. In infancy, the lesions initially appear on face (sparing the napkin area) and later on extensor aspect of knees and elbows as the child starts crawling. In later childhood and in adults, the principal site of involvement is flexures.

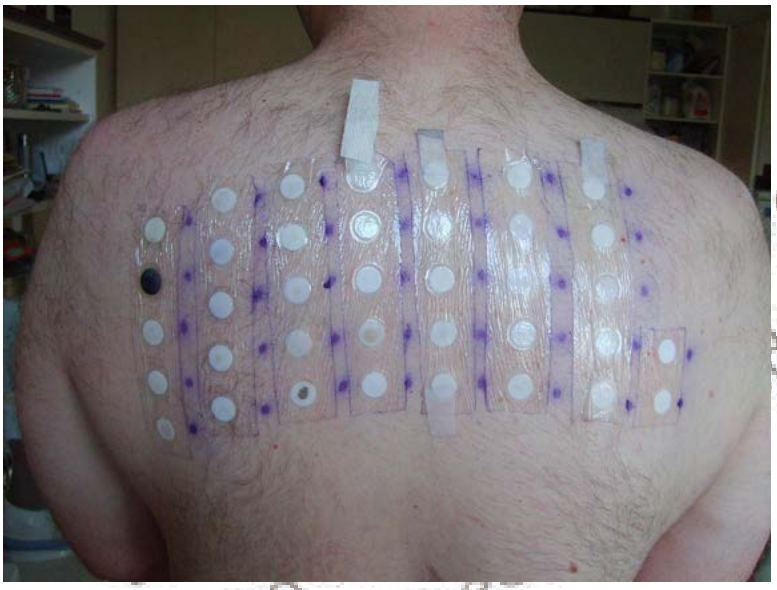
The filaggrin monomers in keratinocytes in the epidermis bind and aggregate keratin bundles and intermediate filaments to form the epidermal barrier. Any damage/dysfunction of this barrier is associated with an increased risk of developing AD. Damage to this barrier can be due to environmental factors (detergents, hard water, UV light) or local inflammatory reactions. Dysfunction of the barrier can be due to genetic mutation of the FLG gene leading to reduced filaggrin production or local immunomodulatory effects leading to reduced filaggrin expression.

Other options:

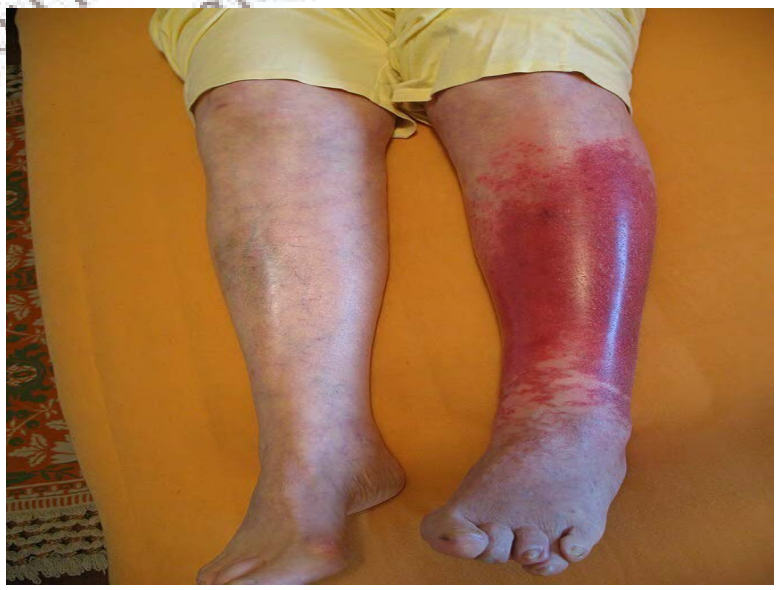
Option A: Seborrheic dermatitis is a chronic inflammatory skin condition characterized by erythema, pruritus, scaling, flaking, or crusting of the skin. It is often associated with Malasezzia fungal infection. A milder form of seborrheic dermatitis of the scalp is commonly known as dandruff.



Option C: Allergic contact dermatitis (ACD) is an inflammatory condition caused due to a delayed hypersensitivity reaction (Type 4 hypersensitivity) to a specific allergen that comes into direct contact with the skin.Patients usually present with pruritus, erythema, swelling, papules, and papulovesicles. Some common allergens include nickel (found in artificial jewelry), PPD/Para phenylene diamine (in hair dye), chromate (in cement), rubber or latex, cosmetics, etc. Patch test (image below) is used for the diagnosis of ACD.



Option D: Erysipelas is a bacterial skin infection caused by Streptococcus pyogenes (Group A Streptococcus) characterized by raised, erythematous sharply demarcated rapidly spreading skin lesions, along with systemic symptoms like fever and chills. The skin may also have a peau d'orange or orange peel-like appearance.



Solution to Question 6:

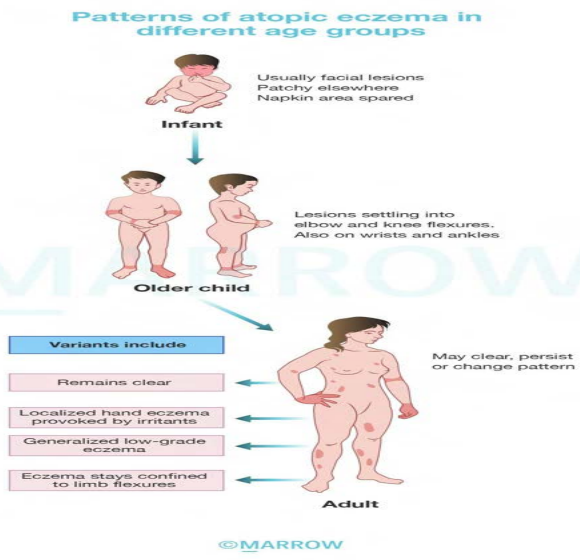
The UK refinement of Hanifin and Rajka criteria is used in the diagnosis of atopic dermatitis.

Solution to Question 7:

The above image is suggestive of infantile atopic eczema/dermatitis. It has a flexural distribution in adult type and extensor distribution in infantile type.

Clinical features include:

- Rash- erythematous, itchy papules/papulovesicles
- Excoriations
- Lichenified skin
- Dennie Morgan fold - under lower eyelid.
- Allergic shiners - periorbital pigmentation
- Allergic salute - horizontal groove on dorsum of nasal bridge.



Dennie morgan fold

Solution to Question 8:

The first site of involvement in infants with atopic eczema is the face.

Atopic eczema can be divided into 3 phases:

• Infantile

• Childhood

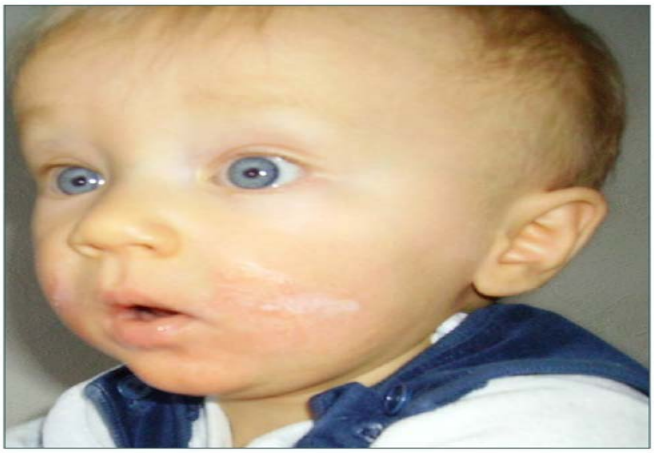
• Adult

Infantile phase - Discrete or confluent oedematous papules associated with erythema. The papules are intensely itchy and may become exudative and crusted as a result of rubbing. Secondary infection and lymphadenopathy are common.

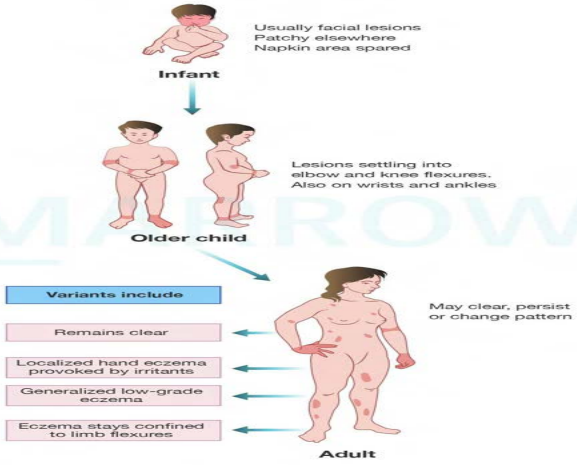
Childhood phase - starts at 18 to 24 months. Papules tend to be replaced by lichenification. The sides of the neck may show a striking reticulate pigmentation, sometimes referred to as atopic dirty neck.

Adult phase - Essentially similar to that in later childhood, with lichenification, especially of the flexures and hands.

Infantile atopic eczema involving the face



Patterns of atopic eczema in different age groups



Solution to Question 9:

Hertoghe's sign or Queen Anne's sign is defined as loss of lateral one third of eye-brows (superciliary madarosis).

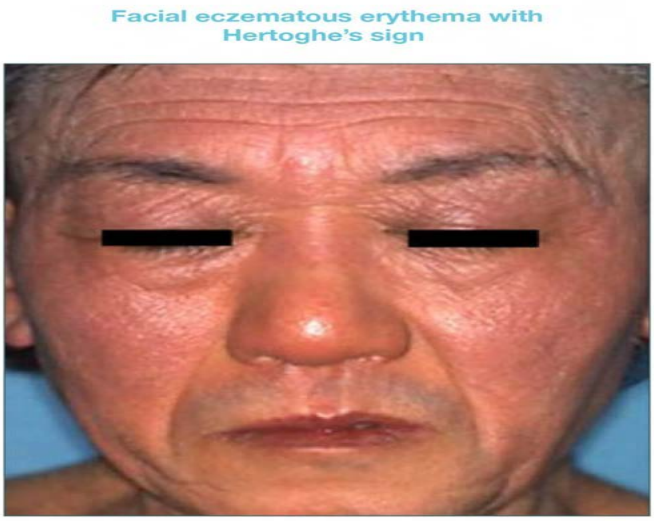
It is seen in various conditions such as:

- Hypothyroidism
- Lepromatous leprosy
- Atopic dermatitis
- Trichotillomania
- Alopecia areata

Option B: Anterior subcapsular cataract- shield-shaped cataract seen in atopic dermatitis.

Option C: Transverse crease across the bridge of the nose- allergic salute.

Option D: Folds of skin under lower eyelids- Dennie-Morgan folds seen in atopic dermatitis.



Solution to Question 10:

The above image showing pustular lesions with heavy crusting in a patient with atopic dermatitis is suggestive of staphylococcal infection. Staphylococcus aureus is the most common organism to cause secondary infections in the lesions of atopic dermatitis.

However, human papillomavirus-induced warts, fungal infections, and viruses (such as HSV, vaccinia, coxsackie A, and the poxvirus of molluscum contagiosum) are also frequent pathogens.

Solution to Question 11:

The image shows flaky, white to yellowish greasy scales on the scalp, suggestive of infantile seborrheic dermatitis.

It is a common, inflammatory skin condition that causes the formation of flaky, white to yellowish greasy scales on oily areas such as the scalp, forehead, nose, or inside the ear. Cradle cap is the term used when it affects the scalp of infants.

It commonly appears around 3 months of age. It is rare after 8 months.

Solution to Question 12:

The above image shows a deep■brown pigmented lesion in the right underarm likely to have formed from the trickle of the droplets of perfume applied on the skin. This is suggestive of Berloque dermatitis.

The skin pigmentation occurs due to an acute phototoxic reaction to perfumes containing bergamot oil (bergapten) which potentiates UV■stimulated melanogenesis. A hot and humid climate along with exposure to UV light increases the risk of developing this condition.

Solution to Question 13:

The above image shows an eczematous ring surrounding a melanocytic naevus (birthmark), suggestive of halo dermatitis.

It is also known as Meyerson nevus. Histology shows a benign naevus surrounded by a dermal lymphocytic and eosinophilic infiltrate, with acanthosis, spongiosis, and parakeratosis.

The condition usually resolves spontaneously within few months without involution of the nevus.

Solution to Question 14:

The above image showing dry, scaly eczematous lesions with a characteristic crazy-paving pattern (eczéma craquelé) is suggestive of asteatotic eczema. It usually develops in the elderly, not in children.

It affects the legs, arms, and hands of elderly people in the context of very dry skin. The condition is usually chronic, relapsing each winter and clearing in the summer, but eventually becoming permanent.

It may be a presenting sign of myxoedema. It can also be due to zinc deficiency.

Drugs implicated include:

• Diuretics

• Cimetidine

• Topical corticosteroids

Solution to Question 15:

The above image is suggestive of erythroderma which is an inflammatory skin disease affecting >90% of body surface.

The most common causes of erythroderma in decreasing order of frequency are:

• Eczema (40%)

• Psoriasis

• Lymphoma and leukemias

• Drugs - phenylbutazone, phenytoin, carbamazepine, gold salts, lithium, cimetidine

Note: If the option was between atopic dermatitis and psoriasis always choose psoriasis because the latter is the single most common cause of erythroderma whereas atopic dermatitis is one of the subtypes of eczema.

Solution to Question 16:

Hypothermia is seen as a complication of erythroderma due to increased skin perfusion. There is no hyperthermia.

The main complications of erythroderma are hemodynamic and metabolic disturbances.

Option A: Increased skin perfusion results in high■output cardiac failure. Fluid loss by transpiration may lead to hypovolemia.

Option B: Hypoalbuminaemia is due to increased protein loss from exfoliated scales.

Option C: Cutaneous, subcutaneous, and respiratory infections are common and pneumonia remains the commonest cause of death.

Solution to Question 17:

The given image is that of pompholyx, a distinct type of hand eczema. It shows confluent vesicles that are painful and pruritic.

It is also called vesicular eczema of palms and soles. This gives a sago grain or tapioca vesicle appearance.

Predisposing factors:

• Atopy

• Naturally dry skin

• Allergic or irritant dermatitis - chromate, epoxy glues, and rubber

• Filaggrin gene mutations are predisposing factors

Treatment:

• First-line - Hand care advice, irritant, and allergen avoidance

• Second-line - topical corticosteroids

• Third line:

• Alitretinoin

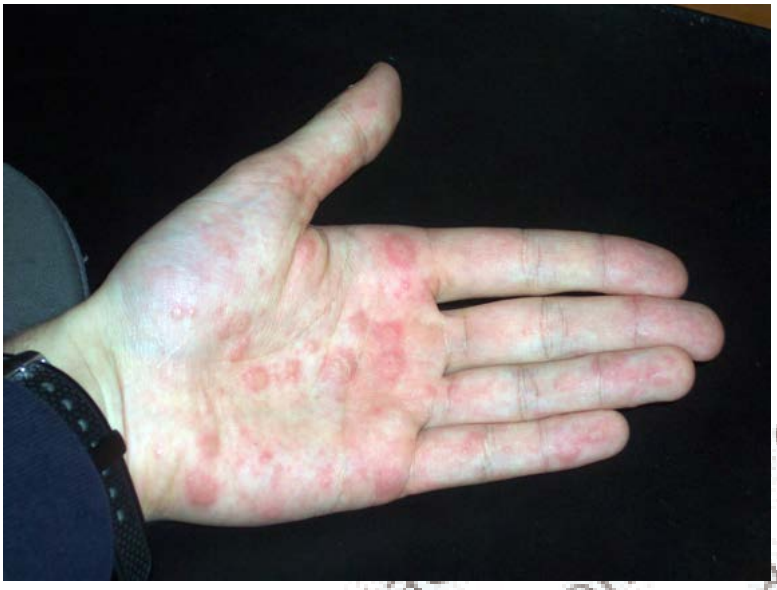
• PUVA

• Azathioprine

• Ciclosporin

• Methotrexate

The image below shows pompholyx.



Solution to Question 18:

Nickel is the most frequent contact allergen for contact dermatitis. Most of its salts (nickel chloride, nickel sulfate) are readily soluble in water and sweat and have strong sensitizing properties.

It is more common in women than in men. Jewelry and metal components of clothing are the usual sources of nickel in prolonged contact with the skin.

Allergic contact dermatitis is an inflammatory reaction to a substance (allergen) that causes an eruption only in those individuals previously sensitized by the same molecule. It is a delayed-type of hypersensitivity (type IV).

Substances causing allergic contact dermatitis:

• Chromium

• Palladium

• Gold

• Vegetable matter

• PPD in hair dye

The diagnosis is made by a patch test.

Solution to Question 19:

The above scenario is suggestive of irritant contact dermatitis which is the cutaneous response to the physical/toxic effects of a wide range of environmental exposures. It is not an immunologically

mediated reaction.

Irritant contact dermatitis is also called wear and tear dermatitis. Examples include housewives eczema due to soaps and detergents and wetwork, napkin or diaper rash.

Treatment includes avoidance of irritants, personal protection, and 'barrier creams'.

Irritant contact dermatitis	Allergic contact dermatitis
Not an immunologically med iated reaction	Immunologically mediated re action (type-IV delayed hyper sensitivity)
It can occur in anyone witho ut predisposing factors	It only occurs in those indivi duals with a history of atopy
Sensitization is not required	Sensitization phase required

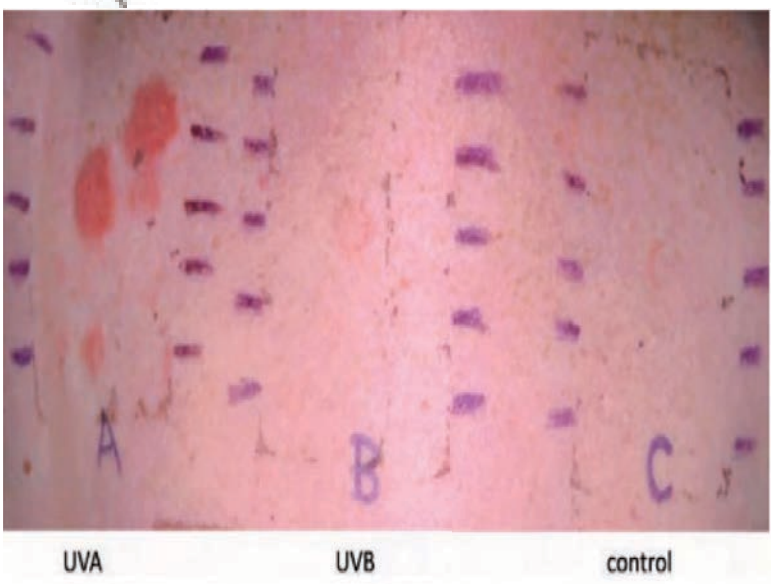
Solution to Question 20:

The given history points towards the diagnosis of photoallergic contact dermatitis. Photopatch test is used to diagnose this condition.

It is a delayed-type IV hypersensitivity reaction with a predilection for photo exposed sites with well■demarcated margins where the skin is covered by clothing (at the collar and 'V' of the neck, on the backs of the hands, and on the ankles). It spares the skin behind the earlobe (Wilkinson's triangle) since it is a photo-protected site.

Photopatch test: The standard patch test units are applied in two sets (on either side of the spine) and kept covered. One set of patches is removed and exposed to UVA. After irradiation, the other set of patches are also removed and both the sites are covered again for 48 hours. A positive reaction on the irradiated side only is an indication of photoallergy

The image below shows a photopatch test showing reaction after exposure to UVA only.

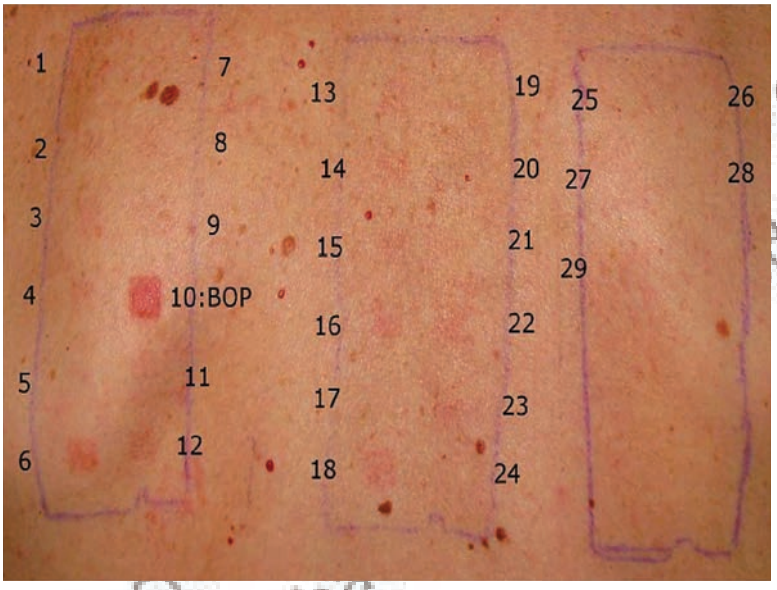


Solution to Question 21:

The gold standard test for airborne contact dermatitis is a patch test.

Patch testing is done to document sensitivity to a specific antigen. Patch test antigens comprising suspected allergens are applied to the patient's back and covered for 48 hours. After the patch is removed, the area is examined for delayed type of hypersensitivity.

The image below shows a patch test.



Solution to Question 22:

Pityriasis rosea is not a cause of erythroderma.

The most common causes of erythroderma in decreasing order of frequency are:

- Eczema of various subtypes including seborrheic dermatitis
- Psoriasis
- Lymphoma and leukemia
- Drugs - phenylbutazone, phenytoin, carbamazepine, gold salts, lithium, cimetidine
- Hereditary disorders - ichthyosiform erythroderma, pityriasis rubra pilaris
- Pemphigus foliaceus
- Other skin diseases - lichen planus, dermatophytosis, crusted scabies, dermatomyositis

Solution to Question 23:

The image shows atopic dermatosis.

Atopic dermatosis is a relapsing inflammatory skin disorder that is common in infancy and presents differently in different age groups. It is characterized by pruritus leading to lichenification.

Clinical features:

• Infants - The lesions most frequently start on the face, and then, the extensor aspect of the knees and elbows are involved.

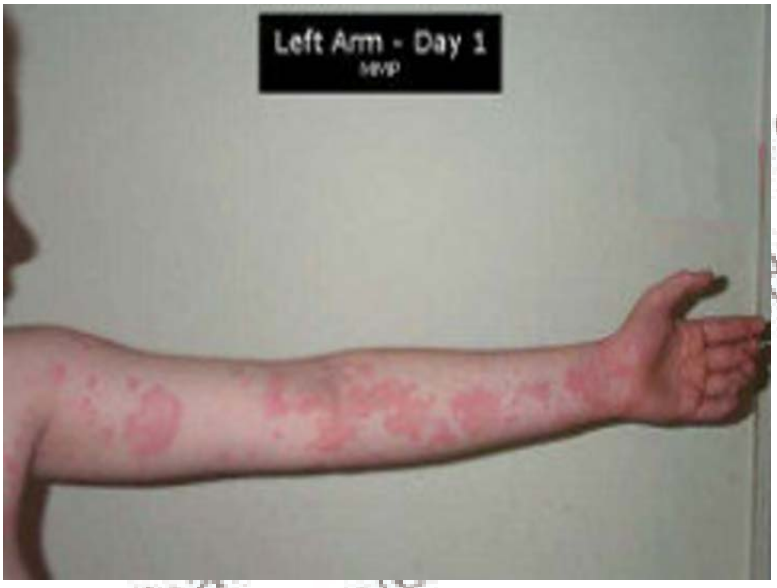
• Children: Dry, scaly, pruritic, excoriated papules and plaques in the flexural areas and neck.

• Adults: Lichenification and dry, fissured skin in a flexural distribution.

Urticaria & Angioedema

Question 1:

A 27-year-old man comes to the emergency department with the following lesions one hour after eating shrimp. Which of the following is incorrect about this condition?



a) It is an evanescent lesion

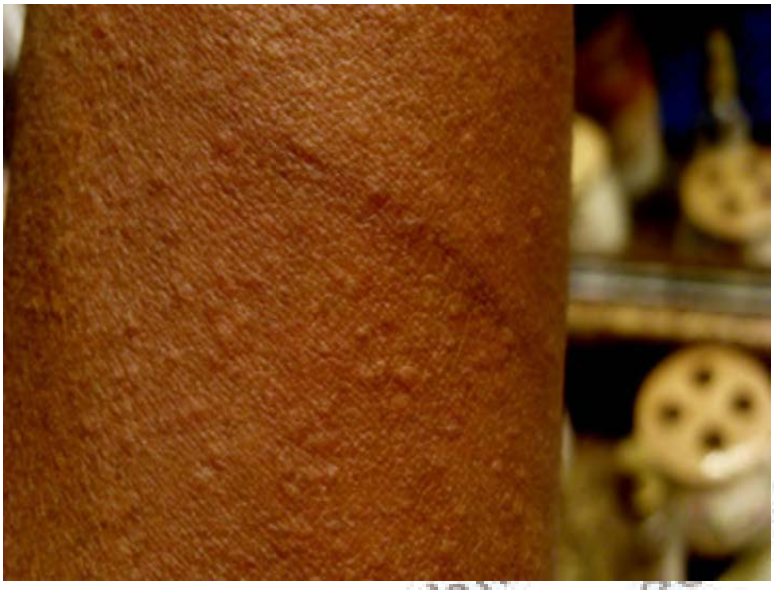
b) Cause is unknown in majority of cases

c) It is purely immune-mediated

d) Subsides without leaving pigmentation

Question 2:

A teenager with the following lesions is brought to the hospital by his coach. The lesions had developed suddenly all over his body following sports practice. Which of the following statements is true about this condition?



a) The lesions typically last for 24 hours

b) It is due to stimulation of parasympathetic nerves

c) It can also be triggered by spicy food

d) Symptomatic dermographism can occur in this condition

Question 3:

While vacationing in Goa, an 18-year-old girl develops small itchy wheals ten minutes after stepping into the sun. They are prominent over her face, neck, and arms. What is the most likely diagnosis?

a) Cholinergic urticaria

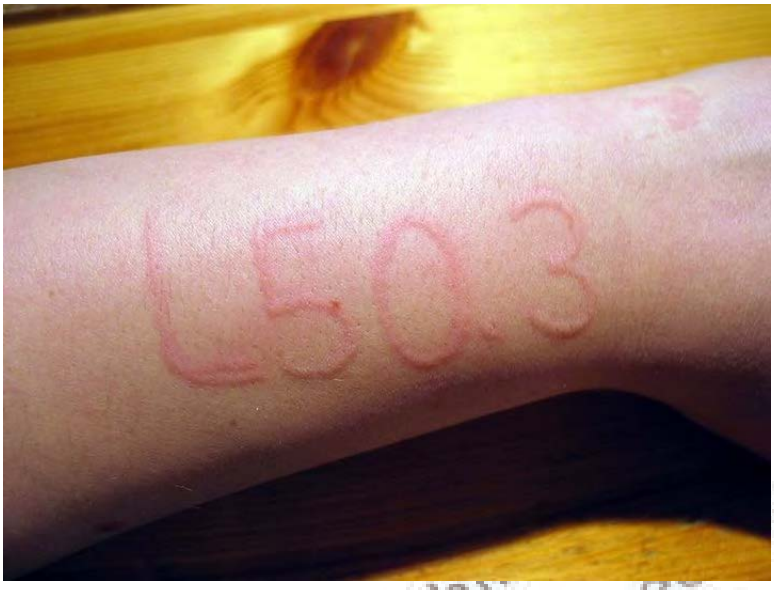
b) Heat urticaria

c) Polymorphic light eruptions

d) Solar urticaria

Question 4:

While examining a patient in the dermatology OPD, the senior resident elicits the following finding. What condition does this patient likely have?



a) Urticaria pigmentosa

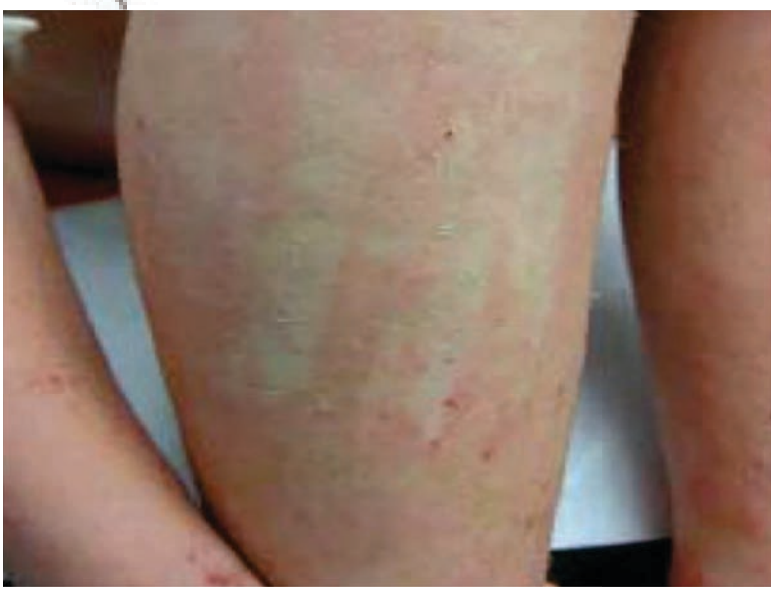
b) Chronic urticaria

c) Cholinergic urticaria

d) Urticarial vasculitis

Question 5:

The mother of a 10-year-old boy brings him to the dermatologist for skin problems. She reports that whenever he wears tight clothing or when something brushes against his skin, his skin appears as shown in the image below. Which of the following conditions is this phenomenon seen in?



a) Chronic urticaria

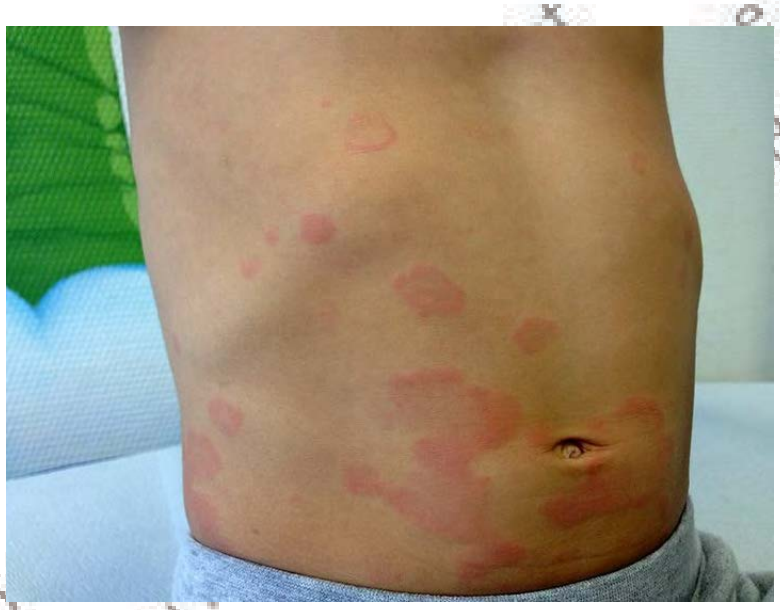
b) Atopic dermatitis

c) Angioedema

d) Cholinergic urticaria

Question 6:

A 9-year-old boy presents with the following lesions all over his body for the past two days. They are associated with severe itching. Vitals are stable and saturation is 98% in room air. What is the best initial treatment?



a) Omalizumab

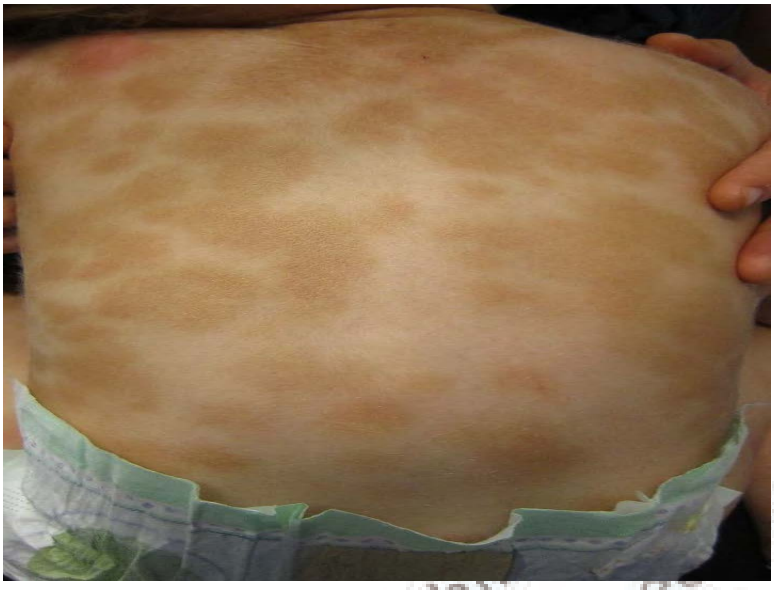
b) Systemic corticosteroids

c) Topical corticosteroids

d) Antihistamines

Question 7:

A 1-year-old girl is brought to the OPD by her parents with a 1-month history of the following skin lesions, which are present all over her body. Which of the following statements about this condition is incorrect?



a) Due to gain of function mutation in KIT gene

b) Age of onset in adults is between 20-40 years

c) It is a type of systemic mastocytosis

d) It can present with bullous lesions

Question 8:

In which of the following conditions would you expect to see Darier's sign?

a) Darier's disease

b) Urticaria pigmentosa

c) Hereditary angioedema

d) Atopic dermatitis

Question 9:

Which of the following statements about angioneurotic edema is false?

a) Pitting edema of face, lips and mucous membranes

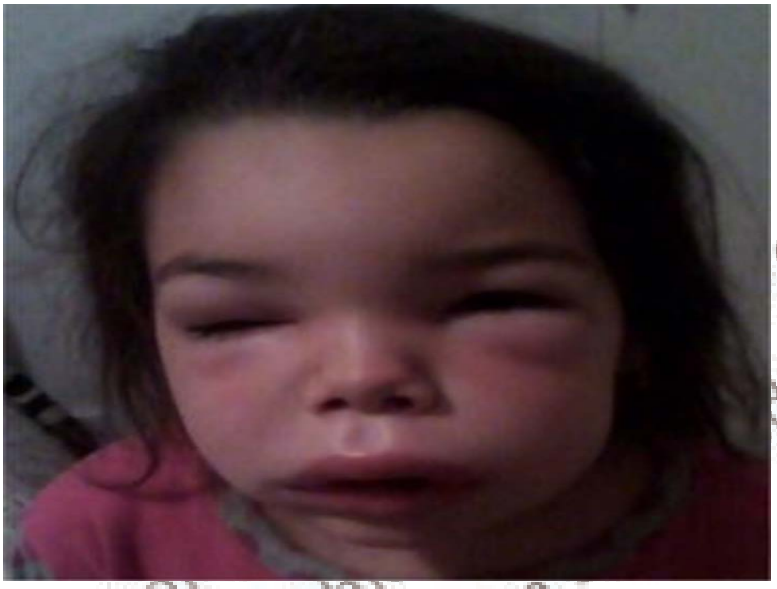
b) C1 esterase inhibitor deficiency can cause it

c) Wheals and itching do not occur

d) Also known as Quincke's disease

Question 10:

A 3-year-old girl is rushed to the casualty with sudden-onset breathing difficulty. History reveals that her father also suffers from similar episodes. Examination findings are as follows. Which of the following statements is false regarding this condition?



a) Type II of this condition is most common

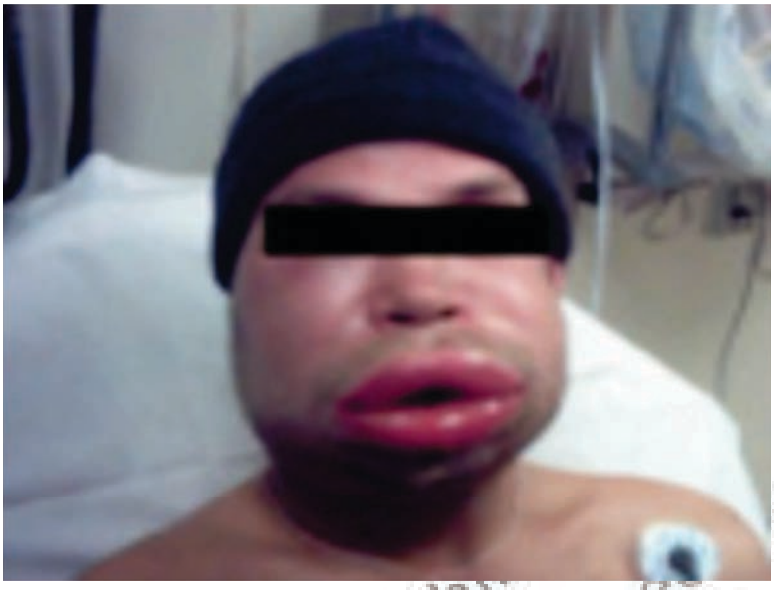
b) The enzyme involved is C1 INH

c) There is loss of inhibition of Hageman factor

d) Associated with C4 and C2 deficiency

Question 11:

The laboratory evaluation of a patient with the following findings showed decreased C4 and C1-INH levels with normal C1q. What is the diagnosis?



a) Hereditary angioedema type 2

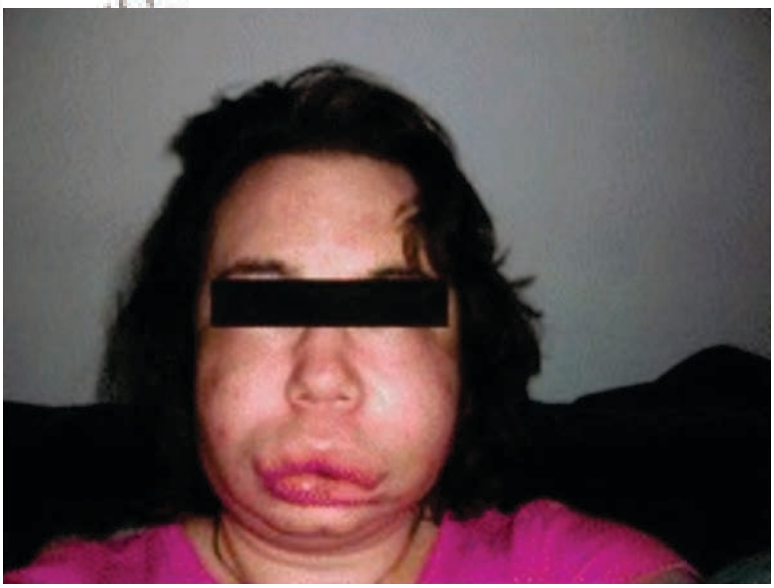
b) Hereditary angioedema type 1

c) Acquired angioedema type 2

d) Acquired angioedema type 1

Question 12:

A 66-year-old woman with poorly controlled hypertension was seen at a private clinic. The decision was made to add enalapril to her regimen. Two weeks later, she develops the following finding. Which of the following statements is true regarding this condition?



a) It is not seen with the newer drugs in this class

b) It occurs due to reduced bradykinin metabolism

c) Symptoms are mild and self-resolving

d) It is also common with angiotensin receptor blockers

Question 13:

While having dinner with his friends, a man develops swelling of his face and lips and has difficulty breathing. He is rushed to the nearest hospital. In the ER, he scratches himself furiously and keeps saying that something terrible is going to happen to him. On examination, urticaria and hypotension are noted. What is the most likely diagnosis?

a) Angioneurotic edema

b) Anaphylaxis

c) Generalized acute urticaria

d) Steakhouse syndrome

Question 14:

Cutis marmorata occurs due to _____

a) Exposure to cold temperature

b) Humidity

c) Exposure to hot temperature

d) An adverse reaction to drugs

Answer Key

Question No.	Correct Option
1	c
2	c
3	d
4	b
5	b
6	d
7	c

8	b
9	a
10	a
11	b
12	b
13	b
14	a

Detailed Explanations

Solution to Question 1:

The image shows multiple wheals in acute spontaneous urticaria. It is mediated by immunological and non-immunological mechanisms.

The primary mechanism of urticaria is mast cell degranulation triggered by immune (IgE-mediated) or non-immune (cytokines, complement) mechanisms, which cause the release of histamine. This increases vascular permeability and vasodilation.

It can be acute (<6 weeks) or chronic (>6 weeks). Acute spontaneous urticaria can be triggered:

• Hypersensitivity

• Viral infections

• Food allergy

• Drug allergy

• Blood transfusions.

However, the actual cause is unknown in nearly 60% of cases.

It is characterized by wheals, which are evanescent, well■defined, pink, or pale swellings due to reversible dermal edema. It usually fades within hours without pigmentation. Wheals are usually very itchy and associated with a surrounding red flare when they arise.

They may occur anywhere on the body, including the scalp, palms, and soles, in variable numbers and sizes.

Solution to Question 2:

This clinical scenario with the development of itchy monomorphic, micropapular wheals that appear within minutes of sweating is suggestive of cholinergic urticaria.

Cholinergic urticaria is an inducible urticaria that is common in adolescents. It occurs to due stimulation of the cholinergic post-ganglionic sympathetic nerve supply to eccrine sweat glands. It

may be triggered by a rise in core body temperature, spicy food, or emotion and lasts for a few minutes to 1-2 hours.

Symptomatic dermographism refers to an exaggerated wheal-flare response to physical stimulus, associated with severe itching. It is not a feature of this condition.

Solution to Question 3:

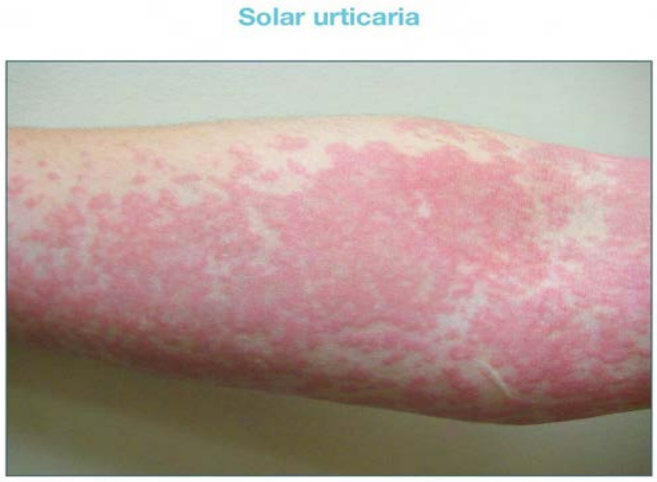
This clinical scenario is suggestive of solar urticaria. The wheals develop within minutes of sun exposure and are common on sun-exposed areas.

Solar urticaria is a type of induced urticaria that occurs in response to visible or UV radiation and usually fades within 1-2 hours.

Option A: Cholinergic urticaria presents with small wheals that occur due to sweating and a rise in core body temperature. Though it can also occur following sun exposure, it is more pronounced in the covered parts of the body, where the temperature is higher.

Option B: Heat contact urticaria is a rare form of urticaria that develops following localized warming of skin. It lasts for about one hour.

Option C: Polymorphic light eruption, urticarial lesions appear hours later and last for days after exposure to sunlight.



Solution to Question 4:

This clinical scenario is suggestive of dermographism, which is commonly elicited in chronic urticaria patients.

It is an urticarial reaction in response to pressure or trauma to the skin. It is the most common type of inducible urticaria.

Simple dermographism or factitious urticaria refers to the triple response of local erythema due to:

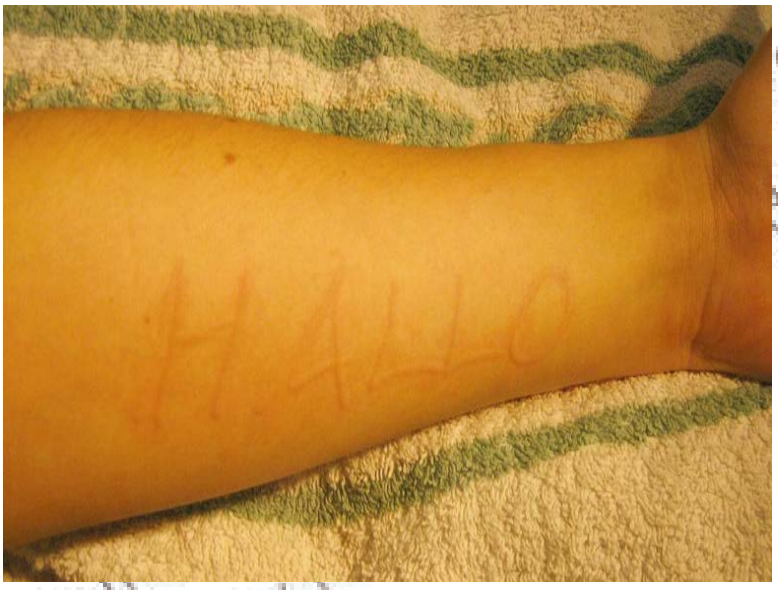
• Capillary vasodilatation

• Edema

• Surrounding flare

The eliciting stimulus determines the shape of the wheals, but they are often linear from scratching or stroking.

In <5% of cases, symptomatic dermographism can occur. It is characterized by severe, disproportionate itching that is worse at night.

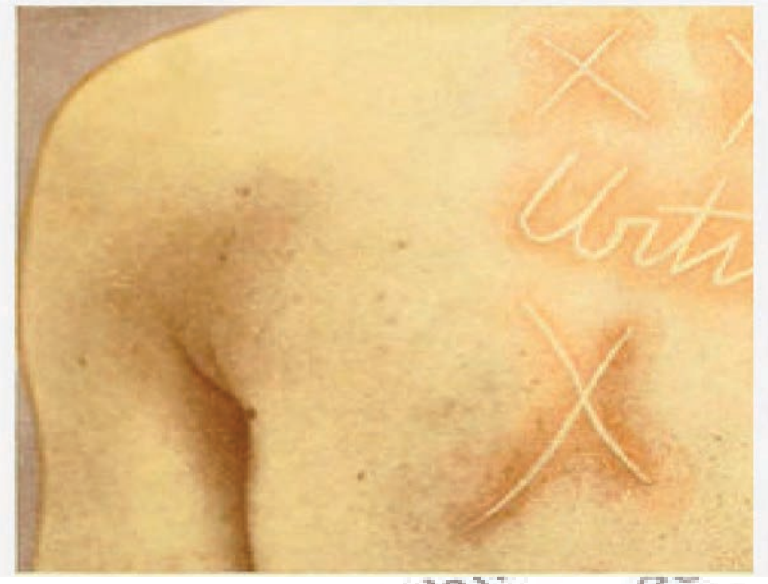


Other rare forms of dermographism associated with urticaria are cholinergic dermographism, red dermographism, and delayed dermographism.

Solution to Question 5:

The given image showing white lines that developed in response to light pressure on the skin is suggestive of white dermographism. It is pronounced in atopic dermatitis.

It is due to an abnormal vascular response, where capillary vasoconstriction occurs in response to light stroking of the skin. While it can occur normally, it is more pronounced in patients with eczema. Tight clothing is a common triggering stimulus. It causes white lines in areas where pressure has been applied, as shown below.



Note: Black dermographism is characterized by skin discoloration after pressure from a metallic object.

Solution to Question 6:

This clinical scenario and image showing wheals are suggestive of acute urticaria. The best initial treatment is oral antihistamines.

The lesions are due to histamine release caused by mast cell degranulation as a result of immune and non-immune mechanisms. The treatment is as follows:

- First-line: Second generation non-sedating antihistamines.
- Second-line: Oral corticosteroids and leukotriene receptor antagonists
- Third-line: Immunomodulators like cyclosporine and tacrolimus
- Fourth-line: Omalizumab, an antibody targeted against IgE

Solution to Question 7:

The given image shows urticaria pigmentosa lesions on the trunk of a child. It is the commonest type of cutaneous mastocytosis. It occurs due to an increased number of mast cells in the skin.

The mast cells accumulate in tissues due to a gain-of■function mutation of KIT. The symptoms occur due to the release of mast cell-derived mediators. The age of onset is in the first year in the childhood type and 20–40 years in the adult type.

It presents with numerous reddish■brown or pale monomorphic maculopapules, plaques, or nodules in a symmetrical distribution. Lesions can occur anywhere but are common over trunk and thighs. The palms and soles are usually spared. It can also present with bullous lesions that heal without scarring.

Treatment includes:

• Avoiding physical stimuli that trigger mast cell degranulation- temperature extremes, pressure, alcohol

• Antihistamines

• Mast cell stabilizers

• Topical and oral corticosteroids

• PUVA therapy

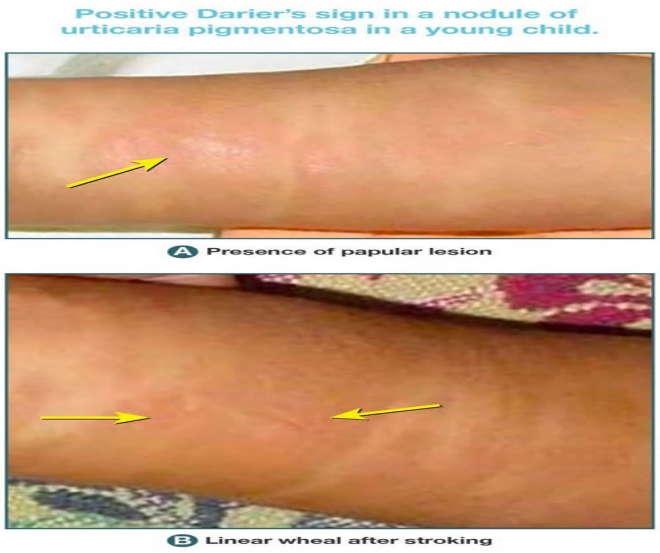
• Tyrosine kinase inhibitors like imatinib.

Solution to Question 8:

Darier's sign is seen in urticaria pigmentosa. It refers to the development of urticaria and erythema around the lesions after mild trauma, including scratching or rubbing of the lesion.

Urticaria pigmentosa is the most common pattern of cutaneous mastocytosis, which occurs due to an increased number of mast cells in the skin. It presents with reddish-brown or pale maculopapules, plaques, nodules in symmetric distribution, sparing the palms and soles.

Darier's sign is not specific for mastocytosis as it is also rarely seen in juvenile xanthogranuloma and acute lymphoblastic leukemia.



Note: Pseudo-Darier sign is seen in soft tissue hamartoma, with piloerection and transient induration after stroking the lesions. Darier's disease is an autosomal dominant disorder, characterized by hyperkeratotic papules and plaques along with nail changes.

Solution to Question 9:

Angioneurotic edema or Quincke's disease is characterized by non-pitting edema of the face, lips, and mucous membranes.

Angioedema is the accumulation of fluid in the subcutaneous and submucosal layers. It is common in the lips, eyelids and genitalia due to laxity of tissue in these areas. It can present with or without wheals.

Quincke's disease refers to the hereditary form of angioedema without wheals. There is no itching. It is bradykinin-mediated and is usually linked to abnormality or deficiency of C1■esterase inhibitor (C1INH) enzyme. Other non-hereditary causes include acquired C1INH deficiency and use of ACE inhibitors.

Angioedema with wheals is a type of spontaneous or inducible urticaria.

Solution to Question 10:

The image shows subcutaneous and submucosal edema of the face and lips without wheals. Along with the history, a diagnosis of hereditary angioedema (HAE) is most likely. Type I HAE is the most common form (85%).

There are three types of hereditary angioedema (HAE):

• Type 1 (85%): C1INH deficiency

• Type 2 (15%): Dysfunction of C1-INH, but normal levels

• Type 3 (rare) : Normal C1-INH levels and function

HAE occurs due to a mutation in the SERPING1 gene, which codes for the C1 esterase inhibitor (C1INH). It is also called angioneurotic edema or Quincke's disease.

C1INH enzyme normally inhibits the following:

• Complement system

• Kallikrein system

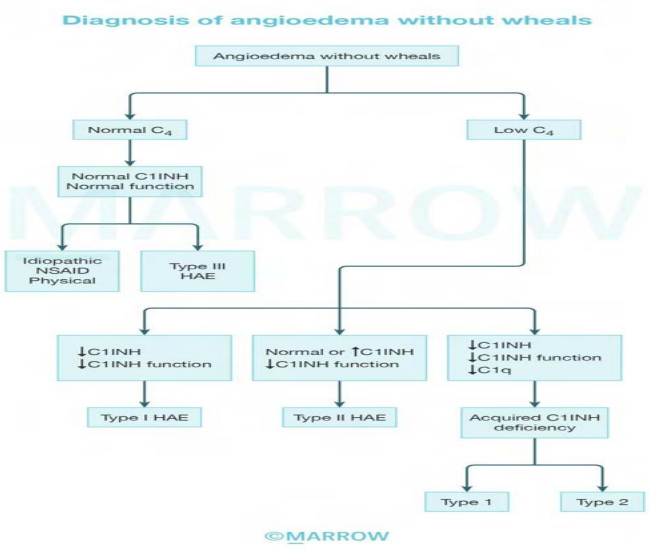
• Factor XII or Hageman factor

In HAE, loss of C1INH activity leads to loss of inhibition of these above processes. This leads to decreased C4 and C2 levels and bradykinin accumulation.

Solution to Question 11:

The image shows subcutaneous and submucosal edema of the face without wheals, pointing towards a diagnosis of angioedema. Hereditary angioedema type 1 is characterized by decreased C1INH levels and decreased C2 and C4 with normal C1q levels.

Angioedema without wheals can be due to hereditary or acquired causes. Levels of antigen C1q help in differentiating between them. In hereditary angioedema, the C1q level is normal whereas, in acquired angioedema, the C1q level is usually low.



Solution to Question 12:

The given clinical scenario is suggestive of ACE inhibitor-induced angioedema, which is due to inhibition of ACE resulting in reduced bradykinin metabolism. Increased bradykinin level produces vasodilation causing angioedema. It typically occurs within 3 weeks of starting treatment but can occur anytime.

ACE inhibitor■induced angioedema is common in older people on treatment with ACE inhibitors.

It is a class effect seen with all ACE inhibitors. It is uncommon with angiotensin receptor blockers.

It predominantly affects the face and oropharynx. Symptoms may be severe, and laryngeal involvement may be life-threatening.

Solution to Question 13:

The given clinical scenario is suggestive of anaphylaxis. It is a medical emergency.

It is a severe form of type I hypersensitivity. Cinical features include:

- Urticaria
- Angioedema
- Severe pruritus
- Bronchospasm
- Laryngeal edema
- Hypotension.
- Sense of impending doom

The first step in management is to secure the airway. This must be followed by intramuscular administration of epinephrine in the lateral thigh. The dose is 0.3 to 0.5 ml of 1:1000 solution. It can be repeated after 10-15 minutes if necessary.

Option A: Angioneurotic edema is not associated with pruritus or systemic features.

Option C: Generalized acute urticaria is not associated with systemic features.

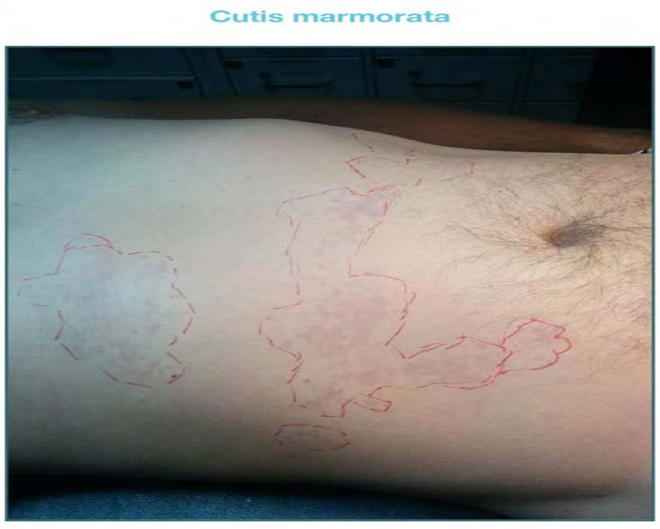
Option D: Steakhouse syndrome refers to oesophageal impaction of food. It presents with dysphagia. There is no respiratory distress.

Solution to Question 14:

Cutis marmorata refers to the pinkish-blue mottled or marbled appearance when subjected to cold temperatures.

It is seen throughout infancy and in 50% of children. It is caused by simultaneous dilation and contraction of the superficial capillaries. Rewarming restores the skin to normal. This is a physiological finding and requires no treatment. However, persistent cutis marmorata may be seen in trisomies 18 and 21.

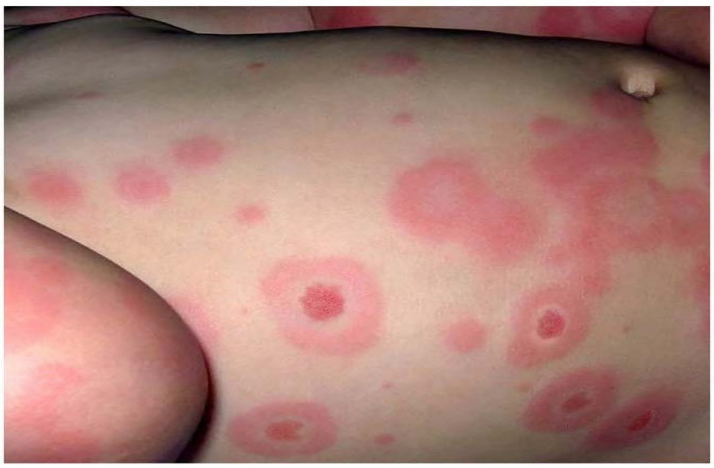
Note: Cutis marmorata telangiectatica congenita is a distinct vascular developmental disorder and is easily distinguished as it is fixed (it does not disappear on rewarming), and it may be associated with a variety of other anomalies such as limb growth or renal anomalies.



Reactive Skin Diseases and Drug Eruptions

Question 1:

The most common triggering factor of the given condition is _____



a) Vaccination

b) Malignancy

c) Drugs

d) Infection

Question 2:

Which of the following statements is false about erythema multiforme?

a) Erythema multiforme major is the most common form

b) The lesions occur in crops and fade in 1-2 weeks

c) Photoaggravation of the lesions is seen

d) The distribution of target lesions is mainly acral

Question 3:

In which of the following conditions is interface dermatitis not seen?

a) Erythema multiforme

b) Lichen planus

c) Graft versus host disease

d) Eczema

Question 4:

What percentage of a patient's body surface area would need to show sloughing to make a diagnosis of Stevens-Johnson syndrome?

a) <10%

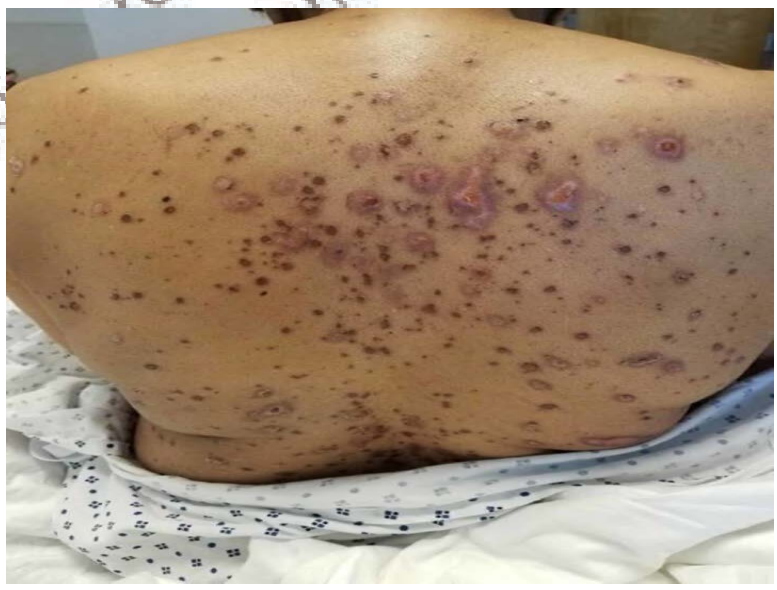
b) 10-20%

c) 20-30%

d) >30%

Question 5:

A 53-year-old woman presents with complaints of fever, malaise, conjunctivitis, and skin lesions on her back for the past 2 days. She gives a history of taking the tablet piroxicam for knee pain 2 weeks ago. What is the probable diagnosis?



a) Fixed drug eruption

b) Erythema multiforme

c) Stevens-Johnson syndrome

d) Toxic epidermal necrolysis

Question 6:

A disease associated with the occurrence of blistering and peeling of over >30% of body surface area is usually caused by:

a) Viral infection

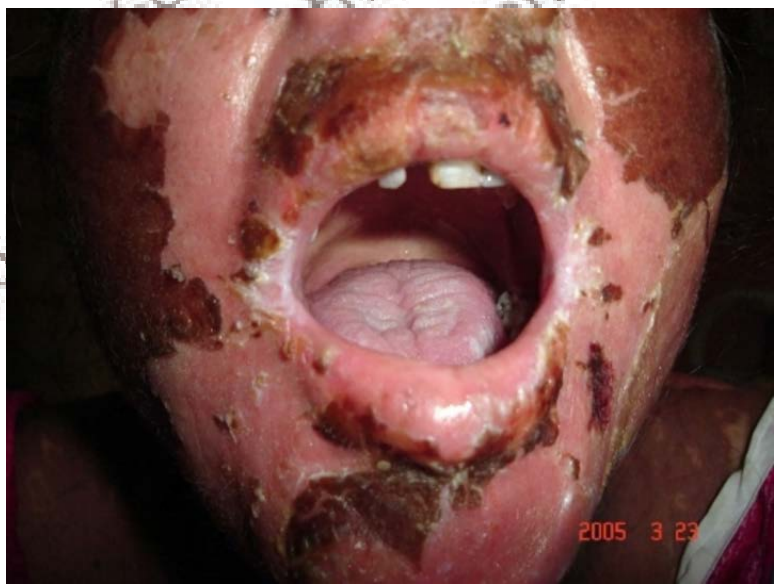
b) Drugs

c) Fungal infection

d) Auto-immunity

Question 7:

A 30-year-old man was brought to the casualty with a 3-day history of the findings shown. On examination, 50% of the body surface area was involved. Hemorrhagic cheilitis and crusting were also noted. What are the diagnosis and most probable underlying etiology?



a) Stevens Johnson syndrome; Mycoplasma pneumoniae infection

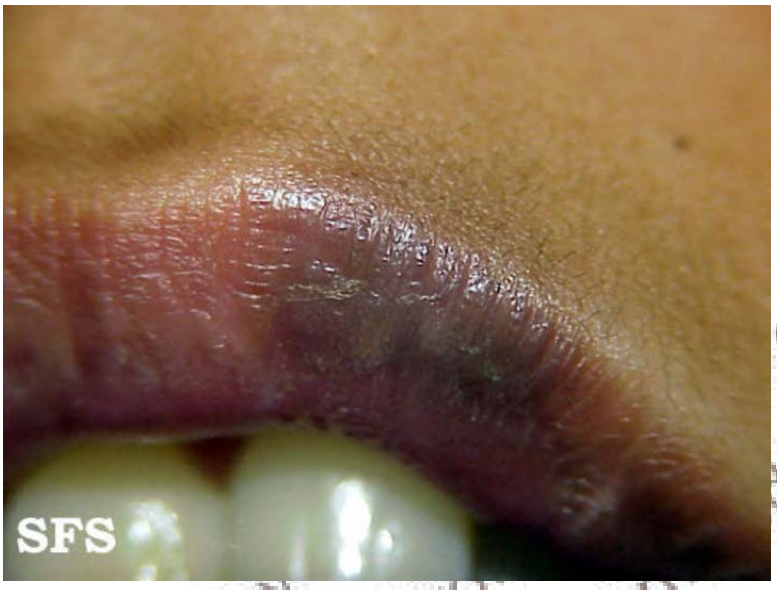
b) Stevens Johnson syndrome; cephalosporin intake

c) Toxic epidermal necrolysis; viral infection

d) Toxic epidermal necrolysis; carbamazepine intake

Question 8:

A 27-year-old sexually active man presents to the OPD with the following finding. He informs you that a few days ago, he developed an erythematous vesicular lesion at the same location within hours of taking a drug. Which of the following is most commonly implicated here?



a) Carbocystine

b) Cotrimoxazole

c) NSAID

d) Tetracycline

Question 9:

Which of the following is the most common site for fixed drug eruption?

a) Face

b) Extremity

c) Trunk

d) Glans penis

Question 10:

Which of these statements is false regarding erythema nodosum?

a) They are considered to be a hypersensitivity reaction

b) The lesions are mostly symmetrical

c) The lesions are usually tender

d) It is a type of lobular panniculitis

Question 11:

A patient presented with a sudden onset of symmetrical, bilateral, tender, erythematous, warm nodules and raised plaques involving the shins, ankles, and knees. Which of the following is not a trigger for this eruption?

a) Pregnancy

b) Tuberculosis

c) Sulfonamide use

d) Chronic pancreatitis

Question 12:

Which of the following organs are most commonly affected in a patient with DRESS syndrome?

a) Heart

b) Liver

c) Kidney

d) Lungs

Question 13:

A patient with a history of drug intake for her gout was diagnosed with Lyell syndrome. On examination, which of the following cutaneous findings are most likely to be seen?

a) Localized pruritic skin and mucosal macules with erosions

b) Purpuric macules and erosions that affect 10-30% of body surface area, including mucosa

c) Purpuric macules and erosions that affect more that 30% of body surface area, including mucosa

d) Purpuric macules and erosions that affect the major flexures

Answer Key

Question No.	Correct Option
1	d
2	a
3	d
4	a
5	c
6	b
7	d
8	c
9	d
10	d
11	d
12	b
13	c

Detailed Explanations

Solution to Question 1:

The given image shows characteristic target lesions of erythema multiforme. This most commonly occurs following a herpes simplex virus infection.

The common triggers are:

• Herpes simplex infection

• Mycoplasma infection

• Bacterial infections

• Fungal infections

• Vaccinations

• Malignancy- carcinoma, lymphoma, leukemia

• Drugs- sulfonamides, rifampicin, penicillins, hydantoin derivatives

• Miscellaneous- lupus erythematosus (Rowell Syndrome), sarcoidosis, polyarteritis nodosa

Erythema multiforme is best regarded as a self■limiting cytotoxic dermatitis resulting from cell■mediated hypersensitivity.

It presents clinically with a spectrum of macular, papular, or urticarial lesions, as well as the classic acral iris or 'target lesions'.

Target lesions are less than 3 cm in diameter, rounded, and have three zones:

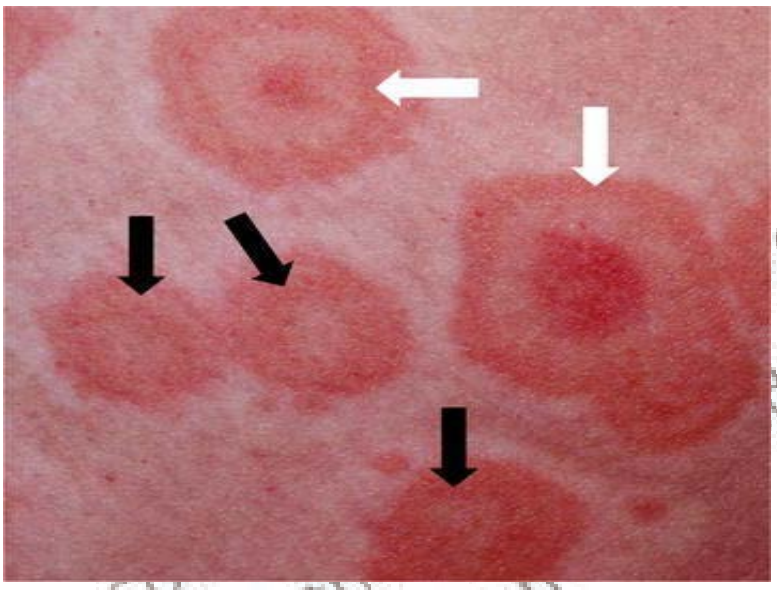
• Central area of dusky erythema or purpura

• Middle paler zone of edema

• Outer ring of erythema with a well■defined edge

Lesions may involve the palms and the trunk. Oral and genital mucosal membranes lesions are associated with erosions

The image below shows target lesions.



Solution to Question 2:

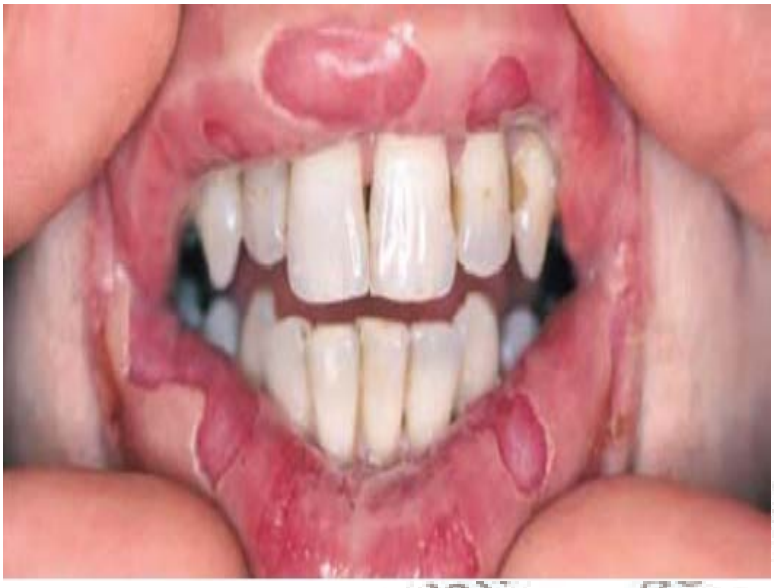
Erythema multiforme minor (papular or simplex form) accounts for approximately 80% of cases and is the most common form.

Clinically erythema multiforme presents as macular, papular, or urticarial lesions, as well as the classic iris or 'target lesions', distributed preferentially on the distal extremities. Raised atypical target lesions having only two of the zones may also be seen and mucous membranes are rarely involved. Koebnerization accounts for some bizarre clinical distributions.

Photoaggravation of erythema multiforme is well recognized.

The lesions appear in successive crops for a few days and fade in 1–2 weeks, sometimes leaving dusky discoloration.

The image given below shows mucosal involvement in erythema multiforme major



Solution to Question 3:

Eczema shows spongiotic dermatitis and not interface dermatitis.

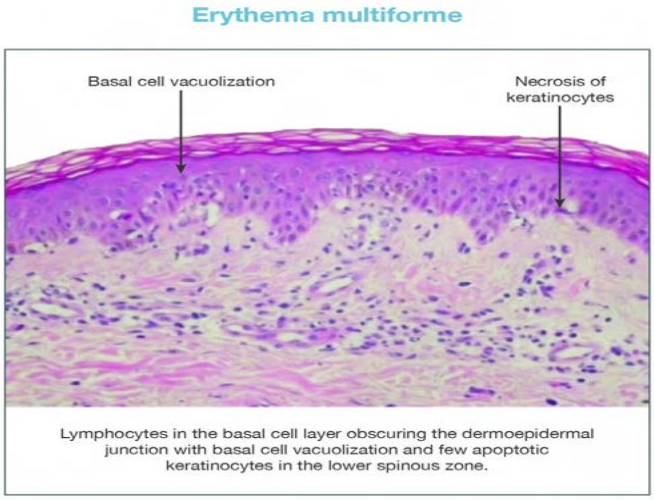
Interface dermatitis includes diseases in which the primary pathology involves the dermo-epidermal junction.

The salient histological findings include:

- Basal cell vacuolization
- Apoptotic keratinocytes (colloid or Civatte bodies)
- Obscuring of the dermo-epidermal junction by inflammatory cells

Common conditions showing interface dermatitis are:

- Erythema multiforme
- Lichen planus
- Graft versus host disease
- Fixed drug eruptions
- Lupus erythematosus
- Dermatomyositis



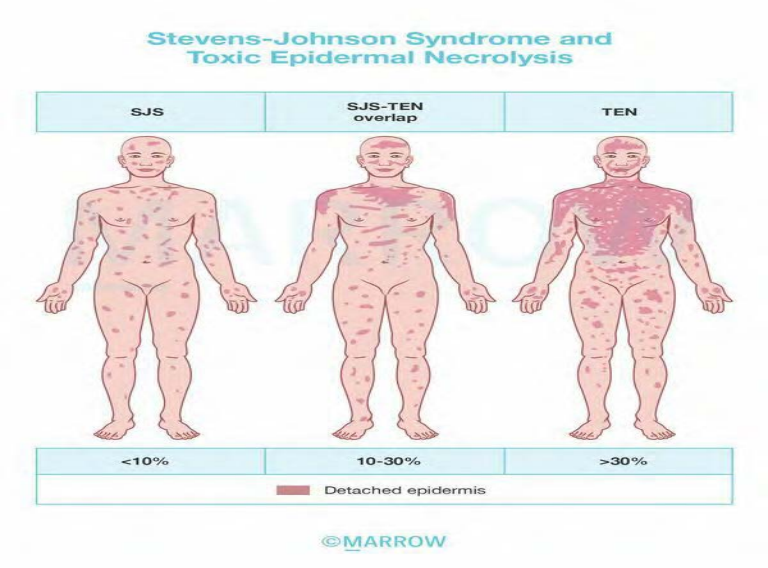
Solution to Question 4:

Stevens-Johnson syndrome (SJS) involves less than 10% of body surface area (BSA).

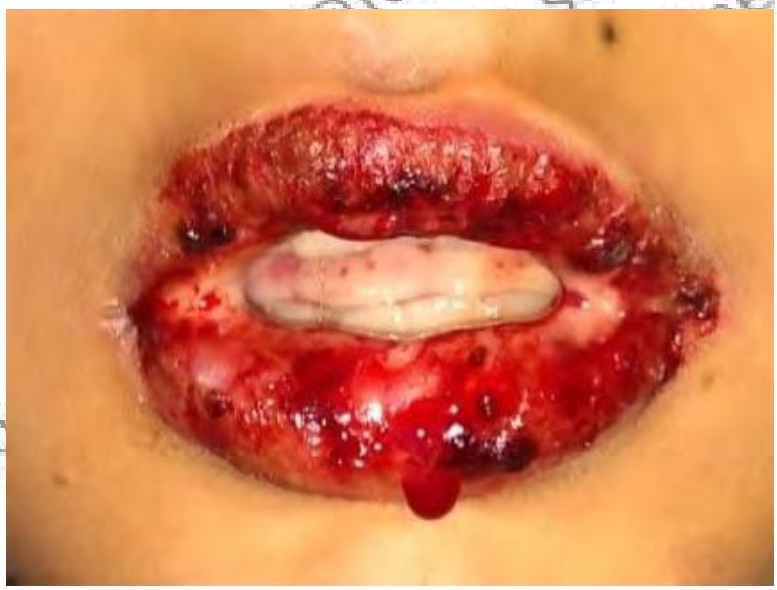
Stevens-Johnson syndrome and toxic epidermal necrolysis (TEN) are severe mucocutaneous reactions, usually to drugs, characterized by blistering and epithelial sloughing. The two terms describe phenotypes within a severity spectrum, where SJS is the less extensive form and TEN is the more extensive.

Based on the type of cutaneous lesion and extent of maximal epidermal detachment, the disease is classified as:

Disease	Epidermal detachment	Purpuric macules and atypical target lesions
SJS	<10%	Present
Overlap SJS-TEN	10-30%	Present
TEN with spots	>30%	Present
TEN without spots	>30% (large sheets of epidermal loss)	Absent



The image below shows SJS in the early stages with mucosal involvement.



Solution to Question 5:

The image shows atypical target lesions with 2 zones. The rash and flaccid blisters affecting the back (epidermal detachment <10% BSA), conjunctivitis, cheilitis (mucosal involvement), with the history of drug intake (triggering factor) favor a diagnosis of Stevens-Johnson syndrome.

Option A: Fixed drug eruptions present up to 8 hours of drug intake. These are erythematous lesions that heal with hyperpigmentation. Mucosal involvement is rare.

Option B: Erythema multiforme shows typical target or raised atypical target lesions, that develop over few days and resolve in 2 to 3 weeks. Mucosal involvement is rare if the trigger is a drug.

Option D: In toxic epidermal necrolysis, >30% of body surface area is involved. Diffuse generalized epidermal detachment is seen with extensive mucosal involvement.

Solution to Question 6:

Blistering and peeling involving greater than 30% of the body surface area points to the diagnosis of toxic epidermal necrolysis (TEN). TEN is primarily drug■induced, with a culprit drug being demonstrated in approximately 85% of cases.

Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are both severe mucocutaneous reactions, characterized by blistering and epithelial sloughing. The two terms describe phenotypes within a severity spectrum, where SJS is the less extensive form and TEN is the more extensive

Common drugs that can cause SJS/TEN are:

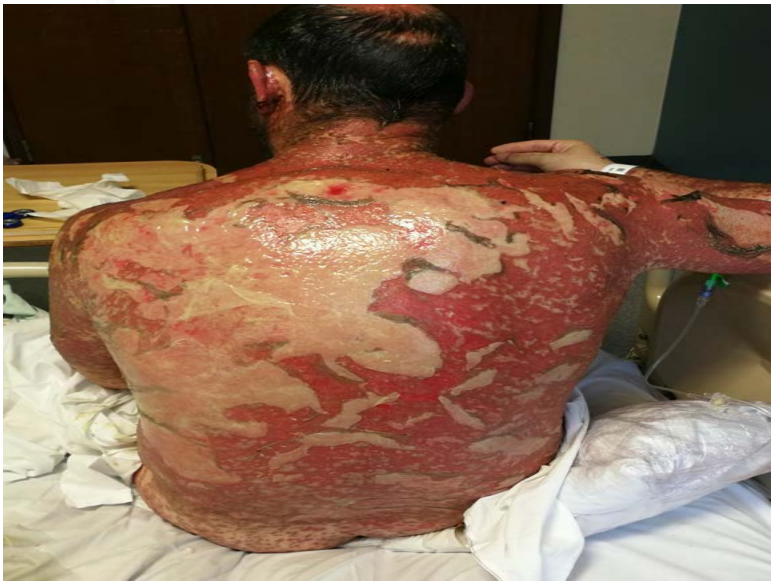
• Allopurinol

• NSAIDs- oxicam group

• Anti-epileptics - phenobarbital, phenytoin, carbamazepine, lamotrigine

• Antibiotics - penicillins, cephalosporins, sulfamethoxazole, sulfasalazine, nevirapine

Disease	Epidermal detachment	Purpuric macules and atypical target lesions
SJS	<10%	Present
Overlap SJS-TEN	10–30%	Present
TEN with spots	>30%	Present
TEN without spots	>30% (large sheets of epidermal loss)	Absent



Solution to Question 7:

As more than 30% of the body surface is involved, the diagnosis is toxic epidermal necrolysis (TEN). SJS/TEN is primarily a drug■induced phenomenon, with a culprit drug being demonstrated in approximately 85% of cases.

Common drugs that can cause SJS/TEN are:

• Allopurinol

• NSAIDs - oxicam group

• Anti-epileptics - phenobarbital, phenytoin, carbamazepine, lamotrigine

• Antibiotics - penicillins, cephalosporins, sulfamethoxazole, sulfasalazine, nevirapine

In 15% of the cases, where the drug cannot be identified, especially in children, appear to be triggered by infections, most notably by Mycoplasma pneumoniae.

Note: FDA recommends genotyping before starting carbamazepine, as HLA B1502 allele which is seen in increased frequencies among Asians is implicated in carbamazepine induced SJS/TEN.

Solution to Question 8:

The characteristic lesion healing with hyperpigmentation following drug intake is consistent with fixed drug eruption. NSAIDs are the most commonly implicated drug.

Fixed drug eruption (FDE) is a cutaneous adverse drug reaction characterized by recurrent well■defined lesions occurring at the same sites each time the offending drug is taken. It typically presents 30 min to 8 h after drug exposure.

The most common drugs that act as triggers are:

• NSAIDs (25%)

• Paracetamol (15%)

• Cotrimoxazole

• Tetracyclines

FDE is a form of classical delayed■type hypersensitivity reaction.

Typically, FDE presents as a sharply defined, round, or oval erythematous and oedematous plaque, which evolves to become dusky, violaceous, and occasionally vesicular or bullous lesions. Lesions are usually solitary or few in number.

Commonly affected sites include the lips, genitals, palms, and soles; 5% of cases may have an exclusive mucosal involvement. Overall, the most common site involved is the genitalia.

The majority of FDE is self■limiting with an excellent prognosis.

Note: The generalized bullous form of FDE should be differentiated from toxic epidermal necrolysis by prior similar history, absence of target lesions, and no involvement of mucosal surfaces.

Solution to Question 9:

Glans penis is the best answer among the given options. Fixed drug eruptions(FDE) can occur anywhere in the body. However, 50% of FDE occurs in the genital and oral mucosa. The other common sites are palms and soles.

Drug■specific clinical patterns have been reported. These include the following:

• NSAID■induced FDE - genitals and lips

• Tetracycline and trimethoprim/sulfamethoxazole■induced FDE - genitals

• Metamizole■induced FDE - trunk and extremities

• Carbocysteine■induced FDE - face

The image below shows hyperpigmentation on the glans penis- healed fixed drug eruption.

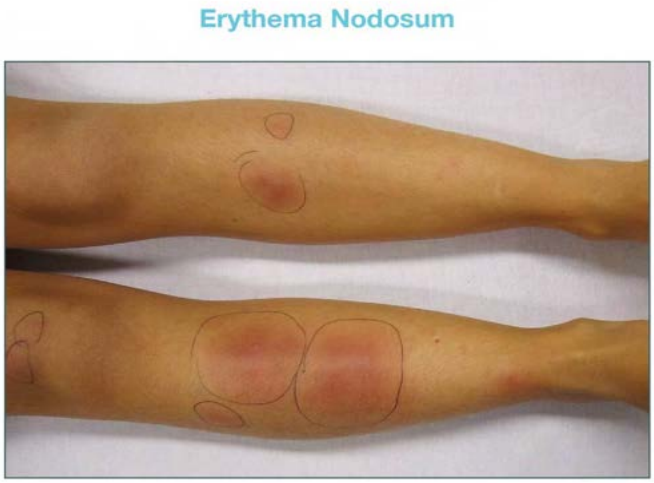
Solution to Question 10:

Erythema nodosum (EN) is a cutaneous reactive septal panniculitis with no vasculitis to a variety of stimuli.

It is believed to be a type IV delayed hypersensitivity reaction to various antigens including medicines.

It presents with symmetrical, erythematous, and tender subcutaneous nodules or plaques which are typically distributed over the anterior aspect of the limbs. Over a few days, these lesions become purplish before finally turning brown. Ulceration never occurs.

The clinical course is self■limiting following drug withdrawal and usually resolves within 2–4 weeks.



Solution to Question 11:

The description is classical of erythema nodosum. They are not seen in chronic pancreatitis.

Aetiological factors in erythema nodosum:

• NO- Idiopathic, pregnancy

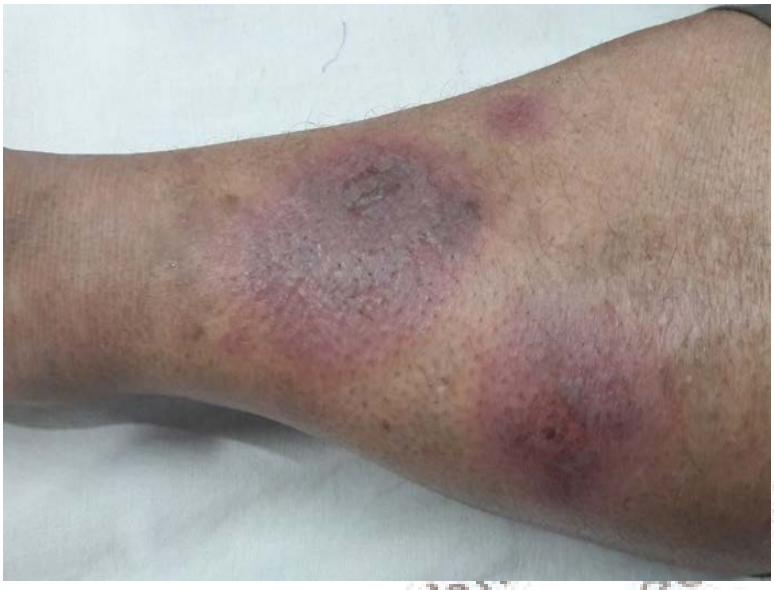
• DO-Drugs - oral contraceptives, hormonal replacement therapy, sulphonamides, and penicillin

• S- Sarcoidosis, Sweet syndrome, SLE, RA, Reiter's syndrome

• U- Ulcerative colitis, Crohn's disease, Behcet's disease

• M- Malignancy, and microbiology(Infections - Group A β-hemolytic streptococcus infection (most common), brucella, toxoplasmosis, CMV, E.coli, yersinia, tuberculosis)

The image below shows erythema nodosum.



Solution to Question 12:

The most commonly affected internal organ in DRESS syndrome is the liver. Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) syndrome is an idiosyncratic multisystem drug hypersensitivity disorder.

DRESS is characterized by an urticarial papular rash suspected to be drug induced, accompanied by a fever, lymphadenopathy and systemic symptoms referring to derangement of the function of at least one organ system, and haematological abnormalities.

The latency period from drug intake to the appearance of symptoms is 2–6 weeks.

The most commonly implicated drugs in DRESS syndrome are:

• Antiepileptics – carbamazepine, phenytoin, lamotrigine

• Antibiotics – vancomycin, amoxicillin, minocycline, piperacillin-tazobactam

• Sulpha drugs – sulphasalazine, dapsone, sulphadiazine

• Furosemide

• Omeprazole

• Ibuprofen

The most severe and life■threatening complication of DRESS is fulminant liver failure.

The majority of patients with DRESS will recover fully, following withdrawal of the culprit drug and management of the acute episode with systemic corticosteroid therapy, IVIG therapy and other supportive measures.

Note: DRESS syndrome is now declared as an adverse effect of the commonly used painkiller Mefenamic acid.

Solution to Question 13:

Lyell's syndrome is another name for toxic epidermal necrolysis, which is characterized by erosions of more than 30% of body surface area.

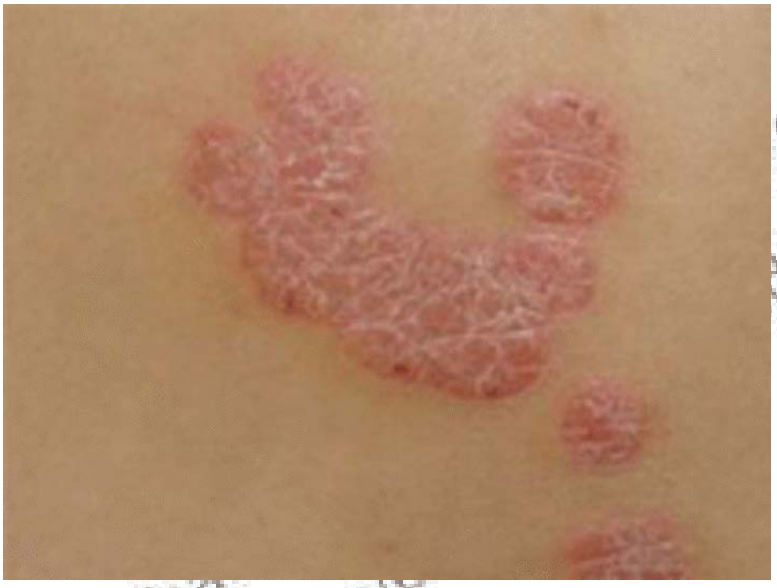
Based on the type of cutaneous lesion and extent of maximal epidermal detachment, the disease is classified as:

Disease	Epidermal detachment	Purpuric macules and atypical target lesions
SJS	<10%	Present
Overlap SJS-TEN	10-30%	Present
TEN with spots	>30%	Present
TEN without spots	>30% (large sheets of epidermal loss)	Absent

Papulosquamous Disorders

Question 1:

As a first-year dermatology resident, you see a patient with the following skin lesion. Which of the following disorders is least likely to present in this form?



a) Reiter's disease

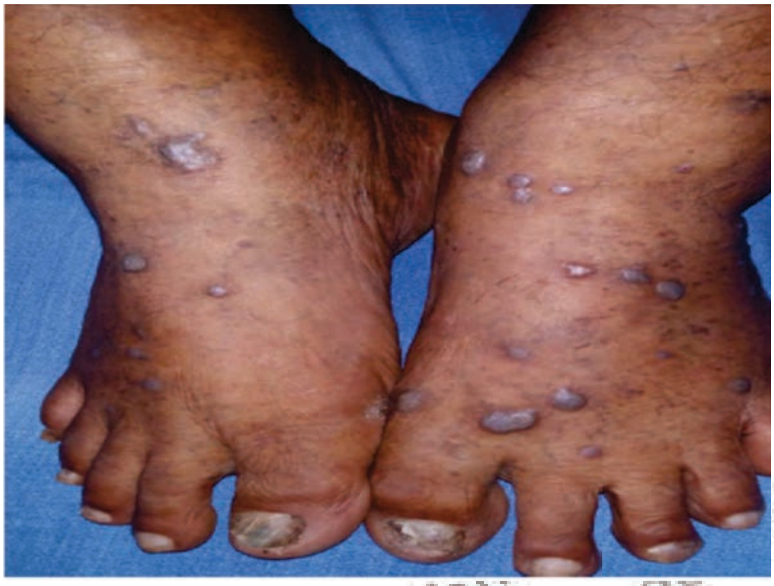
b) Secondary syphilis

c) Mycosis fungoides

d) Basal cell carcinoma

Question 2:

A patient presented with the following itchy cutaneous lesions to the OPD. What is the most likely diagnosis?



a) Lichen planus

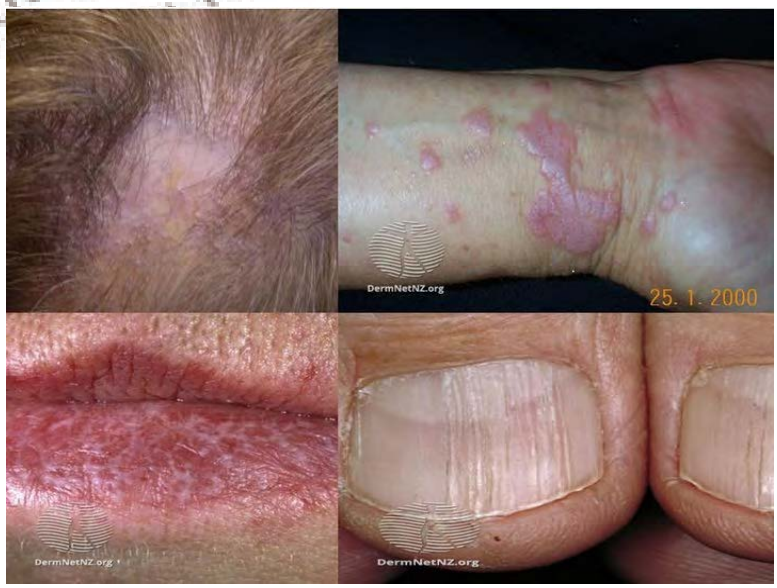
b) Psoriasis

c) Pityriasis rubra pilaris

d) Pityriasis rosea

Question 3:

As a first-year dermatology resident, you see a patient with the following findings. What is the most likely diagnosis?



a) Pityriasis rubra pilaris

b) Psoriasis

c) Pityriasis rosea

d) Lichen planus

Question 4:

In which of the following conditions is basal epidermal cell degeneration characteristically seen?

a) Psoriasis

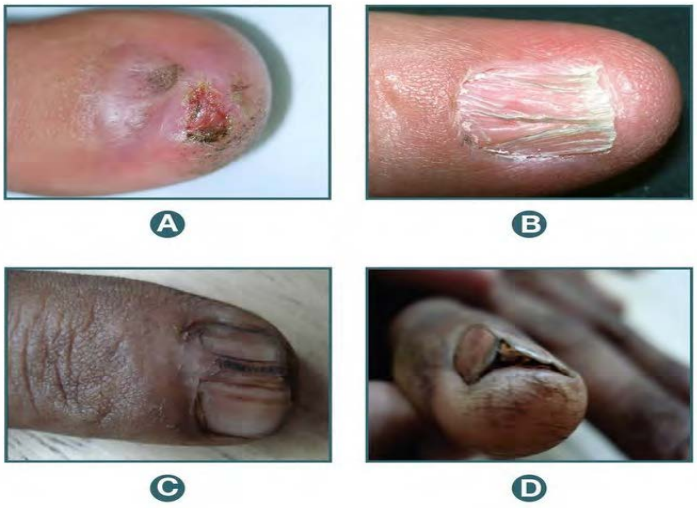
b) Lichen planus

c) Pemphigus vulgaris

d) Pityriasis rubra pilaris

Question 5:

A dermatologist sees four patients who are known cases of lichen planus. The nail findings of each of these patients are depicted below. Which patient shows the most specific nail finding seen in this disease?



a) Patient A

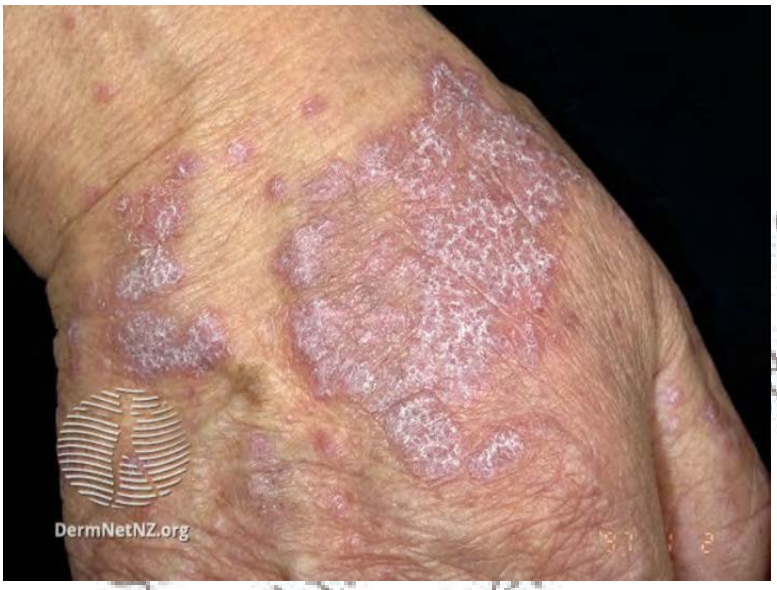
b) Patient B

c) Patient C

d) Patient D

Question 6:

A 30-year-old female presents with subtle, fine, reticulate lacy -white, papules on the vulva, and the following cutaneous finding. Choose the most appropriate treatment strategy.



a) Topical steroids

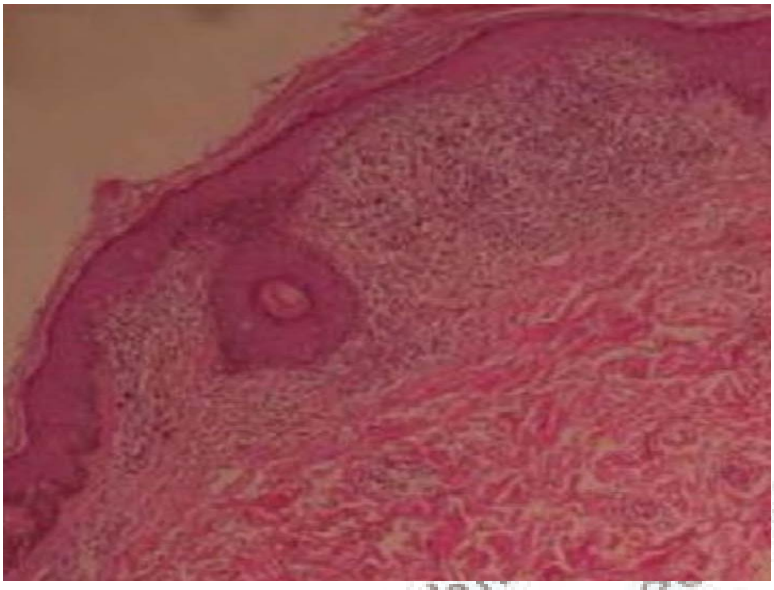
b) Interferons

c) Methotrexate

d) PUVA

Question 7:

A 6-year-old boy has tiny pinhead-sized flesh-colored papules over his elbow and penis. Histopathology of the lesion reveals the following feature. What is the most probable diagnosis?



a) Lichen planus

b) Pityriasis rubra pilaris

c) Pityriasis rosea

d) Lichen nitidus

Question 8:

Which of the following is not true about lichen nitidus?

a) It presents with tiny pinhead-sized papules mainly on forearms

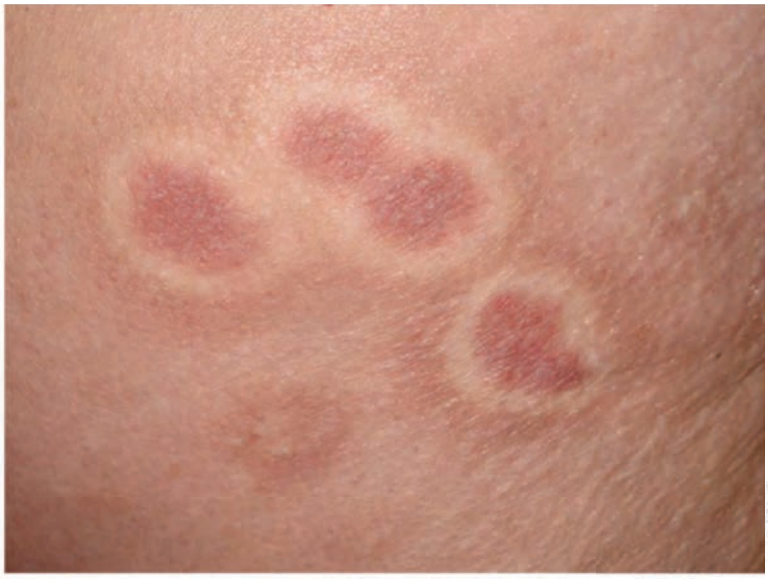
b) Mucous membrane lesions are rare

c) Most commonly seen in elderly individuals

d) Koebner's phenomenon is seen

Question 9:

A patient on regular follow-up for a dermatological condition presents with the following finding. Which of the following conditions is this most likely to be associated with?



a) Lichen planus

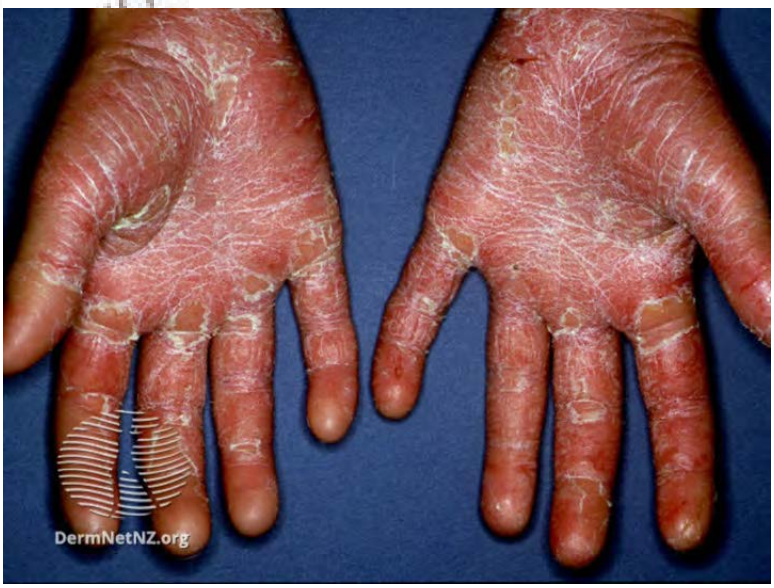
b) Psoriasis

c) Pityriasis rubra pilaris

d) Pityriasis rosea

Question 10:

A 40-year-old man presented to the dermatology OPD with the following finding. These lesions were insidious in onset. He was diagnosed with pityriasis rubra pilaris. Which of the following features is least likely to be found in this patient?



a) Nail pitting will be minimal

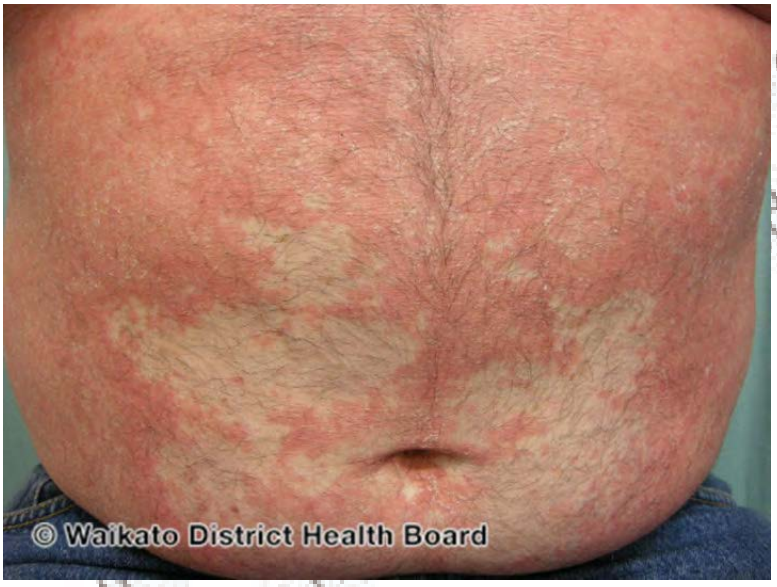
b) Islands of sparing

c) Herald patch

d) Nutmeg grater papules

Question 11:

A patient presented to the OPD with the following cutaneous lesions. What is the most likely diagnosis?



a) Psoriasis

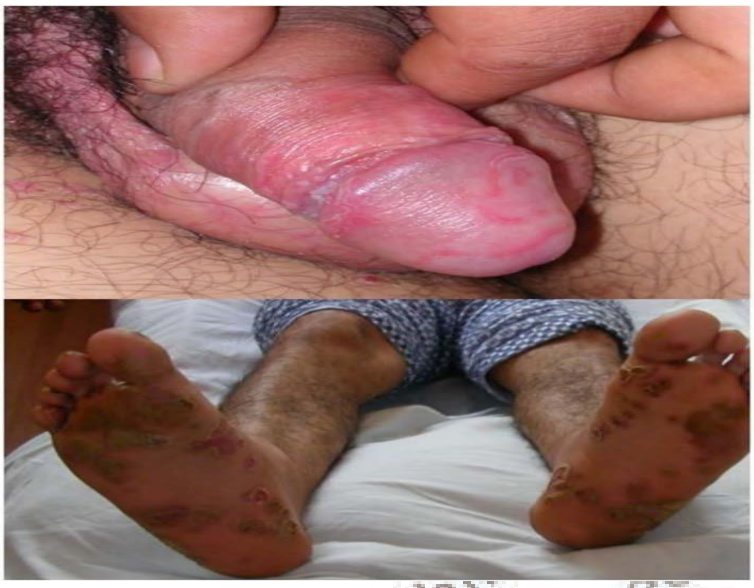
b) Lichen nitidus

c) Pityriasis rosea

d) Pityriasis rubra pilaris

Question 12:

A 24-year-old man presented to the OPD with painless penile lesions and painful lesions on his feet as shown below. What is the most likely diagnosis?



a) Psoriasis

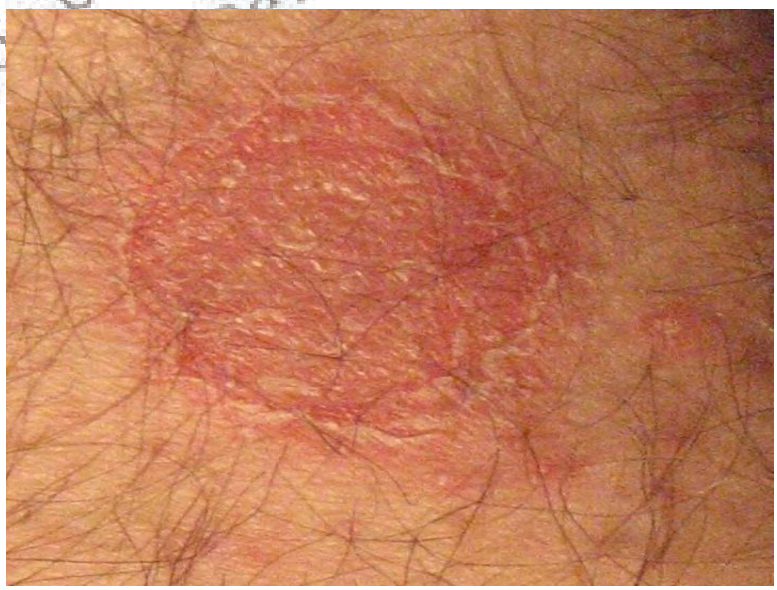
b) Pityriasis rubra pilaris

c) Reiter's syndrome

d) Lichen planus

Question 13:

In which of the following conditions is this type of scale characteristically seen?



a) Tinea corporis

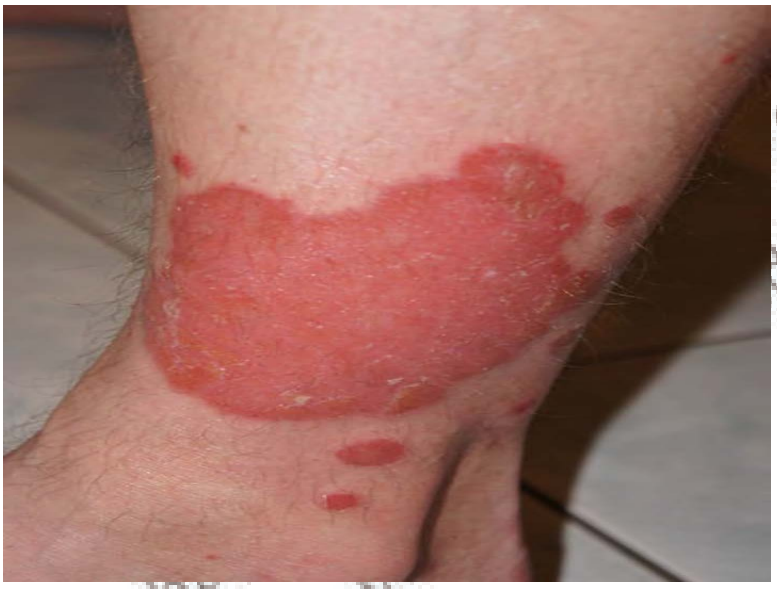
b) Seborrheic dermatitis

c) Pityriasis rosea

d) Ichthyosis vulgaris

Question 14:

A patient presented to the dermatology OPD with the following skin finding. What is the most likely diagnosis?



a) Lichen planus

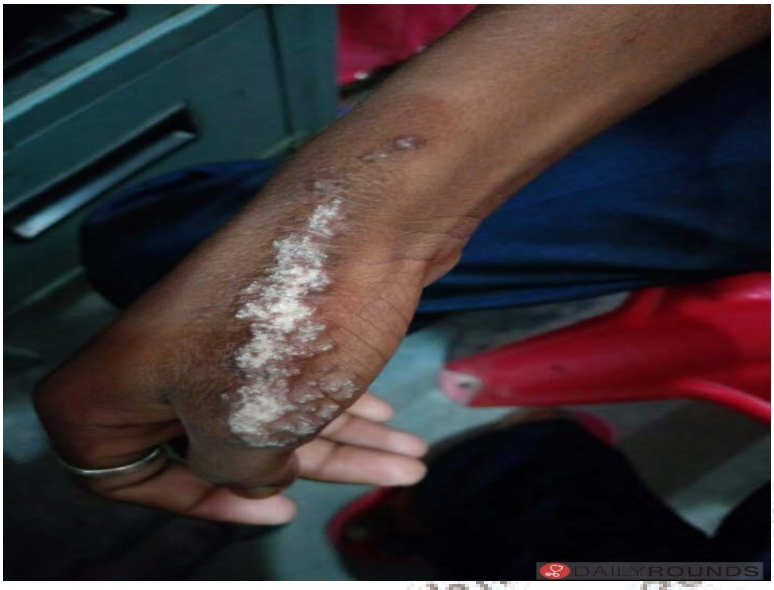
b) Psoriasis

c) Pemphigus

d) Pityriasis rubra pilaris

Question 15:

Identify the finding associated with the condition shown in the image below.



a) Isomorphic phenomenon

b) Meyerson phenomenon

c) Gottron's papule

d) Nikolsky's sign

Answer Key

Question No.	Correct Option
1	d
2	a
3	d
4	b
5	c
6	a
7	d
8	c
9	b
10	c
11	d
12	c
13	c
14	b

15	a

Detailed Explanations

Solution to Question 1:

The image shows a papulosquamous lesion. Basal cell carcinoma does not cause papulosquamous lesions.

Papulosquamous disorders are diseases that present with papules/plaque with scaling. They include:

- Lichen planus
- Psoriasis
- Parapsoriasis
- Pityriasis rubra pilaris
- Pityriasis rosea
- Seborrheic dermatitis
- Secondary syphilis
- Drug reactions
- Reiter's disease
- Eczema
- Neoplasms (mycosis fungoides, squamous cell carcinoma, Bowen's disease)
- Tinea infection

Solution to Question 2:

The skin lesion in the above image shows characteristic purple, flat, polygonal papules seen in lichen planus.

The lesions of lichen planus can be described as 5Ps — purple, polygonal, pruritic, plane topped (flat), papules.

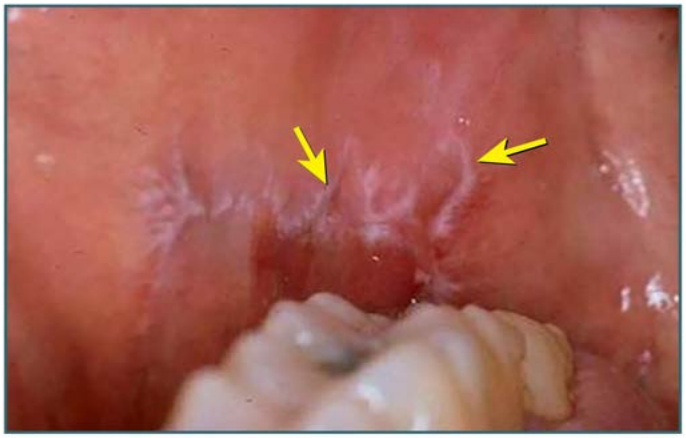
Solution to Question 3:

Cicatrizing alopecia, flat-topped, purple, polygonal, papules and plaques on the flexural aspect of the wrist, Wickham's striae on the lips, longitudinal ridging, and thinning of nails are features of lichen planus.

Mucous membrane lesions are very common in lichen planus, occurring in almost 30–70% of cases. It is mostly seen on the tongue and buccal mucosa and also on the genitals and anal mucosa.

White streaks forming a lacework in buccal mucosa are a characteristic feature and are known as Wickham's striae.

Wickham's Striae on the buccal mucosa.



Solution to Question 4:

Basal epidermal cell degeneration/destruction is characteristically seen in lichen planus.

It occurs because of the basal keratinocytes being destroyed by dermal CD8+ T lymphocytes. Degenerating/apoptotic basal epidermal cells are known as colloid bodies (cytoid/Civatte bodies), which may appear singly or in clumps.

Other histopathological features of lichen planus:

• Hyperkeratosis and hypergranulosis

• Pigment incontinence - melanin gradually moves into the dermis as a result of keratinocyte degeneration

• Dermal melanin is then engulfed by the macrophages forming melanophages (melanin-containing macrophages).

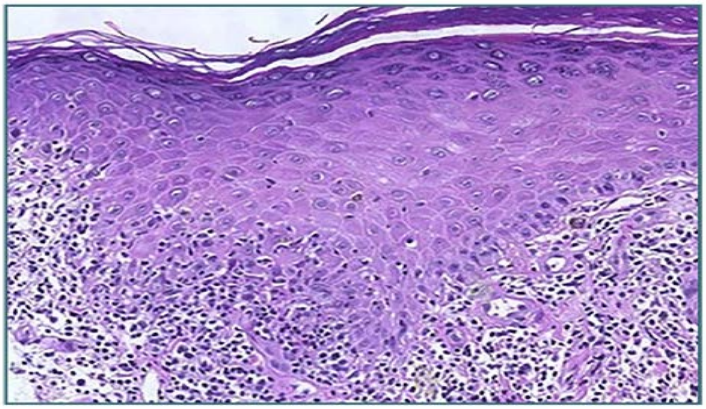
• The degeneration leads to the formation of spaces in the epidermis known as Max-Joseph spaces.

• The rete ridges are pointed at their lower end giving them a saw-toothed appearance.

• Band-like lymphocytic infiltrate is present at the dermoepidermal junction.

The image below show the HPE of lichen planus.

HPE Lichen Planus

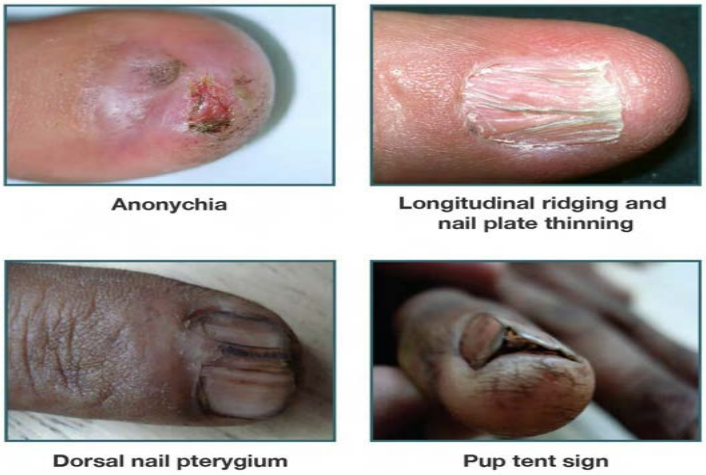


©MARROW

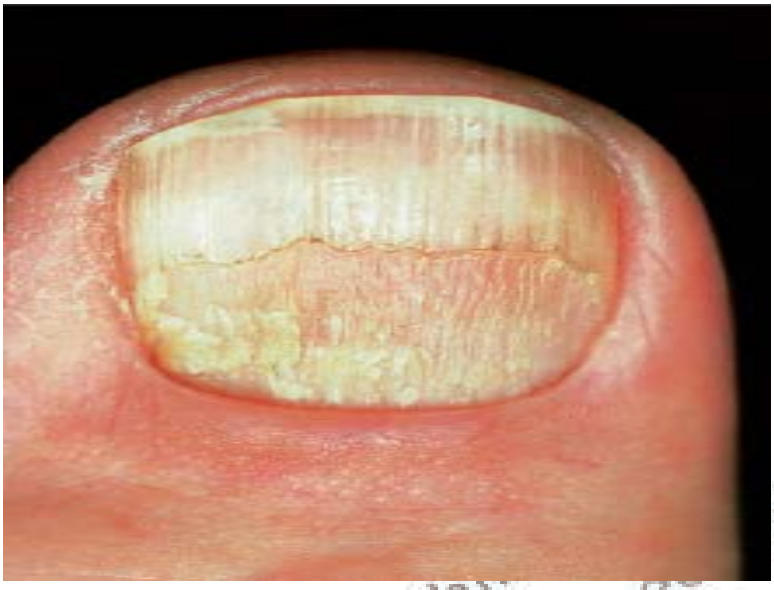
Solution to Question 5:

Dorsal nail pterygium (image C) is the most specific nail change in lichen planus.

Nail changes in lichen planus



The image below shows thinning of nail plate and longitudinal striations - the most common feature.



Solution to Question 6:

The image shows purple, polygonal, flat-topped papules and plaques along with Wickham's striae on the dorsum of the hand, and similar lesions present on the vulva, the age of the patient point towards a diagnosis of lichen planus. The main treatment in the case of persistent lichen planus is steroids.

First-line therapy is always topical steroids.

Second-line treatment is with systemic steroids, retinoids, and PUVA.

Solution to Question 7:

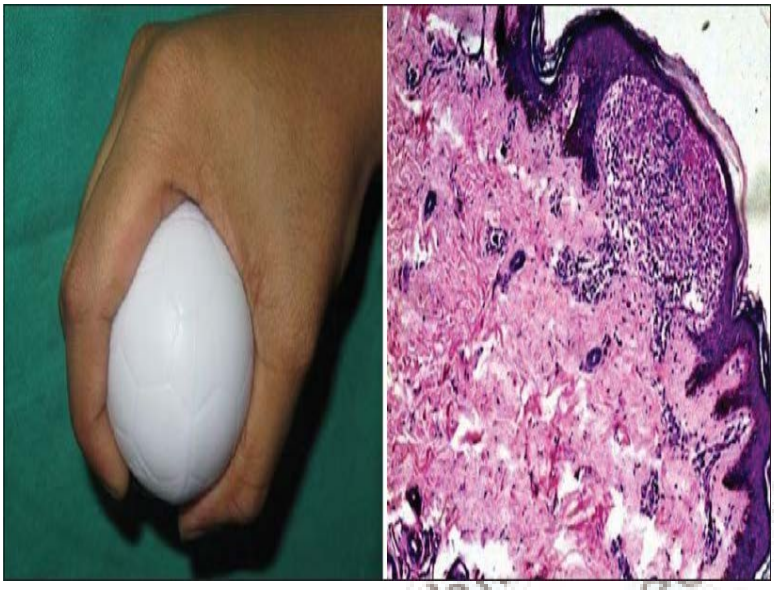
Lichen nitidus has a characteristic histopathology of 'claw clutching a ball' appearance as shown in the image.

Lichen nitidus presents with tiny pinhead-sized flesh-colored papules mainly on the dorsum of forearms or penis. Lichen nitidus is considered to be a variant of lichen planus as both are histologically similar in early lesions.

Ball and claw configuration: The ball is comprised of well-circumscribed granulomatous infiltrate of lymphocytes, epithelioid cells and occasional Langhans giant cells that are clutched by surrounding hyperplastic rete ridges, giving the overall "claw clutching ball" appearance.

Lesions are usually asymptomatic and rarely require any treatment.

The image below shows histology of lichen nitidus showing well-defined granuloma enclosed by rete pegs giving the appearance of 'claw clutching a ball'.



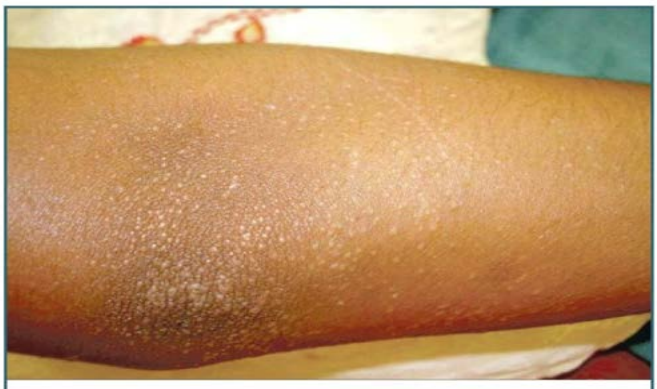
Solution to Question 8:

Most cases of lichen nitidus occur in children or young adults.

It presents with tiny pinhead-sized flesh-colored papules mainly on the dorsum of the forearms or penis. It is histologically similar to the early lesions of lichen planus. Mucous membrane involvement is quite rare. True Koebner's phenomenon is seen.

Lesions are self-resolving and no treatment is required.

Lichen nitidus



Pinhead-sized flesh-colored papules seen.

Solution to Question 9:

Woronoff's ring is a skin condition characterized by a blanched halo of approximately uniform width surrounding psoriatic lesions after phototherapy or topical treatments.

A major cause of the Woronoff ring is suspected to be due to alterations in prostaglandin metabolism.

Solution to Question 10:

Herald patch is seen in pityriasis rosea.

The image shows prominent erythema and scale on the palms of the hands and wrists with marked orange■yellow palmoplantar keratoderma which is a feature of pityriasis rubra pilaris.

Features of pityriasis rubra pilaris:

• Salmon red or orange red-colored dry scaly plaques are seen characteristically, which coalesce together, leaving islands of normal skin, typically known as 'islands of sparing' in between the lesions

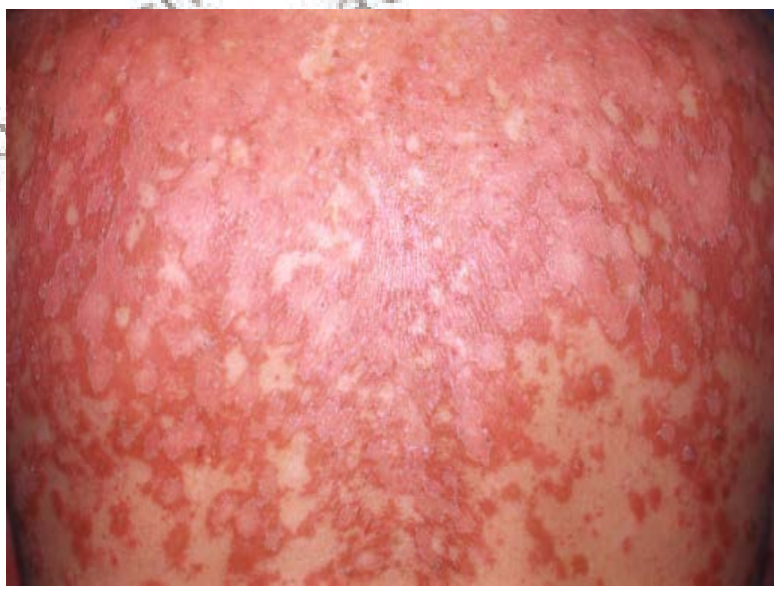
• Most common site - trunk

• On the elbow and wrist, nutmeg grater papules are seen due to follicular hyperkeratosis

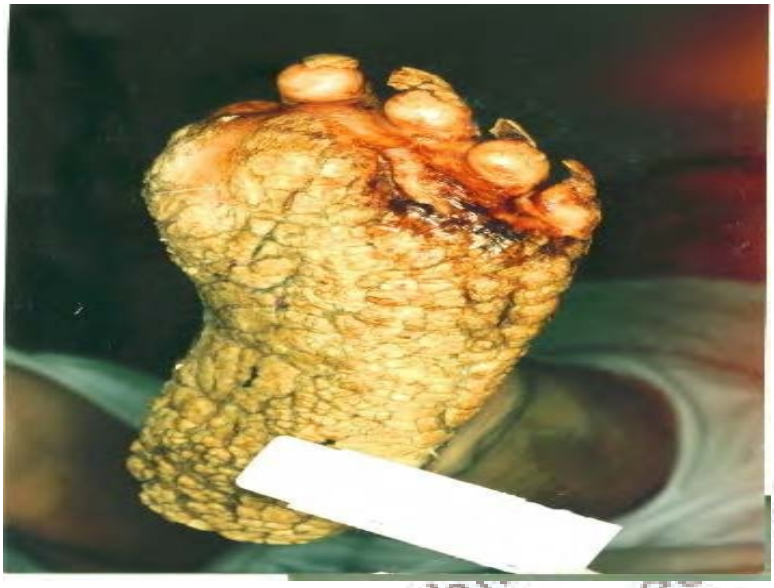
• Palmoplantar keratoderma - keratoderma on the sole is very thick that it appears as a sandal. (keratotic sandal)

• Nails - thickened, discoloured distally, showing splinter hemorrhages

The image below shows islands of sparing in pityriasis rubra pilaris.



The image below shows keratotic sandal.



Solution to Question 11:

This is an image of erythematous follicular hyperkeratosis, parakeratosis, and acanthosis with characteristic islands of sparing as seen in pityriasis rubra pilaris. This is mainly seen over the elbows, knees, wrists, and back of fingers.

Clinical features of pityriasis rubra pilaris:

• Nutmeg grater appearance

• Well■defined salmon■red or orange-red dry scaly plaques, which may coalesce and become widespread

• Typically islands of normal skin are present - 'islands of sparing'

• Starts on the scalp before spreading down over the rest of the body

• Some patients may become erythrodermic

• Pruritus (early stages)

The image below shows a nutmeg grater

Solution to Question 12:

Image 1 shows circinate balanitis characterized by small, shallow, painless ulcerative lesions on the glans penis. Image 2 shows keratoderma blenorrhagica characterized by skin lesions seen over the palms and soles which begin as vesicles on erythematous bases and progress to pustular keratotic lesions that coalesce to form plaques. Keratoderma blenorrhagica and circinate balanitis are both features of Reiter's syndrome.

The classical triad of Reiter's syndrome consists of:

• Urethritis

• Acute non-purulent seronegative arthritis

• Conjunctivitis

Note: Keratoderma or keratotic sandals is seen in pityriasis rubra pilaris.

Solution to Question 13:

The image shows a collarette scale which is a fine, peripherally attached and centrally detached scale at the edge of an inflammatory lesion. It is seen in pityriasis rosea.Pityriasis rosea is an acute self■limiting disease affecting mainly children and young adults. It is characterized by a distinctive skin eruption and minimal constitutional symptoms. It is associated with human herpesvirus 7 and 6 (HHV-7 & HHV-6).

Appearance of scales:

• Herald patch - Large and conspicuous eruptions on the thigh, upper arm, trunk or neck covered by fine scales

• After 5-15 days, it turns into discrete oval lesions, dull pink in colour and covered by fine dry silvery-grey scales.

• It is followed by a marginal collarete of scale with a central clearing. The scales are attached peripherally with the free edges attached internally. It is also called hanging curtain sign

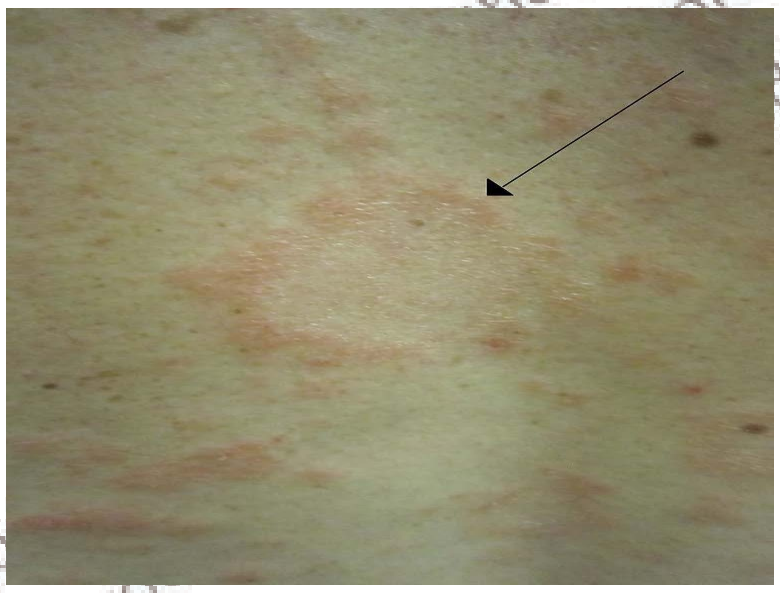
• The long axes of the lesions characteristically follow the lines of cleavage parallel to the ribs in a christmas tree pattern on the upper chest and back.

Option A: Annular lesions with central clearing and peripheral scaling, associated with severe itching are characteristic of tinea corporis.

Option D: In icthyosis vulgaris, dry, fine fish-like scales are noted.

Option B: Seborrheic dermatitis shows red, itchy flaky scales over the scalp and other seborrheic areas.

The image below shows a Herald patch.



Solution to Question 14:

The given image shows a typical erythematous psoriatic plaque with silvery-white scales. The site of predilection in psoriasis is usually extensor areas.

Option A: Lichen planus presents with plane, polygonal, purple, pruritic, papules (5Ps).

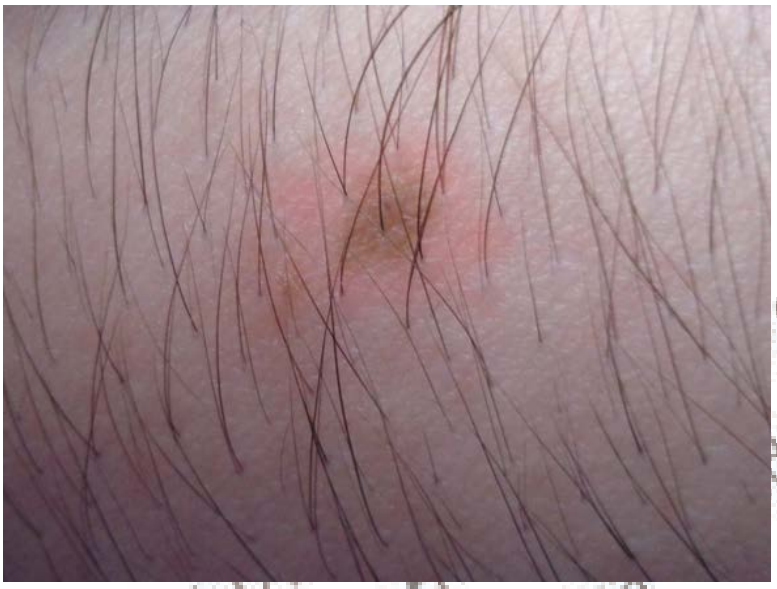
Option C: Pemphigus presents with erosions on the skin and flaccid blisters.

Option D: Pityriasis rubra pilaris presents with red follicular hyperkeratotic papules on the trunk with islands of sparing.

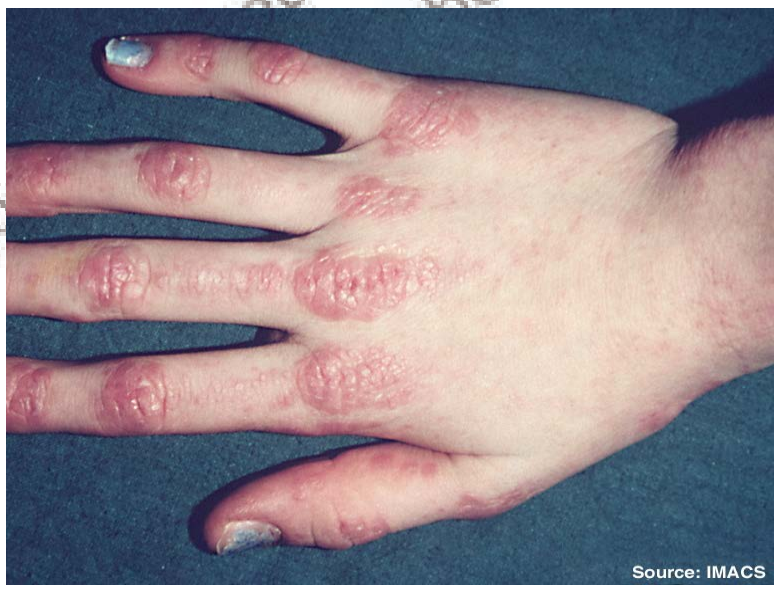
Solution to Question 15:

The image shows plaque psoriasis of the dorsum of the hand, and isomorphic or Koebner phenomenon is associated with the condition.

Option B: Meyerson phenomenon refers to the formation of an eczematous ring around a melanocytic nevus.

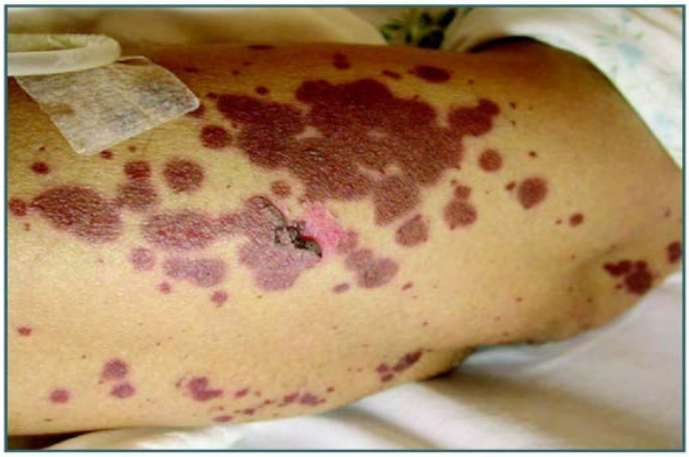


Option C: Gottron's papules are violaceous, erythematous papules overlying the dorsal interphalangeal or metacarpophalangeal, elbow, or knee joints.



Option D: Nikolsky sign refers to easy peeling of skin on applying tangential pressure over a bony prominence and is classically seen in pemphigus and staphylococcal scalded skin syndrome.

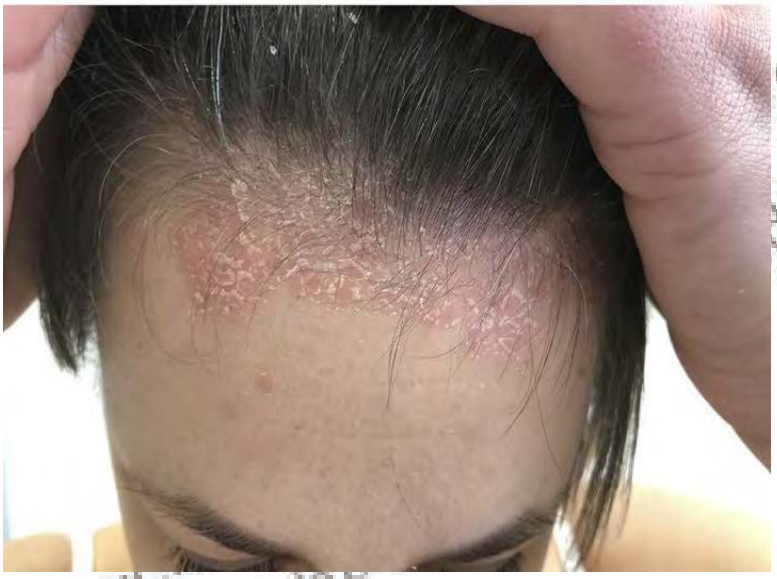
Nikolsky's sign



Psoriasis

Question 1:

A patient presented to her primary care physician with an itchy scalp and dandruff. On examination, the following finding was seen and the Auspitz sign was present. This disease is least likely to affect the _____.



a) Axilla

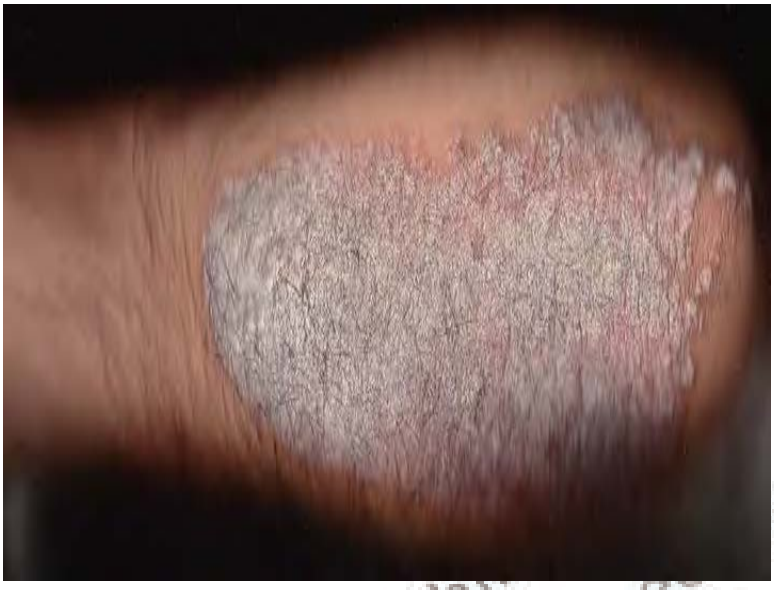
b) Lower back

c) Elbows and knees

d) Gluteal cleft

Question 2:

A 30-year-old man presents with the following skin finding. Which of the following clinical tests will aid in diagnosis?



a) Grattage test

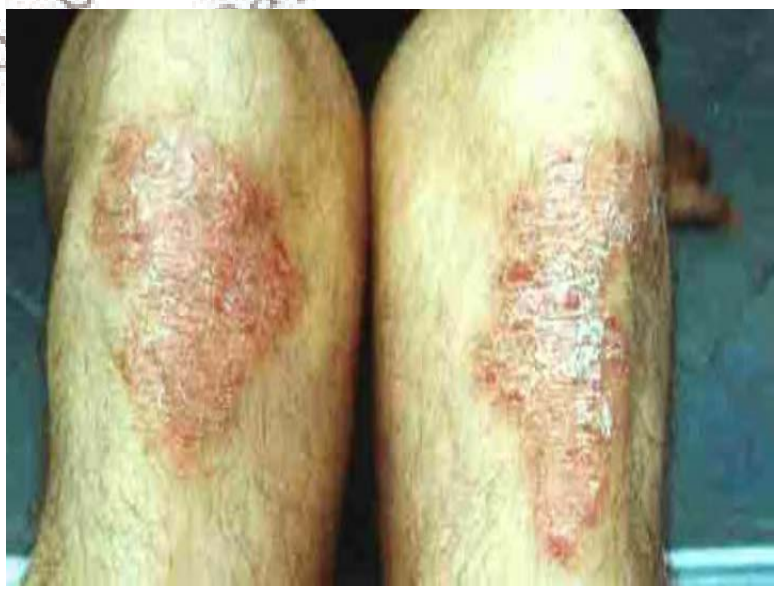
b) KOH smear

c) Besnier's sign

d) Skin biopsy

Question 3:

Which of the following statements is not true regarding the given condition?



a) It is an inflammatory, non-infectious disease

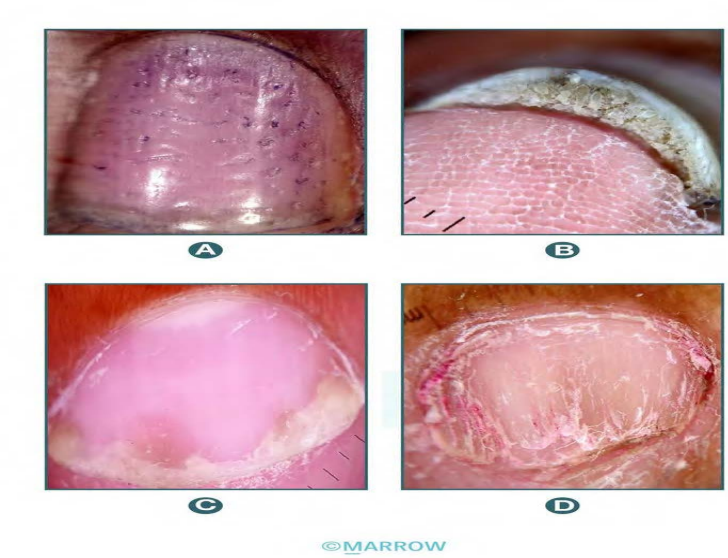
b) Nail pitting is superficial and regular.

c) Joint involvement is seen in 5-30% of patients.

d) Koebner's phenomenon is seen.

Question 4:

While collecting data on nail changes in psoriasis patients, you note the following findings. Which of the following is the most specific finding for this condition?



a) Image A

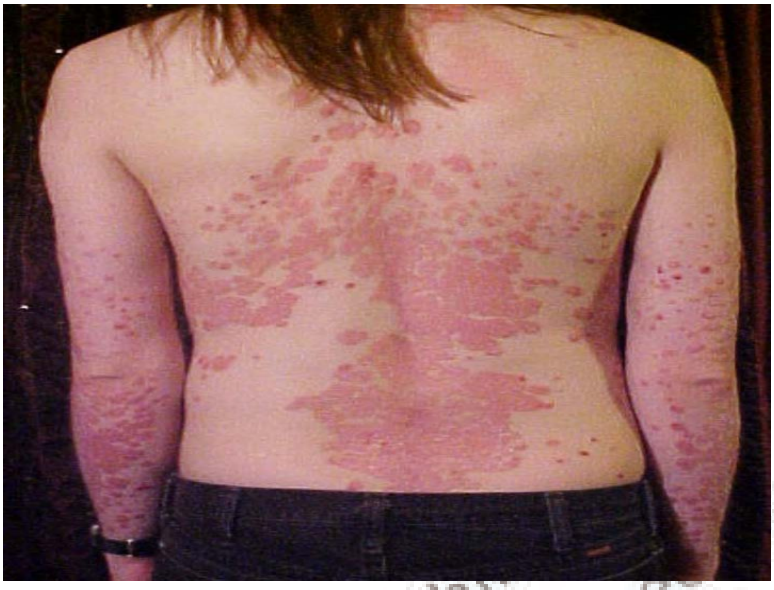
b) Image D

c) Image C

d) Image B

Question 5:

A model presents to the OPD with the following cutaneous lesions. She informs the dermatologist that these lesions increase in size whenever she consumes alcohol and that they bleed whenever she scratches them. Which of the following is false regarding the pathogenesis of her condition?



a) Hyperproliferation of epidermis

b) Genetic predisposition HLA■C:06:02

c) Deficient Th1 and Th17 helper cells

d) IFN-γ, TNF-° , IL-17 levels are raised

Question 6:

Which of the following drugs is not responsible for an exacerbation of psoriasis?

a) Atenolol

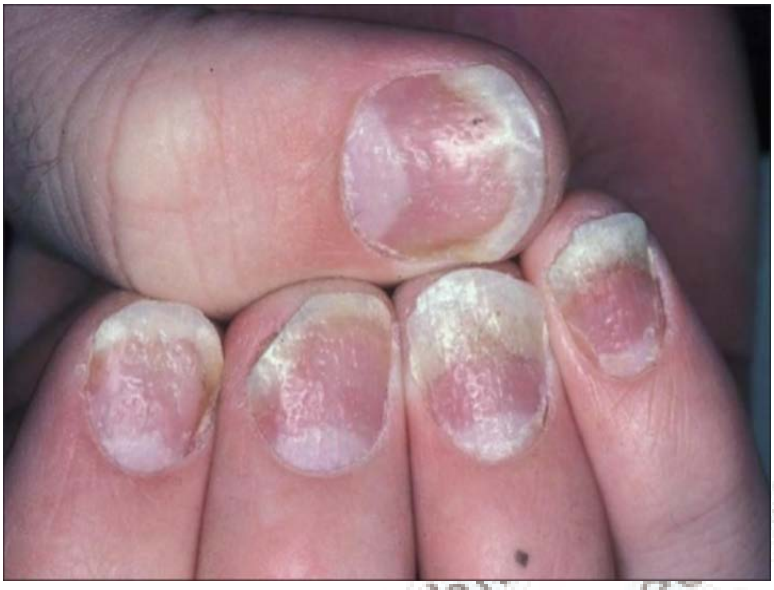
b) Enalapril

c) Lithium

d) Levothyroxine

Question 7:

A patient who presented to the OPD with a papulosquamous lesion has the following nail finding. Histopathology of the skin lesion is unlikely to show which of the following?



a) Epidermal thickening

b) Suprapapillary thinning

c) Kogoj spongiform pustules

d) Pautrier's microabscess

Question 8:

Biopsy taken from a patient who presented with a papulosquamous skin disorder shows a camel foot appearance on HPE. Which disorder is she most likely suffering from?

a) Pityriasis rubra pilaris

b) Psoriasis

c) Lichen nitidus

d) Lichen planus

Question 9:

Which among the following is the most common presentation of psoriatic arthritis?

a) Classic psoriatic arthritis

b) Arthritis mutilans

c) Asymmetric oligoarthritis

d) Symmetric polyarthritis

Question 10:

A 40-year-old woman who presented with pain and stiffness in her hand for the past 6 weeks was diagnosed with classic psoriatic arthritis after a thorough workup. Which of the following joints is typically affected by this disorder?

a) Proximal interphalangeal joint

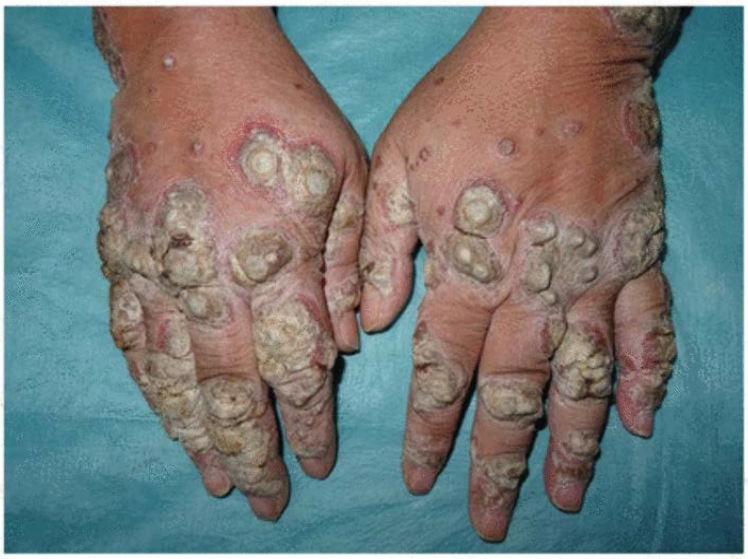
b) Distal Interphalangeal joint

c) Metatarsophalangeal joint

d) Metacarpophalangeal joint

Question 11:

A 42-year-old man with a history of psoriasis vulgaris was referred to the dermatology department with 6 weeks of worsening psoriasis. He was started on valproic acid for bipolar disorder 4 months prior. On examination, the following finding was noted. What is the most likely diagnosis?



a) Rupioid psoriasis

b) Photosensitive psoriasis

c) Small plaque psoriasis

d) Koebnerised psoriasis

Question 12:

In which variant of psoriasis is scaling absent?

a) Erythrodermic Psoriasis

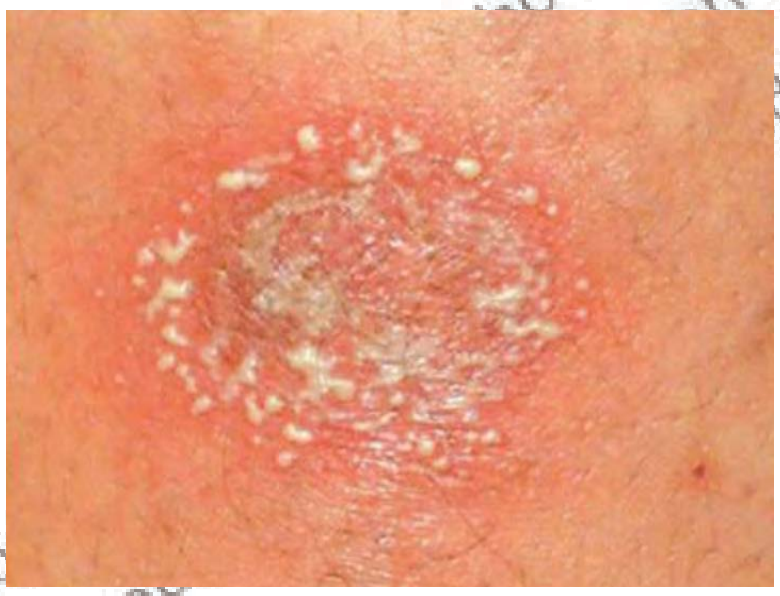
b) Guttate Psoriasis

c) Inverse psoriasis

d) Sebopsoriasis

Question 13:

A patient was treated with steroids for psoriasis. On stopping the treatment, he develops fever, malaise, and lesion as seen in the image below. What is the most probable diagnosis?



a) Pustular psoriasis

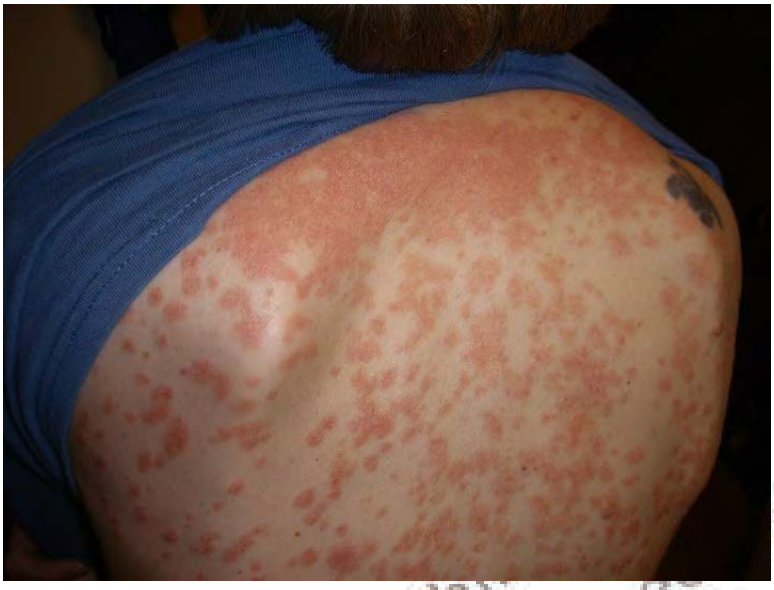
b) Staphylococcal infection

c) Acute generalised exanthematous pustulosis

d) Subcorneal pustulosis

Question 14:

A 9-year-old boy developed skin lesions on his trunk and proximal portion of his arms, 10 days after he recovered from an episode of pharyngitis. Which of the following statements are correct about this condition?



a) 2, 3

b) 2 and 5

c) 3, 4, and 5

d) 1 and 4

Question 15:

A dermatologist can use the Goekerman regimen to treat which of the following conditions?

a) Paraneoplastic pemphigus

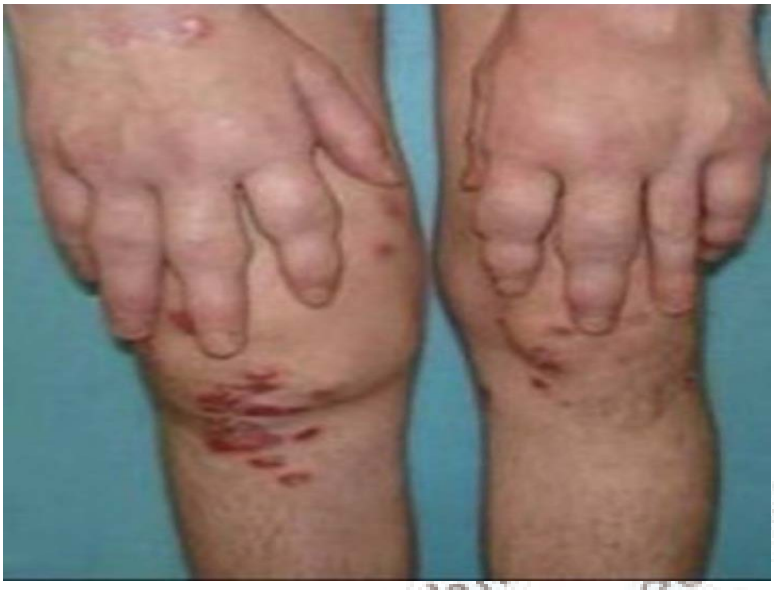
b) Psoriasis

c) Eczema

d) Lichen planus

Question 16:

What is the treatment of choice for a patient who presented with the following finding?



a) PUVA

b) Steroids

c) Methotrexate

d) Infliximab

Question 17:

A patient with a known case of chronic plaque psoriasis with more than 50% skin involvement presents to you. Which of the following will you not recommend?

a) Oral methotrexate

b) NB UVB

c) Oral steroids

d) Oral cyclosporine

Question 18:

In which of the following cases would you prescribe systemic corticosteroids?

a) 22-year-old woman with impetigo herpetiformis

b) 40-year-old man with severe psoriatic arthritis

c) 11-year-old boy with guttate psoriasis

d) 33-year-old woman with erythrodermic psoriasis

Question 19:

What is the treatment of choice for this patient?

a) Systemic steroids

b) Topical anthralin

c) Oral retinoids

d) PUVA

Question 20:

A dermatologist wants to prescribe acitretin to a patient with psoriasis. Which of the following statements is false regarding the drug?

a) Contraindicated in persons with hyperlipidemia

b) It can cause increased sensitivity to sunlight

c) Female patients should avoid getting pregnant for 6 months after therapy

d) Acitretin has a half life of about 50 hours

Question 21:

A researcher developed a drug 'X' that functions as an IL-17 receptor antagonist for the treatment of psoriasis. Identify drug 'X'.

a) Secukinumab

b) Ixekizumab

c) Brodalumab

d) Infliximab

Answer Key

Question No.	Correct Option
1	a
2	a
3	b
4	c
5	c
6	d
7	d
8	b
9	c
10	b
11	a
12	c
13	a
14	a
15	b
16	c
17	c
18	a
19	c
20	c
21	c

Detailed Explanations

Solution to Question 1:

The above clinical scenario is suggestive of chronic plaque psoriasis. Axilla is usually not involved in chronic plaque psoriasis. It is affected in inverse psoriasis.

Psoriasis is a common, chronic, immune-mediated inflammatory condition in which multiple genetic and environmental factors may lead to the formation of erythematous plaques with silvery-white scales. Genetic predisposition is present in type 1 plaque psoriasis and guttate psoriasis with HLA■C:06:02.

Chronic plaque psoriasis, also called psoriasis vulgaris is the most common clinical type of psoriasis. Commonly affected sites are:

• Scalp

• Elbows

• Knees

• Lower back

• Gluteal cleft

Solution to Question 2:

The presence of silvery-white scaly plaques on the extensor aspect of elbows and knees is a characteristic feature of psoriasis. Grattage test aids in its diagnosis.

Scratching (grattage) scales in psoriasis makes the scale appear more silver in color by introducing air–keratin interfaces. When the scales are completely scraped off, the basement membrane is exposed and is seen as a moist red surface (membrane of Bulkeley) through which dilated capillaries at the tip of elongated dermal papillae are torn, leading to multiple bleeding points. This classical pinpoint bleeding is known as the Auspitz sign.

Auspitz sign is due to the elongated, dilated, tortuous vessels in the dermal papilla along with supra papillary thinning of the epidermis.

However, the Auspitz sign is neither sensitive nor specific for psoriasis.

Auspitz sign present	Auspitz sign absent
Psoriasis vulgaris	Pustular psoriasis
Darrier's disease	Guttate psoriasis
Actinic keratosis	Inverse psoriasis
	Erythrodermic psoriasis

Solution to Question 3:

The presence of dull red sharply demarcated plaques on the knees with loosely adherent silvery-white scales is in favor of psoriasis. Nail plate pitting is the most common feature of nail psoriasis and is of the deep and irregular type.

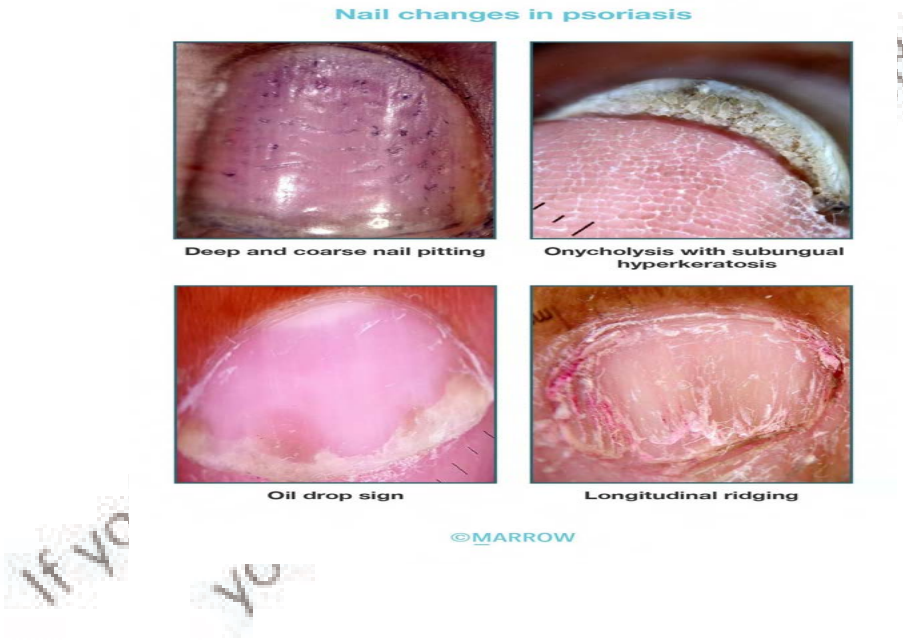
About 5 to 30% of patients with cutaneous psoriasis have psoriatic arthritis(PsA). Psoriasis patients have a variable degree of pruritus.

Koebner's phenomenon or isomorphic phenomenon, the phenomena of appearance of new lesions along the line of trauma, is seen in psoriasis.

Nail pitting is superficial and regular in alopecia areata.

Solution to Question 4:

Subungual oil drop sign or salmon patch (image C), a highly specific pathognomonic sign seen in nail psoriasis. It is a yellow-red discoloration in the nail bed resembling a drop of oil. The reddish-brown color is due to dilated, tortuous, superficial capillaries in the papillary dermis and parakeratosis.



Solution to Question 5:

The image shows sharply marginated, dull-red plaques with silvery-white scales which have coalesced to form geographical lesions. The history and image point towards a diagnosis of psoriasis. Here, there is an increased number of activated Th1, Th17, and Th22 cells, with a deficiency of Th2 cells.

It is a common, chronic, immune-mediated inflammatory condition in which multiple genetic and environmental factors may lead to the formation of erythematous plaques with silvery-white scales. Genetic predisposition is present in type 1 plaque psoriasis and guttate psoriasis with HLA■C:06:02.

There is increased keratinocyte turnover. It normally takes 30 days for basal keratinocytes to reach the surface but in patients with psoriasis, this is reduced to 4-5 days.

The activation of T cells of the adaptive immune system, specifically Th17 cells, in turn, activates keratinocytes to proliferate and produce multiple chemokines and antimicrobial peptides.

Cytokines in psoriasis:

Increased	Decreased
Inflammatory cells and cytok ines	Anti-inflammatory cells and c ytokines
Th1 and Th17 cells	Th2 cells
IL■2, IL■8, IFN■γ, TNF■° , IL■15, IL-17, IL■22, and IL■ 23	IL-4 and IL-10 absent

Solution to Question 6:

Levothyroxine is not implicated in exacerbations of psoriasis.

Drugs inducing/exacerbating psoriasis:

- Beta-blockers
- Synthetic antimalarials
- NSAIDS
- Lithium
- ACE inhibitors & angiotensin receptor blockers
- Interferon alpha
- Tetracycline
- Terbinafine
- Gemfibrozil

Other environmental and immunological factors that may trigger psoriasis are:

- Infections- beta-hemolytic streptococci can trigger guttate psoriasis
- Alcohol misuse and smoking
- Emotional stress
- Trauma - Koebner phenomenon
- Winter
- Sunlight

Solution to Question 7:

The given image showing nail pitting and salmon patches in fingernails are characteristic of psoriasis. Munro microabscess is seen in psoriasis whereas Pautrier's microabscess is seen in mycosis fungoides.

Histopathological features of psoriasis:

• Irregular epidermal thickening (acanthosis)

• Hyperkeratosis and parakeratosis

• Suprapapillary thinning

• Clubbing of rete ridges at the base

• Kogoj spongiform pustules (collection of neutrophils in Malpighian layer)

• Munro microabscesses (collection of neutrophils in stratum corneum)

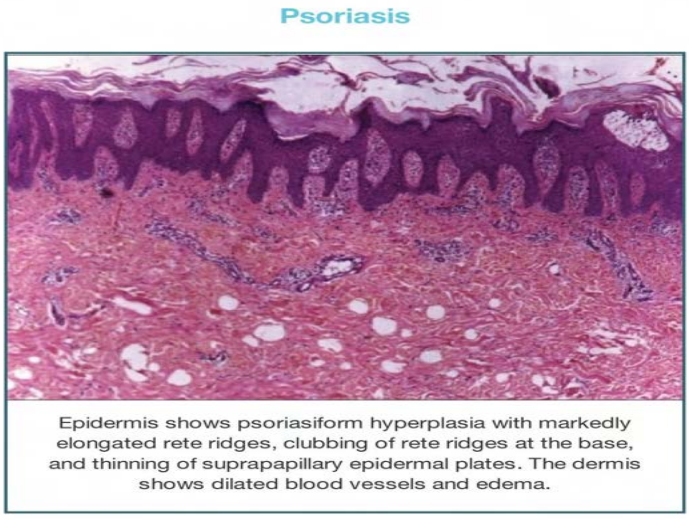
• Absence of stratum granulosum

• Dilated, tortuous blood vessels in the dermis

• Suprapapillary mononuclear leukocytic infiltrates

Remember: M (Munro microabscess) is seen in P (Psoriasis) and P (Pautrier's microabscess) is seen in M (mycosis fungoides)

The image below shows histopathology of psoriasis.



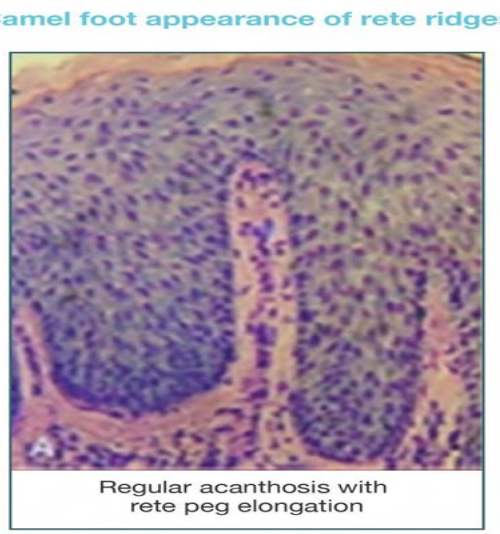
Solution to Question 8:

Camel foot appearance is seen in histopathology of plaque-type psoriasis.

Normally, only 10% of the basal cells are in the proliferative phase, whereas in psoriasis about 90% of the basal cells are in this phase. As a result, to accommodate the increasing population of basal cells, rete pegs take a plunge in the dermis in the form of regular elongation of rete ridges, giving the 'camel foot' or clubbed appearance to epidermal rete ridges.

Other HPE findings seen in psoriasis:

- Regular acanthosis (epidermal thickening)
- Hyperkeratosis and parakeratosis
- Suprapapillary thinning
- Kogoj spongiform pustules (collection of neutrophils in Malpighian layer)
- Munro microabscesses (collection of neutrophils in stratum corneum)
- Absence of stratum granulosum
- Dilated, tortuous blood vessels in dermis
- Suprapapillary mononuclear leukocytic infiltrates



Regular acanthosis with rete peg elongation

Solution to Question 9:

Asymmetric oligoarthritis is the most common type of psoriatic arthritis.

Psoriatic arthritis refers to an inflammatory musculoskeletal disease that has both autoimmune and autoinflammatory features characteristically occurring in individuals with psoriasis.

Asymmetric oligoarthritis commonly involves a knee or another large joint with a few small joints in the fingers or toes, often with dactylitis.

Solution to Question 10:

Classic psoriatic arthritis typically involves the distal interphalangeal joints.

Solution to Question 11:

Cone-shaped heaped-up hyperkeratotic lesions shaped like a shell (limpet) are seen in this rupioid variety of psoriasis. Valproic acid may be associated infrequently with such psoriatic flare-ups.

The term “rupioid” (from the Greek rhupos, meaning filth) is used to describe oyster or limpet shell-shaped thick keratotic lesions. In contrast to rupioid forms, regular plaque-type psoriasis has a white, nonadherent, and thin, scaly surface.

Severe psoriatic flares and atypical forms of the disease (including rupioid plaques) have been reported in HIV-positive patients and with certain drugs.

Drugs associated with psoriasis:

- β-Blockers
- Lithium
- Synthetic antimalarials
- Nonsteroidal anti-inflammatory drugs
- Tetracyclines

Solution to Question 12:

In inverse psoriasis, flexural plaques are thin and scaling is greatly reduced or absent.

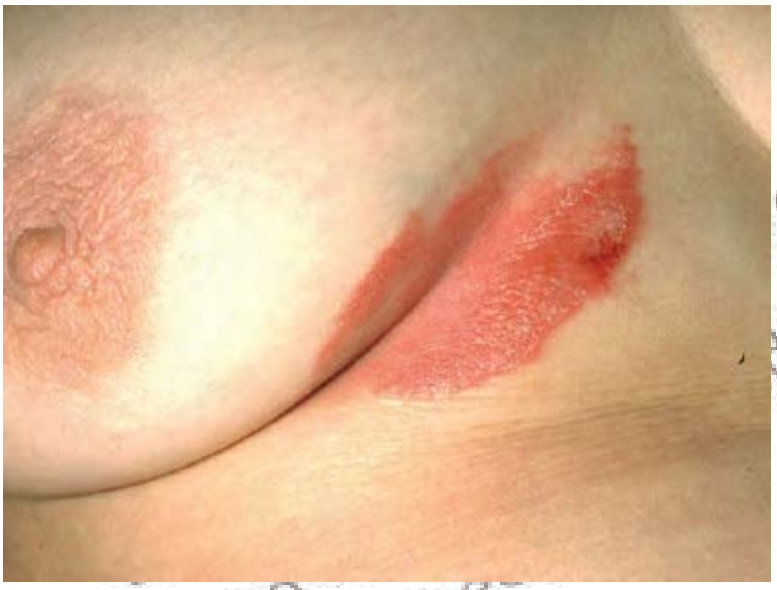
It involves the inguinal creases, axillae, submammary folds, gluteal cleft, umbilicus, and other body folds. It is more common in older adults and is associated with obesity.

Option B: Guttate psoriasis presents with small plaque lesions with scales 2-3mm to 1 cm distributed over the trunk and proximal limbs in children

Option D: In sebopsoriasis, plaques of thin sharply demarcated erythema with variable scales may occur in the typical distribution of seborrhoeic dermatitis

Option A: Erythrodermic psoriasis has most or all of the body surface affected (>90%BSA)

The image below shows inverse psoriasis.



Solution to Question 13:

The given clinical scenario points towards the diagnosis of pustular psoriasis.

Pustular psoriasis is a type of psoriasis characterized by tiny pus-filled lesions (pustules) having a characteristic lakes or sheets of pus appearance (seen in the image).

The patient presents with a history of fever and malaise along with the presence of pustules on a circumscribed, fiery red, edematous or scaling plaque. The pus is usually sterile. Sudden withdrawal of systemic steroids is usually the trigger for this condition.

Pustular psoriasis can be divided into:

• Localized pustular psoriasis

• Generalized pustular psoriasis:

• Acute generalized pustular psoriasis (Von Zumbusch)

• Subacute annular and circinate pustular psoriasis

• Acute generalized pustular psoriasis of pregnancy (Impetigo herpetiformis)

Treatment: Acitretin (oral retinoid) is the drug of choice for pustular psoriasis. However, it is contraindicated in pregnancy. Systemic steroids are used instead. Cyclosporine is the second-line drug.

Note: Systemic steroids are never used for the treatment of psoriasis except in the case of Impetigo herpetiformis where they are first-line agents.

Solution to Question 14:

The clinical stem of small, red, drop-like lesions on the trunk and arms (shown in the image) after an attack of pharyngitis is suggestive of guttate psoriasis.

Guttate psoriasis is a type of psoriasis occurring as a sudden onset shower of small lesions seen diffusely over the body, more on the trunk and proximal limbs. It is more common in children and young adults, following infection with group A streptococcus and is often the first presentation of psoriasis. It can also occur as a flare-up in adults with plaque psoriasis that began in childhood. It is linked to HLA■C:06:02.

Lesions usually resolve over about 3 months. Some patients with acute guttate psoriasis might develop plaque psoriasis in the future.

Treatment:

• Topical steroids

• Antimicrobials - Recurrent episodes may be related to the pharyngeal carriage of the responsible streptococcus by the patient or close contact. A course of semisynthetic penicillin with rifampin may be required to clear chronic streptococcal carriage.

• Phototherapy - Broad-band ultraviolet B (UVB)- Response is better with broadband UVB over narrow-band UVB.

A chronic course is seen in plaque and follicular psoriasis.

Pustular psoriasis patients can have a fever, erythroderma, hypocalcemia, and cachexia.

Solution to Question 15:

Goekerman regimen is used in the treatment of psoriasis.

The modified Goekerman regimen involves application of coal tar for 5 hours/day in combination with exposure to narrow■band UVB (NBUVB).

Ingram Regimen is another treatment regimen used in psoriasis. In■patients are treated with a coal tar bath, suberythemogenic UVB and then dithranol in Lassar's paste is applied to plaques.

The mechanism of action of dithranol may relate to its antiproliferative and proapoptotic effects on keratinocytes. Dithranol produces brown staining of the skin, which resolves about 2 weeks after therapy is completed.

Both regimens have a good safety profile and are highly efficacious.

Solution to Question 16:

The patient has right knee effusion, dactylitis of multiple digits, sharply demarcated red papulosquamous lesions on both knees all of which point towards a diagnosis of psoriatic arthritis.

Methotrexate and apremilast are the first-line drugs for the treatment of moderate to severe psoriasis associated with psoriatic arthritis.

Solution to Question 17:

Oral/systemic steroids are not used in the management of chronic plaque psoriasis. Topical steroids may be used.

Systemic steroids are avoided because the withdrawal of systemic steroids causes the development of pustular psoriasis.

The only indication of using systemic steroids in psoriasis is generalized pustular psoriasis in pregnancy (impetigo herpetiformis).

Other options maybe used in treatment of extensive (>30%) chronic plaque psoriasis.

Solution to Question 18:

Impetigo herpetiformis (pustular psoriasis of pregnancy) is the only definitive indication for systemic steroids.

Steroids can also be used for the control of acute symptoms like ARDS accompanying pustular psoriasis.

Steroids are contraindicated in all other forms of psoriasis as sudden withdrawal can trigger severe pustular or erythrodermic psoriasis. As most of the other medications are contraindicated in pregnancy, this is the only definitive indication for systemic steroids.

Solution to Question 19:

The image shows pustular psoriasis. Acitretin, an oral retinoid is the treatment of choice for pustular psoriasis. Other first-line drugs are methotrexate and cyclosporine.

Pustular psoriasis is a complication of psoriasis wherein multiple sterile pustules develop. The acute generalized form of pustular psoriasis is termed as Von Zumbusch type.

The most provocative factor is the withdrawal of systemic corticosteroids. Steroids are relatively contraindicated except in pustular psoriasis of pregnancy (impetigo herpetiformis) where it is the treatment of choice.

Note: Tar and dithranol are absolutely contraindicated in pustular psoriasis.

Solution to Question 20:

Female patients should avoid conception for 3 years after receiving acitretin treatment to prevent retinoid-induced embryopathy.

Acitretin is approved for use in the cutaneous manifestations of psoriasis.

Absolute contraindications:

• Pregnant women

• Women who are planning to get pregnant

• Breastfeeding

Relative contraindications:

• Leukopenia

• Alcoholism

• Hyperlipidemia

• Hypercholesterolemia

• Hypothyroidism

• Significant hepatic or renal disease

Solution to Question 21:

Brodalumab is a monoclonal antibody against the IL-17 receptor.

These biological drugs are used in cases of severe psoriasis and psoriatic arthritis.

Secukinumab and ixekizumab bind to IL-17 and prevent its binding to the receptor. They are considered IL-17 neutralizers.

Class	Drugs
TNF-alpha inhibitors	AdalimumabInfliximabEtanerceptGolimumabCertolizumab
IL-17 antagonists (neutralizers)	SecukinumabIxekizumab
IL-17 receptor antagonist	Brodalumab
IL-23 antagonist	Guselkumab
IL-12/23 antagonist	UstekinumabBriakinumab
CD-11a antagonist	Efalizumab
Phosphodiesterase -4 inhibitors	Apremilast

Vesiculobullous Diseases

Question 1:

Which of the following is a subepidermal disease?

a) Darier's Disease

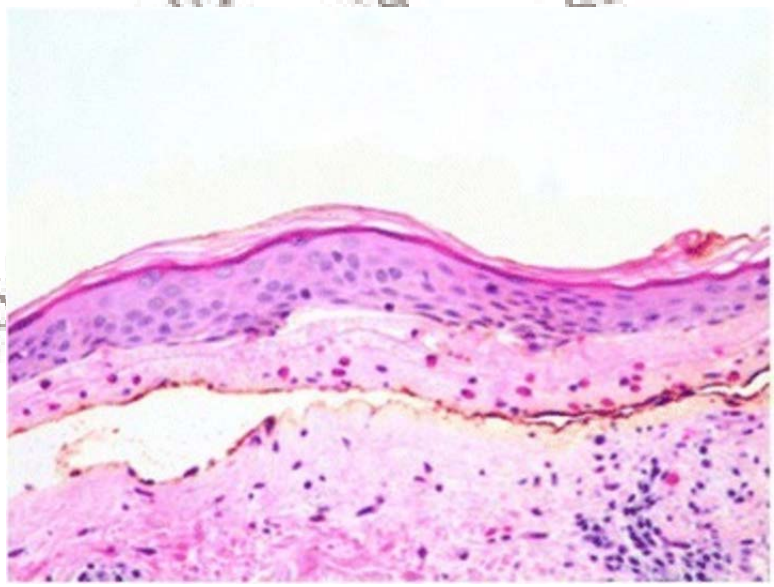
b) Bullous impetigo

c) Pemphigus foliaceus

d) Bullous pemphigoid

Question 2:

The skin biopsy from a patient with a vesiculobullous disease is shown below. What is the diagnosis?



a) Pemphigus vulgaris

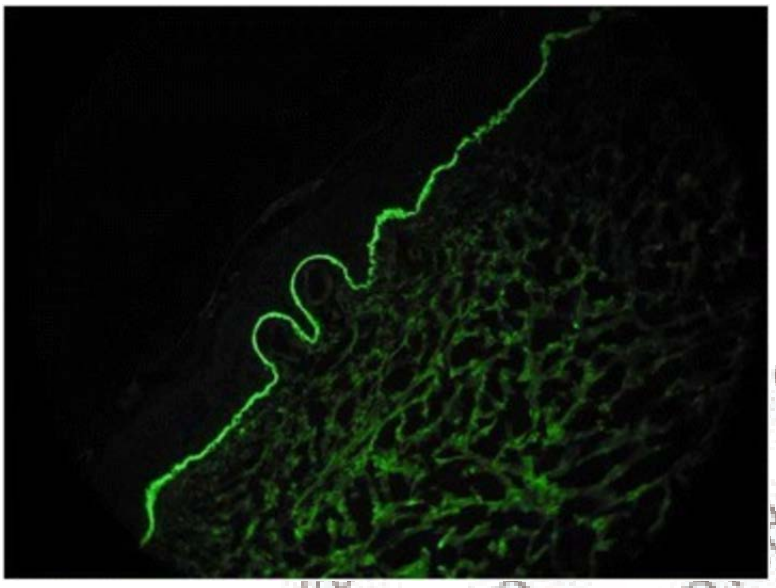
b) Pemphigus foliaceus

c) Dermatitis herpetiformis

d) Bullous pemphigoid

Question 3:

A patient presented with pruritic blisters. Direct immunofluorescence microscopy for IgG was done. Which of the following statements is incorrect regarding this condition?



a) It is a disease of the elderly

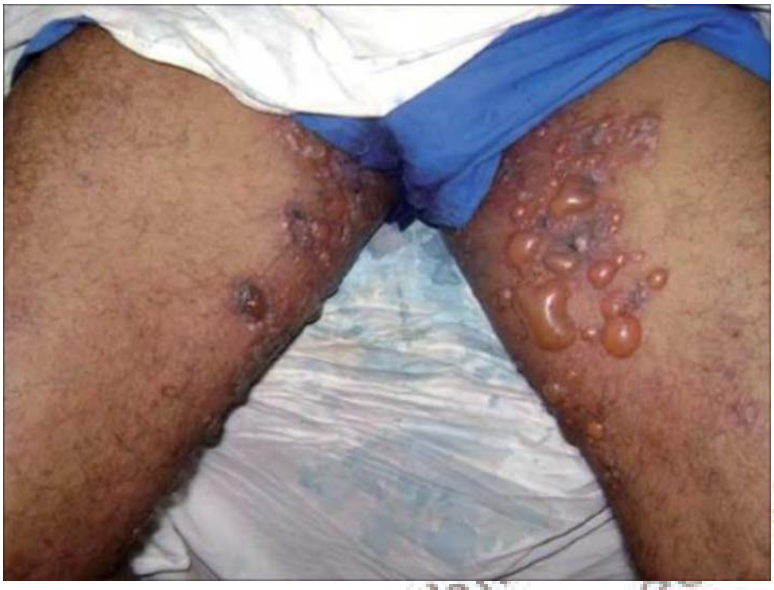
b) Oral erosions are frequently seen

c) Tense bullae are seen

d) Nikolsky sign is negative

Question 4:

A patient presents with the following itchy lesions. On examination, Nikolsky sign is negative. Autoantibodies against which of the following antigens are most commonly seen in this condition?



a) BP180

b) BP230

c) BP280

d) Desmoglein 1

Question 5:

While examining a patient with pemphigus vulgaris, you notice that applying pressure on top of the bulla causes it to extend to the adjacent unblistered skin. What is this sign known as?

a) Asboe-Hansen sign

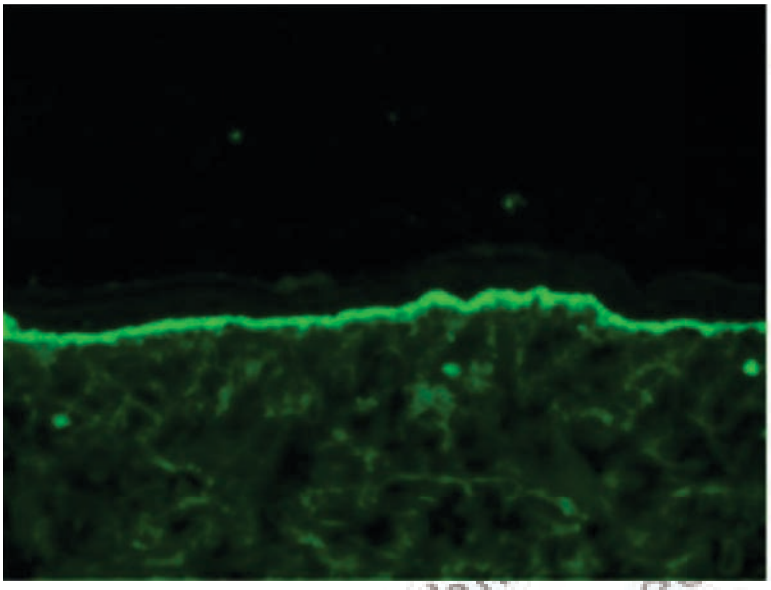
b) Nikolsky sign

c) Dimple sign

d) Bulla spread sign

Question 6:

A 4-year-old girl was brought by her parents with itchy blisters on her face and buttocks that developed quite suddenly. History revealed an episode of streptococcal pharyngitis 2 weeks ago that was treated with penicillin. Direct immunofluorescence microscopy revealed IgA deposition, as shown in the image below. What is the most likely diagnosis?



a) Hailey-Hailey disease

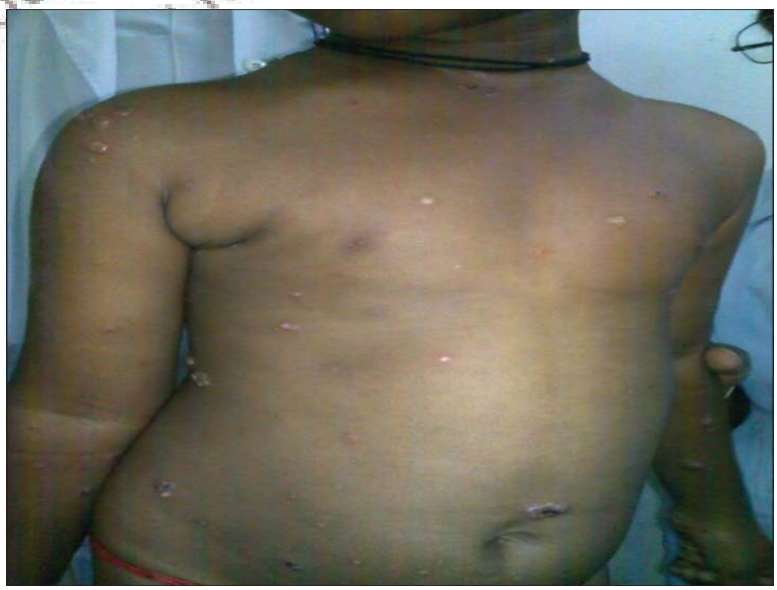
b) Chronic bullous disease of childhood

c) Epidermolysis bullosa dystrophicans

d) Epidermolysis bullosa simplex

Question 7:

A child presents to OPD with tense bullae over the torso. Biopsy of the lesion showed a subepidermal level of blistering and neutrophil infiltration. What is the drug of choice?



a) Rituximab

b) Dapsone

c) Cyclosporine

d) Azathioprine

Question 8:

In patients with which of the following conditions would you perform direct immunofluorescence microscopy for diagnosis?

a) Epidermolysis bullosa simplex

b) Epidermolysis bullosa acquisita

c) Hailey-Hailey disease

d) Darier's disease

Question 9:

Direct immunofluorescence microscopy of a patient's skin biopsy reveals intraepidermal intercellular deposition of IgA. What is the diagnosis?

a) Linear IgA disease

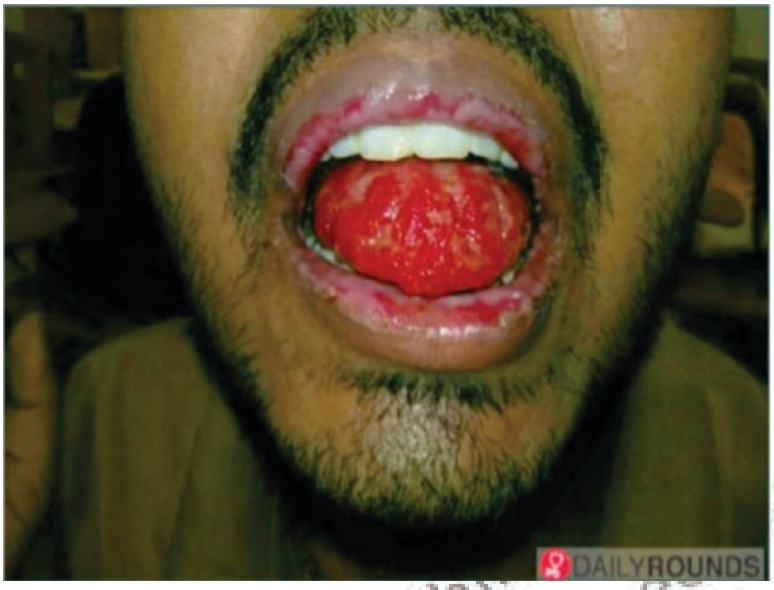
b) Pemphigoid gestationis

c) Bullous pemphigoid

d) IgA pemphigus

Question 10:

A 40-year-old man presented with blisters on his upper chest and back and mucosal lesions as shown. On examination, the bullae were flaccid and filled with clear fluid. What is the diagnosis?



a) Pemphigus vulgaris

b) Bullous pemphigoid

c) Pemphigus foliaceus

d) Epidermolysis bullosa acquisita

Question 11:

Match the following:

a) 1-b ; 2-a ; 3-c ; 4-d

b) 1-d ; 2-c ; 3-b ; 4-a

c) 1-d ; 2-b ; 3-a ; 4-c

d) 1-b ; 2-d ; 3-c ; 4-a

Question 12:

A 40-year-old man presents with recurrent episodes of oral ulcers, large areas of denuded skin, and flaccid blisters. What is the first-line investigation for this condition?

a) Direct immunofluorescence microscopy

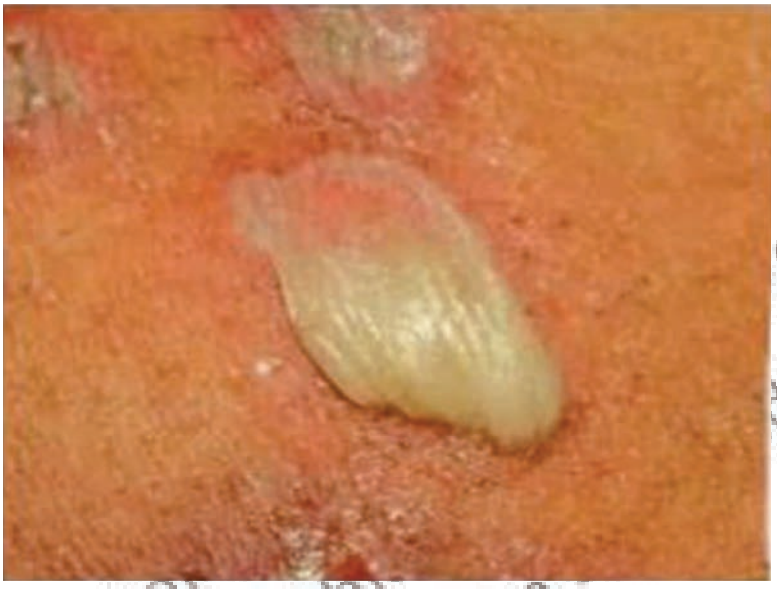
b) Indirect immunofluorescence microscopy

c) Enzyme linked immunosorbent assay

d) Tzanck smear from the floor of blister

Question 13:

A patient presents with flaccid bullous lesions involving the oral cavity and the skin. He has lesions as shown below. Acantholytic cells are seen on Tzanck smear. What is the most probable diagnosis?



a) Pemphigus foliaceus

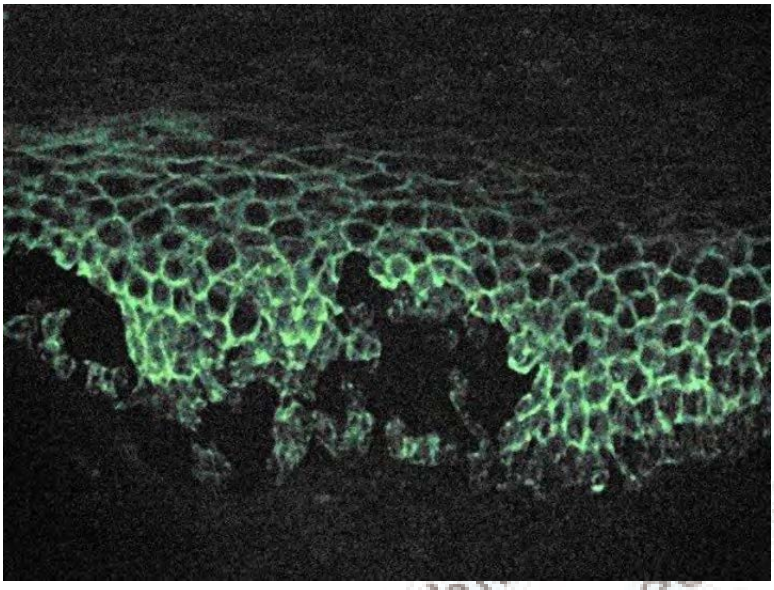
b) Pemphigus vulgaris

c) Dermatitis herpetiformis

d) Bullous pemphigoid

Question 14:

A patient with a bullous disorder is referred to the dermatology OPD for further investigations. Direct immunofluorescence microscopy is performed. What is the diagnosis?



a) Bullous pemphigoid

b) Pemphigus vulgaris

c) Epidermolysis bullosa aquisita

d) Dermatitis herpetiformis

Question 15:

What is the most accurate diagnostic test for Pemphigus vulgaris?

a) Indirect immunofluorescence testing

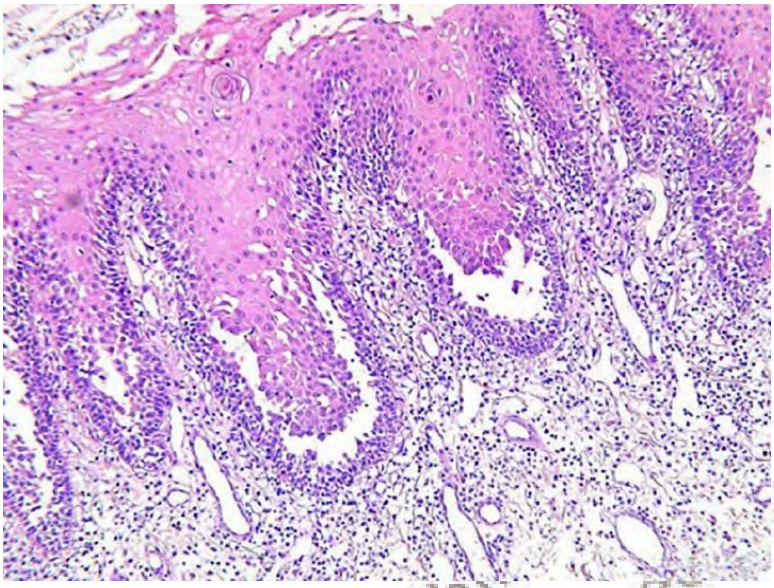
b) Direct immunofluorescence testing

c) Histopathology

d) Enzyme Linked Immunosorbent Assay (ELISA)

Question 16:

A skin biopsy from a patient with an immunobullous condition is shown below. What is the diagnosis?



a) Pemphigus vulgaris

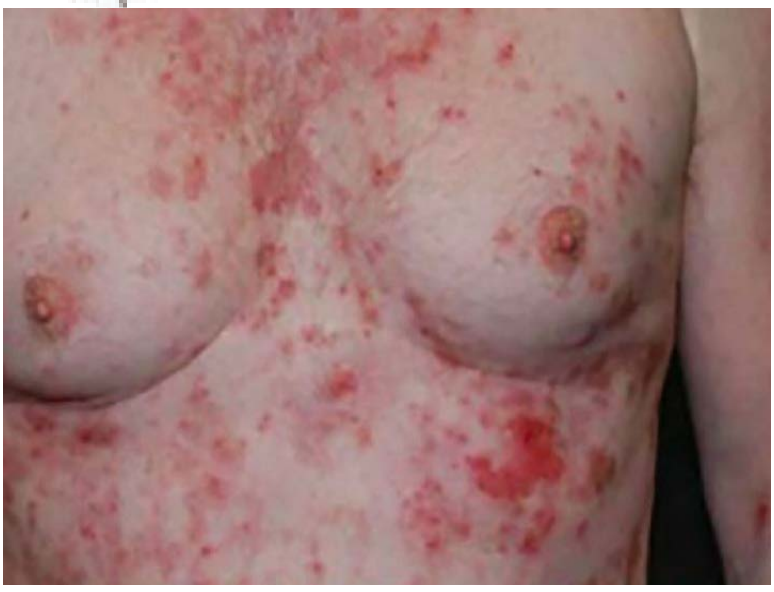
b) Pemphigus foliaceus

c) Bullous pemphigoid

d) Epidermolysis bullosa

Question 17:

A 43-year-old man is referred to the dermatology OPD with the following skin lesions that have been present for 4 months. The lesions are extremely painful. On examination, there are flaccid blisters that rupture easily and mucosal surfaces are normal. Where does the bullous split occur in this condition?



a) Subcorneal layer

b) Spinous layer

c) Suprabasal layer

d) Dermo-epidermal junction

Question 18:

Which of the following are causes of drug-induced pemphigus?

a) 1, 3, 5

b) 1, 2, 5

c) 2, 3, 4

d) 2, 3, 5

Question 19:

Which of the following is the most common cause of paraneoplastic pemphigus?

a) Chronic lymphocytic leukemia

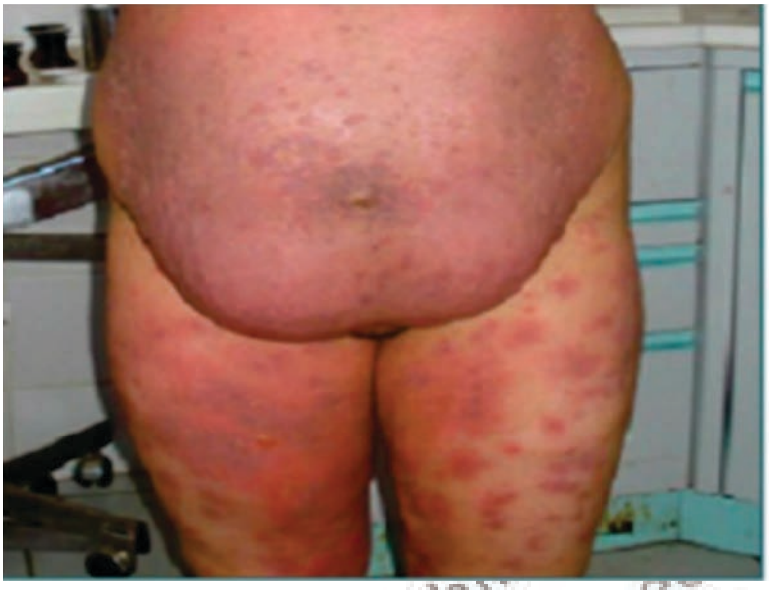
b) Castleman disease

c) Non-Hodgkin's lymphoma

d) Waldenstrom's disease

Question 20:

A 28-year-old woman in her 37th week of gestation develops the following intensely pruritic skin lesions. On examination, a few tense bullae are noted and mucous membranes are spared. Which of the following statement is incorrect regarding this condition?



a) The initial site of involvement is the thigh

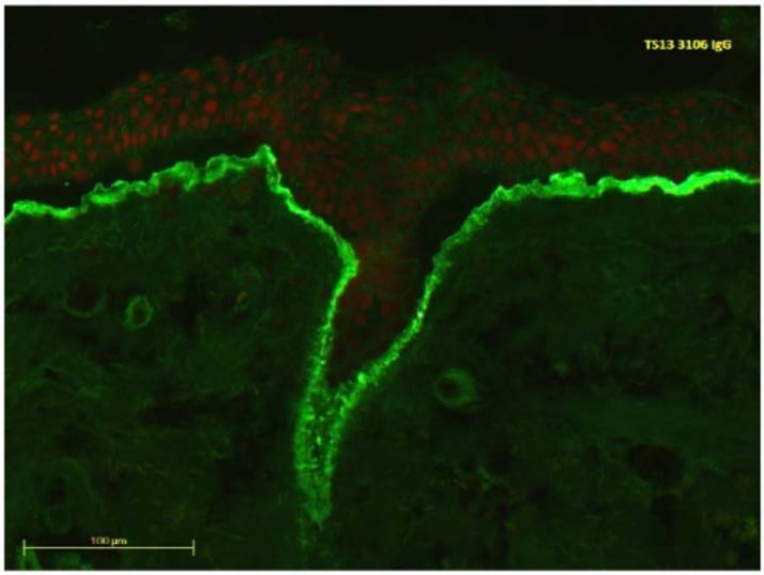
b) It resolves spontaneously in postpartum period

c) Associated with antibodies against BP180

d) Usually flares during delivery

Question 21:

A 45-year-old man presents to the OPD with skin fragility. On examination, he is noted to have erosions, bullae, and scarring over the extensor aspects of his elbows, hands, and knees. Direct immunofluorescence microscopy is given below. Presence of antibodies against which of the following is diagnostic of this condition?



a) Collagen V

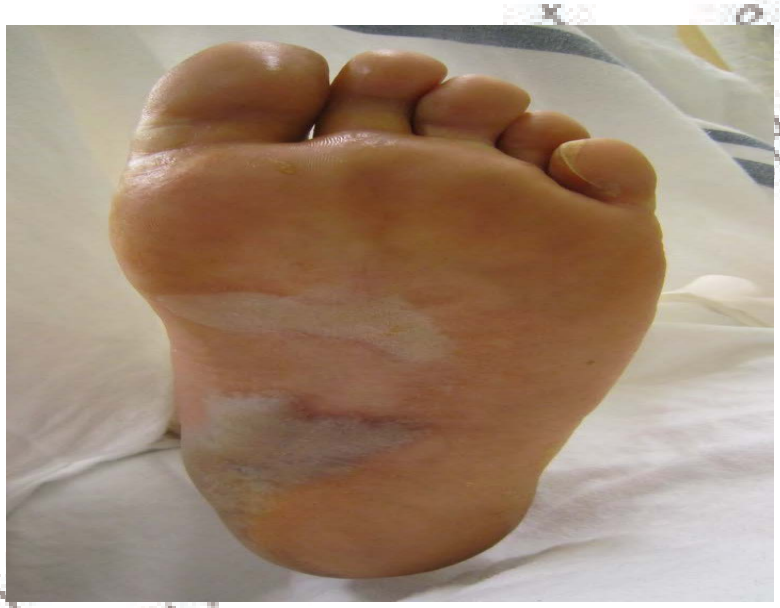
b) Collagen VII

c) Collagen III

d) Collagen VIII

Question 22:

A 24-year-old patient comes to you with the following lesions. He tells you that he used to develop similar lesions since childhood but they always heal without scarring. His father also suffers from a similar condition. Which protein is defective in this patient?



a) Collagen VII

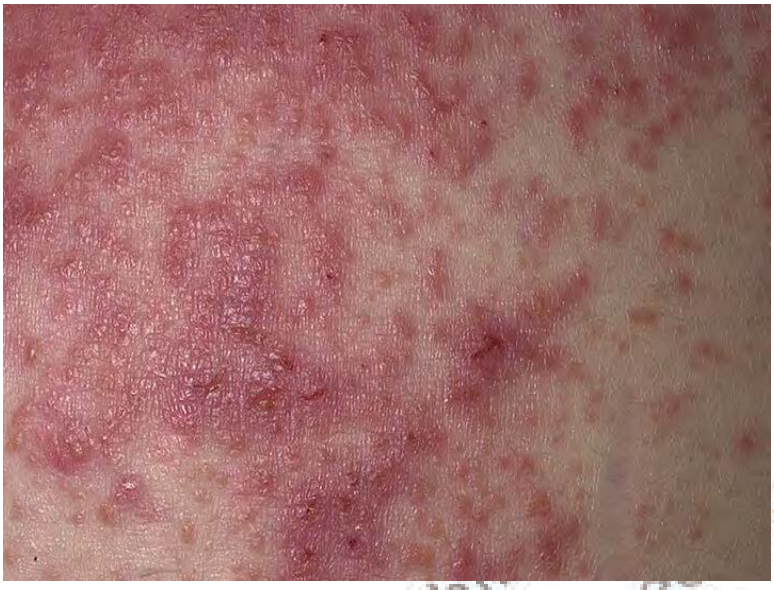
b) K5/K14

c) Laminin

d) BP180

Question 23:

A 28-year-old patient complains of the following intensely itchy rash over his elbows, knees, buttocks, and upper back. He has been having persistent watery loose stools for the past 3 months and reports feeling more tired than usual. A complete blood count shows microcytic, hypochromic anemia. What is the likely diagnosis?



a) Pemphigus vulgaris

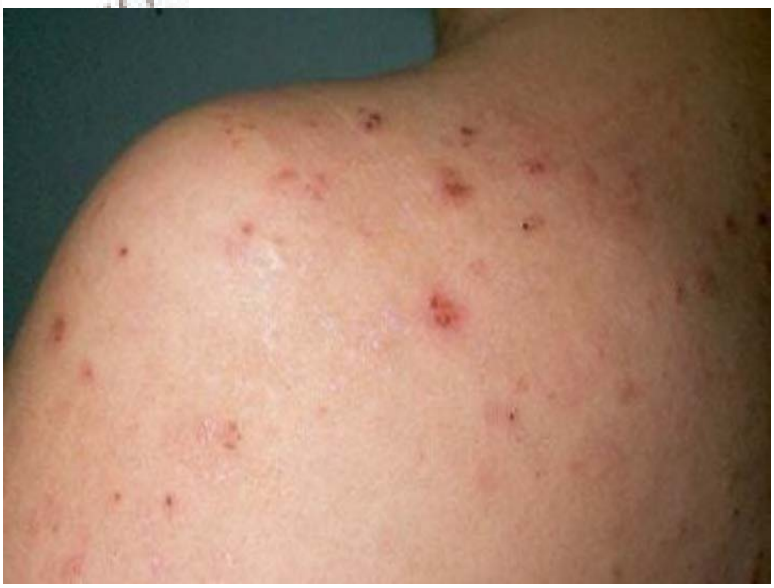
b) Bullous pemphigoid

c) Linear IgA disease

d) Dermatitis herpetiformis

Question 24:

A young woman with celiac disease comes to you for a follow-up. She strictly follows a gluten-free diet, which has resulted in improvement of her diarrhea. However, the following itchy skin lesions have persisted despite her altered diet. What drug will you prescribe?



a) Dapsone

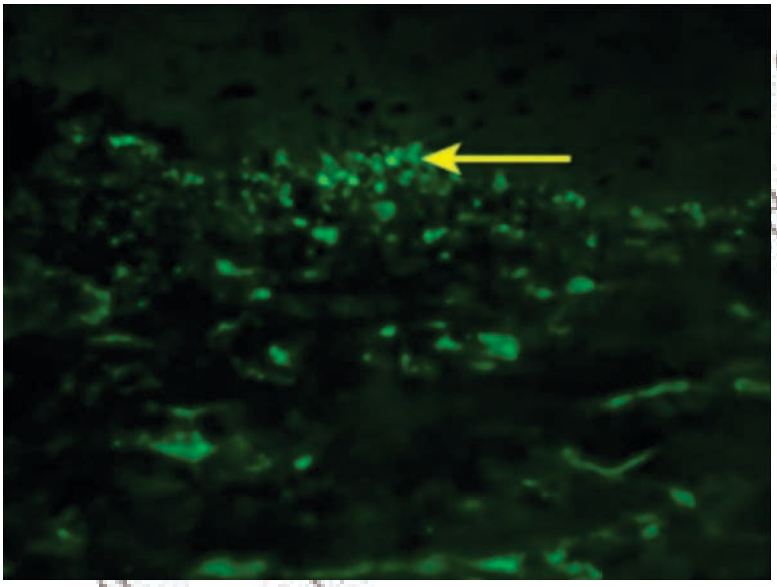
b) Oral steroids

c) Mycophenolate mofetil

d) Topical steroids

Question 25:

Immunofluorescence microscopy of a skin biopsy from a patient shows IgA deposits as shown. Which of the following is incorrect about this condition?



a) It is intensely pruritic

b) Patients present with papules and vesicles over extensor areas

c) Lymphocytic microabscesses are seen in dermis

d) Histopathology reveals subepidermal blisters

Question 26:

In which of the following conditions is Nikolsky's sign seen?

a) 1, 3, 4

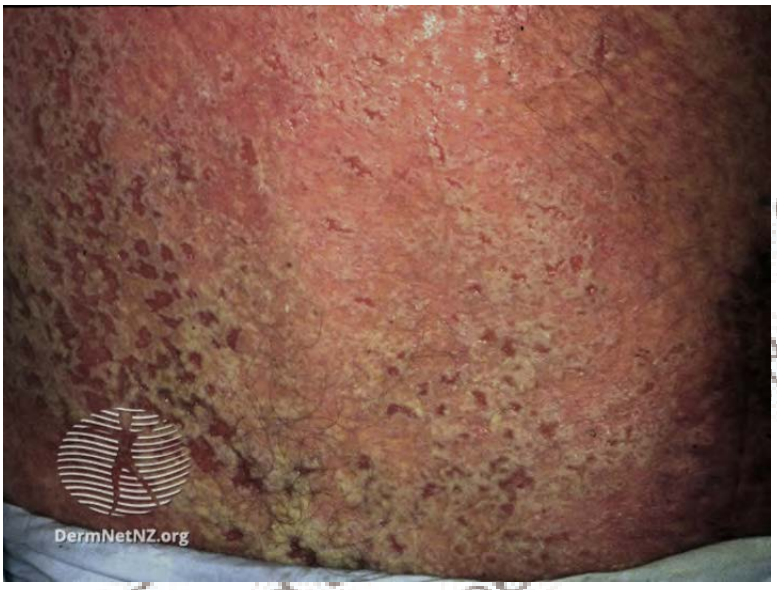
b) 1, 2, 3

c) 2, 4, 5

d) 1, 4, 5

Question 27:

A 50-year-old man is referred to the dermatology OPD with the following painful and malodorous skin lesions over his trunk, face, and scalp. He also has longitudinal erythronychia and distal v-shaped nicks on his nails. Which of the following genes is mutated in this condition?



a) ATP 2C2

b) ATP 2A2

c) ATP 3A2

d) ATP 2C1

Question 28:

Corps ronds are a feature of which of the following conditions?

a) Keratosis follicularis

b) Hailey-Hailey disease

c) Duhring's disease

d) Keratosis pilaris

Question 29:

In which of the following conditions does acantholysis lead to a dilapidated brick wall appearance?

a) Pemphigus vulgaris

b) Pemphigus foliaceus

c) Hailey-Hailey disease

d) Darier's disease

Question 30:

What are Tzanck cells?

a) Langerhans cells

b) Keratinocytes

c) Multinucleated giant cells

d) Histiocytes

Question 31:

Which of the following is diagnosed by the presence of multinucleated giant cells on a Tzanck smear?

a) Pemphigus vulgaris

b) Molluscum contagiosum

c) Varicella-zoster infection

d) Bullous pemphigoid

Answer Key

Question No.	Correct Option
1	d
2	d
3	b
4	a
5	a
6	b
7	b
8	b

9	d
10	a
11	b
12	d
13	b
14	b
15	b
16	a
17	a
18	a
19	c
20	a
21	b
22	b
23	d
24	a
25	c
26	d
27	b
28	a
29	c
30	b
31	c

Detailed Explanations

Solution to Question 1:

Bullous pemphigoid is a subepidermal vesiculobullous disorder.

In bullous pemphigoid, there is subepidermal separation at the dermo-epidermal junction (DEJ). Eosinophilic and neutrophilic infiltration are noted. It is not associated with acantholysis.

Solution to Question 2:

The image shows a sub-epidermal split that is suggestive of bullous pemphigoid.

As the antibodies in bullous pemphigoid are directed against BPAg2 and BPAg1 present in the basement membrane zone, intercellular junctions are intact and acantholysis is not seen.

Option A: Pemphigus vulgaris is characterized by intraepidermal (suprabasal) acantholytic blisters.

Option B: Pemphigus foliaceus shows intraepidermal (subcorneal) acantholytic blisters.

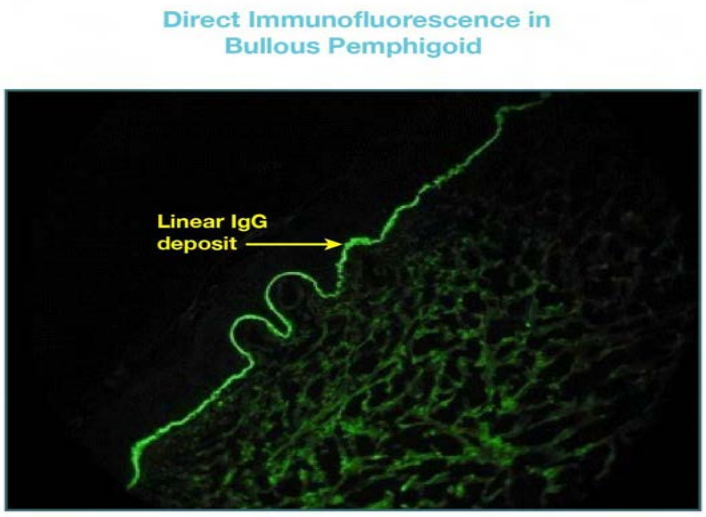
Option C: In dermatitis herpetiformis, there are papillary tip micro-abscesses.

Solution to Question 3:

Linear IgG deposits on direct immunofluorescence (DIF) microscopy are characteristic of bullous pemphigoid. Oral erosions are a rare feature.

Bullous pemphigoid is an autoimmune disease of the elderly, between 70 to 80 years. Bullae are tense and very pruritic, mostly present on the flexural aspects of limbs and abdomen. They may reach several centimeters in size. The bullae are Nikolsky negative as acantholysis is absent.

On DIF microscopy, an n-serrated pattern is seen on 600-fold magnification.



Solution to Question 4:

Tense bullae over the flexor aspect that are Nikolsky negative are suggestive of bullous pemphigoid. Autoantibodies against BP180 are most commonly seen in this condition.

BP180 is also known as BPAg2 and it is seen in 75–90% of bullous pemphigoid patients. Autoantibodies against BP230 or BPAg1 are recognized in 50–70% of bullous pemphigoid patients.

Solution to Question 5:

The extension of a blister to adjacent unblistered skin when pressure is applied over the top of the bulla is known as the Asboe-Hansen sign.

Option B: Nikolsky sign refers to easy peeling of skin on applying tangential pressure over a bony prominence. It is classically seen in pemphigus vulgaris, pemphigus foliaceus, and staphylococcal scalded skin syndrome.

Option C: Dimple sign refers to the dimpled appearance of a dermatofibroma on squeezing the adjacent skin.

Option D: The traditional bulla spread or Lutz sign involves applying lateral pressure to the blister, which causes the spread of the bulla.

Solution to Question 6:

The given image showing linear deposition of IgA at the dermo-epidermal junction is diagnostic for linear IgA disease or chronic bullous disorder of childhood or IgA pemphigoid.

It is the most common immunobullous disease in infants and children. It may occur <5 years or at 60-65 years of age. It occurs in genetically susceptible individuals and can be triggered by drugs like vancomycin, penicillin, and NSAIDs. The main target antigen is BP180 or BPAg2.

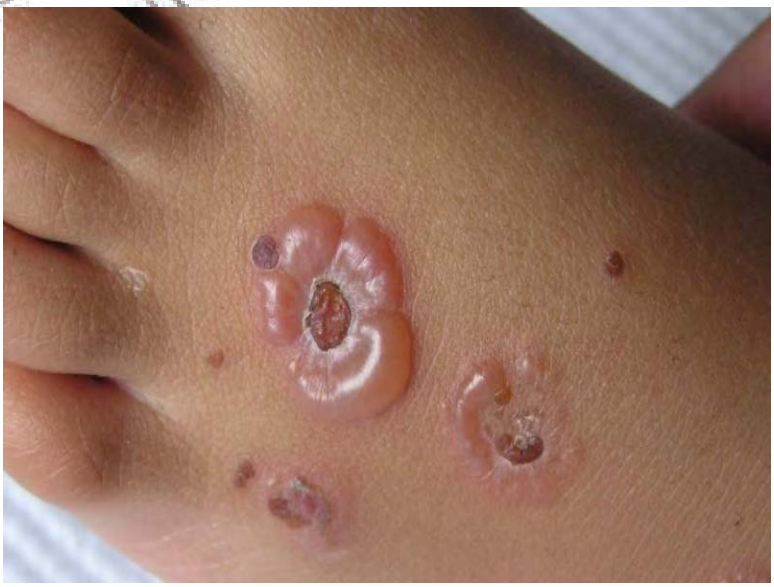
The classic triad of clinical features is:

• Tense blisters

• Vesicles

• Annular erythema

Onset is abrupt in children with involvement of the perioral and perianal regions. In adults, the extensor areas and trunk are affected. The blisters are arranged in an annular pattern. This is called the crown of jewels or string of pearls appearance, as shown below.



Solution to Question 7:

This clinical scenario with tense blisters showing subepidermal separation and neutrophilic infiltration at the basement membrane points towards a diagnosis of IgA pemphigoid or linear IgA disease or chronic bullous disease of childhood. The drug of choice is dapsone. It is bacteriostatic against M. leprae.

It also has an anti-inflammatory action by decreasing the action of neutrophil enzymes. Hence, it is useful in the treatment of IgA pemphigoid, linear IgA disease and chronic bullous disease of childhood.

Solution to Question 8:

Direct immunofluorescence microscopy is used in the diagnosis of epidermolysis bullosa acquisita. It is positive due to the presence of antibodies against type VII collagen.

Direct immunofluorescence microscopy is negative in blistering conditions with congenital protein defects:

- Epidermolysis bullosa simplex - K5/K14 defect
- Epidermolysis bullosa junctionale - Laminin defect
- Epidermolysis bullosa dystrophica - Collagen VII defect
- Hailey-Hailey disease - SERCA protein defect (ATP2C1 mutation)
- Darier's Disease- SERCA protein defect (ATP2A2 mutation)

Solution to Question 9:

Intraepidermal intercellular deposition of IgA on immunofluorescence is seen in IgA pemphigus.

It is characterized by IgA antibodies against desmosomal components. As in pemphigus vulgaris, the pattern of immunofluorescence is intraepidermal and intercellular.

Direct immunofluorescence staining in various immunobullous conditions is shown in the following table.

Disease	Deposits	Location	Pattern
Pemphigus vulgaris	IgG and C_3	Intraepidermal intercellular	Fish-net/ Reticular
Pemphigus foliaceus	IgG and C_3	Intraepidermal intercellular	Fish-net/ Reticular
Bullous pemphigoid	IgG and C_3	Subepidermal (at DEJ)	Linear, n-serrated
Pemphigoid gestationis	IgG and C_3	Subepidermal (at DEJ)	Linear

Disease	Deposits	Location	Pattern
Epidermolysis bullosa acquisita	IgG	Subepidermal (at DEJ)	Linear, u-serrated
Linear IgA disease	IgA	Subepidermal (at DEJ)	Linear
IgA pemphigus	IgA	Intraepidermal intercellular	Fish-net/ Reticular
Dermatitis herpetiformis	IgA	Papillary tips	Granular

Solution to Question 10:

Flaccid bullae on the skin and oral erosions suggest a diagnosis of mucocutaneous pemphigus vulgaris.

Oral erosions usually precede skin manifestations. The skin lesions are flaccid blisters with clear fluid on an erythematous base, that rupture to produce painful erosions. These are distributed over the face, scalp, upper chest, back, and neck.

Options B and D: Bullous pemphigoid and epidermolysis bullosa acquisita show subepidermal involvement with tense blisters.

Option C: Pemphigus foliaceus causes superficial blisters with no mucosal involvement.

Solution to Question 11:

In pemphigus vulgaris, autoantibodies are directed towards desmoglein 3. Desmoglein 1 and desmocollins can also be involved. Desmoglein 3 is present predominantly in the mucosal epithelium. Thus, antibodies against it lead to severe mucosal blistering. Desmoglein 3 is also involved in pemphigus vegetans.

Patients with pemphigus foliaceus, who have anti-desmoglein 1 antibodies alone, exhibit skin blistering without mucosal involvement.

Epidermolysis bullosa simplex is associated with congenital defects in K5/K14 antigens.

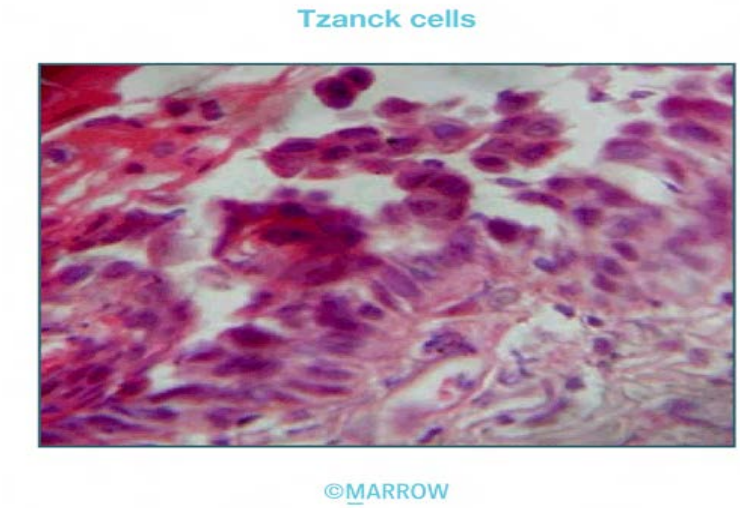
Junctional epidermolysis bullosa is associated with congenital defects in laminin.

Solution to Question 12:

This clinical picture is suggestive of pemphigus vulgaris. The first-line investigation is Tzanck smear.

It allows us to visualize the histology by collecting material from the floor of a fresh blister that is stained with Giemsa or any Romanowsky stain. Tzanck cells are seen on microscopy.

Direct immunofluorescence microscopy (DIF) is the most accurate test.



Solution to Question 13:

Flaccid lesions, mucosal involvement, and the presence of acantholytic cells are suggestive of pemphigus vulgaris.

Option A: There is no mucosal involvement in pemphigus foliaceus.

Option C: Dermatitis herpetiformis presents with multiple small vesicles and no acantholysis.

Option D: Bullous pemphigoid presents with tense bullae and no acantholysis.

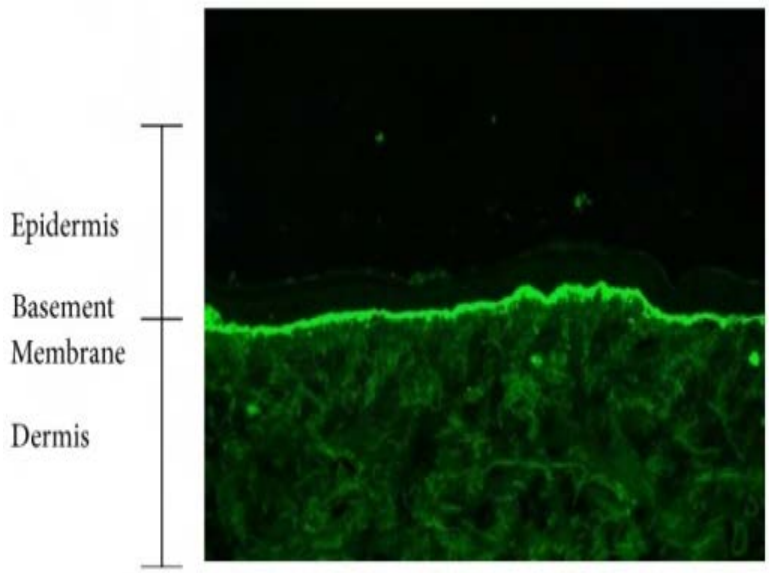
Solution to Question 14:

The given image shows a characteristic fish-net appearance on direct immunofluorescence, which is diagnostic of pemphigus vulgaris.

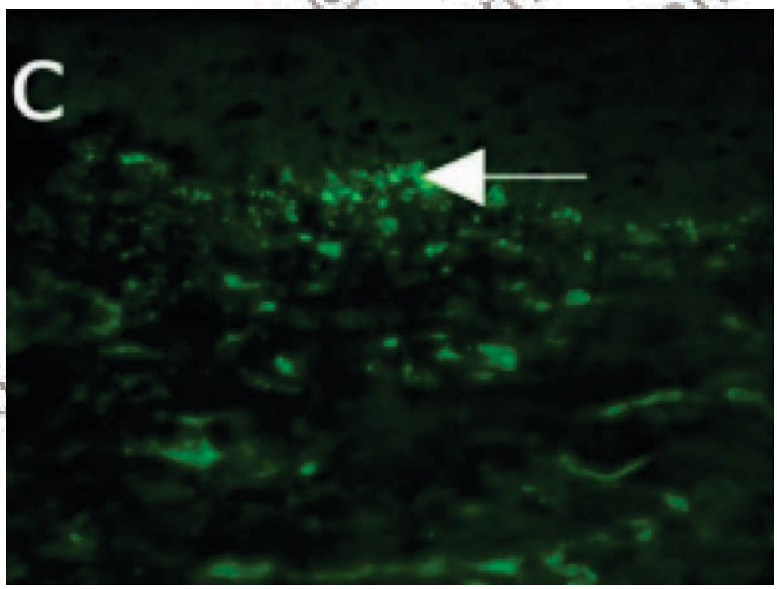
This pattern is due to intraepidermal intercellular deposition of IgG and C3.

Direct or indirect immunofluorescence cannot be used to differentiate between pemphigus vulgaris and pemphigus foliaceus, as they present similarly.

Options A and C: Bullous pemphigoid, cicatricial pemphigoid, and epidermolysis bullosa acquisita present linear or shoreline pattern is seen in due to IgG and C3 deposits along the dermo-epidermal junctions, as seen in the following image.



Option D: Dermatitis herpetiformis presents with focal granular deposits of IgA at papillary tips, as seen below.

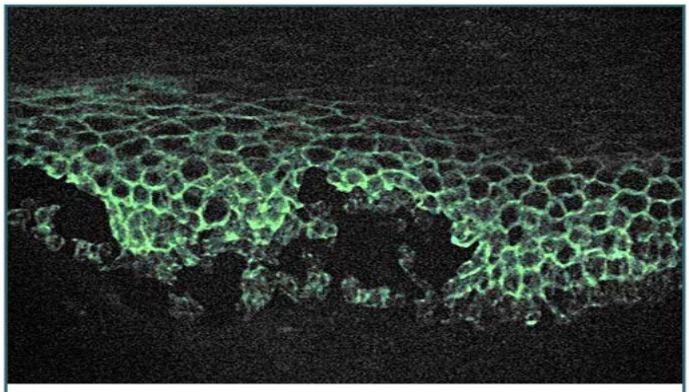


Solution to Question 15:

Direct immunofluorescence test is the most accurate test to diagnose Pemphigus Vulgaris.

Direct Immunofluorescence uses anti-IgG antibodies which detects the anti-desmoglein IgG antibodies deposited on the Desmosomes. These desmosomes are present at cell junctions; this leads to the fishnet pattern.

Direct immunofluorescence in
Pemphigus Vulgaris



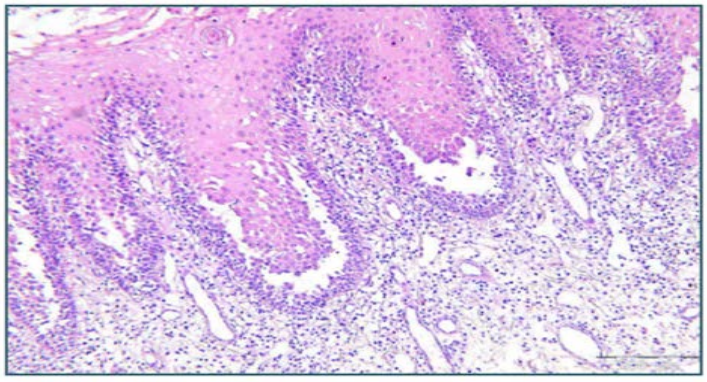
Intercellular deposition of immune complexes giving a "chicken wire/fish net" look

Solution to Question 16:

The given image shows a row of tombstones appearance, which is classically seen in pemphigus vulgaris.

In this condition, there is suprabasal splitting of the epidermis leading to blister formation. The basal layer remains adherent to the basement membrane, and gives the resemblance to the row of the tombstones.

Pemphigus Vulgaris -
Row of tombstones appearance



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Solution to Question 17:

The given clinical scenario is suggestive of pemphigus foliaceus. The blisters are formed due to a split at the subcorneal layer.

Pemphigus foliaceus is a less severe variant of pemphigus vulgaris with antibodies against desmoglein-1. It presents with fewer flaccid bullae and mucosal sparing. It more commonly results in erosions with erythema, scales, and crust. Collarette scales may be present.

Solution to Question 18:

Sodium valproate and isoniazid do not cause drug-induced pemphigus. The commonly implicated drugs include:

• Penicillamine (most common)

• ACE inhibitors

• Antibiotics - penicillins, cephalosporins, rifampicin

• Piroxicam

• Glibenclamide

• Phenobarbital

• Aspirin

Drug-induced pemphigus usually occurs after 1 year of taking the drug. It is more common in individuals with other associated autoimmune conditions.

Note: Common drugs (mnemonic - PCR) are penicillamine, captopril, rifampicin.

Solution to Question 19:

Paraneoplastic pemphigus (PNP) is most commonly associated seen with non-Hodgkin's lymphoma.

PNP is a fatal autoimmune blistering disease associated with underlying benign or malignant neoplasms. It commonly presents 2-3 years after the development of malignancy, but can sometimes precede it as well. It is associated with multiple antigens including desmoglein, desmoplakin, periplakin.

Other associated diseases include:

• Chronic lymphocytic leukemia

• Waldenstrom's disease

• Castleman disease

• Spindle cell tumor

• Thymoma

Solution to Question 20:

This clinical scenario is suggestive of herpes gestationis or pemphigoid gestationis. The initial site of involvement is the periumbilical region.

It is a variant of bullous pemphigoid in pregnancy and is associated with antibodies against BP180. It presents in the II or III trimesters with pruritic, grouped vesicles that later spread to the abdomen, trunk, thighs. It flares in the intrapartum period and tends to resolves spontaneously in the postpartum period. However, it can recur in subsequent pregnancies.

Solution to Question 21:

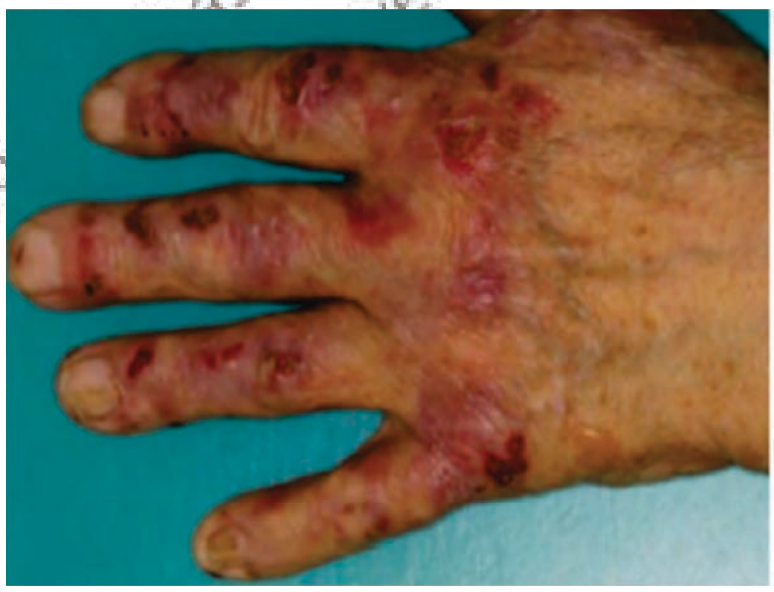
This clinical scenario and image showing linear IgG deposits in a u-serrated pattern on direct immunofluorescence microscopy are suggestive of epidermolysis bullosa acquisita (EBA), in which autoantibodies are formed against collagen VII.

It is an acquired autoimmune disorder, presenting in adults between 44-54 years. It has a chronic, relapsing course. Two main clinical forms can be differentiated:

• Classical mechanobullous - Skin fragility, erosions, blisters, crusts, and scars on trauma■prone areas like hands, knuckles, elbows, knees, toes.

• Inflammatory - Resembles other pemphigoid diseases such as bullous pemphigoid. Associated with inflammatory infiltrate in the dermis.

The following image shows erosions and crusting in a patient with EBA.



Solution to Question 22:

This clinical scenario and the image showing superficial blisters are suggestive of epidermolysis bullosa simplex, which is an autosomal dominant condition associated with a defect in K5/K14

proteins.

Epidermolysis bullosa congenita is a group of congenital mechanobullous disorders that arise after trauma and are common over the hands, feet, elbows, and knees. There are three forms of this condition.

Type	Defective protein	Features
Epidermolysis bullosa simplex	K5/K14	Intraepidermalblister with split in basal layerHeals without scarring
Junctional epidermolysis bullosa	Laminin	Dermoepidermaljunction blister with split in lamina lucida layerPerioral involvement is frequentMay heal with scarring
Epidermolysis bullosa dystrophica	Collagen VII in anchoring fibrils	Subepidermaltense blisters with defect in sublamina densa Frequent mucosal involvementHeal with scarring

Solution to Question 23:

This clinical scenario along with the given image showing pruritic, multiple, grouped papules and vesicles located on extensor aspects is suggestive of dermatitis herpetiformis.

It is associated with gluten-sensitive enteropathy or celiac disease. It is also associated with HLA DQ2/DQ8/B8. Deposition of IgA antitransglutaminase antibodies in the dermal papillae results in subepidermal blisters and vesicles.

This condition is associated with a small increase in the risk of T-cell lymphoma.

Solution to Question 24:

The given image showing itchy, grouped vesicles in a patient with celiac disease is suggestive of dermatitis herpetiformis. The drug of choice is dapsone.

The initial treatment of choice for dermatitis herpetiformis is a gluten-free diet.

Dapsone is used when response to dietary modification is inadequate or slow. It is highly effective in such cases and improves symptoms within one week of starting the drug.

Note: Gluten-containing grains such as barley, rye, oats, wheat (BROW) should be avoided in the diet. Rice and maize are tolerated.

Solution to Question 25:

Granular deposits of IgA on direct immunofluorescence are suggestive of dermatitis herpetiformis or Duhring's disease. The characteristic microscopic feature is subepidermal blisters with papillary tip microabscesses containing neutrophils.

It presents as grouped vesicles and papules. These lesions are commonly located over the extensor aspects of knees, elbows, buttocks, back, scalp which are associated with intense pruritus.

Solution to Question 26:

Nikolsky's sign is positive in the following conditions:

• Pemphigus vulgaris

• Pemphigus foliaceus

• Staphylococcal scalded skin syndrome

Nikolsky's sign refers to the separation of the normal■looking epidermis from the dermis by applying firm tangential sliding pressure, thereby producing an erosion. It is seen in conditions that produce intraepidermal blisters. Hence it is negative in subepidermal bullous conditions like bullous pemphigoid and epidermolysis bullosa acquisita.

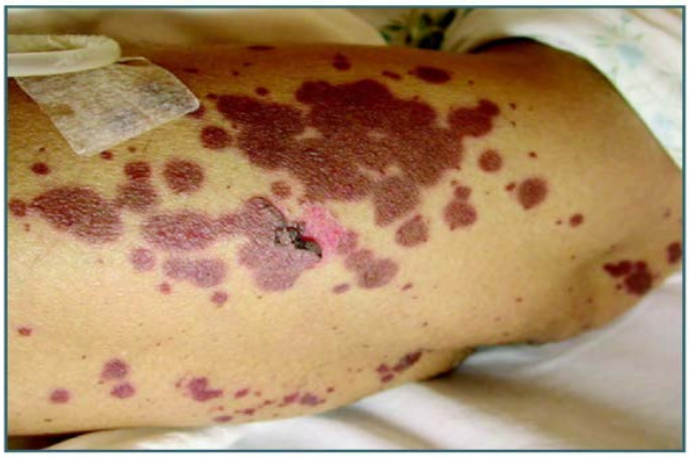
Pseudo-Nikolsky's sign refers to epidermal separation as a result of epidermal necrosis, not acantholysis.

It is seen in

• Toxic epidermal necrolysis

• Steven-Johnson syndrome

Nikolsky's sign



Solution to Question 27:

The given image showing greasy hyperkeratotic papules and the nail changes described point to a diagnosis of Darier's disease. It occurs due to a mutation of the ATP2A2 gene.

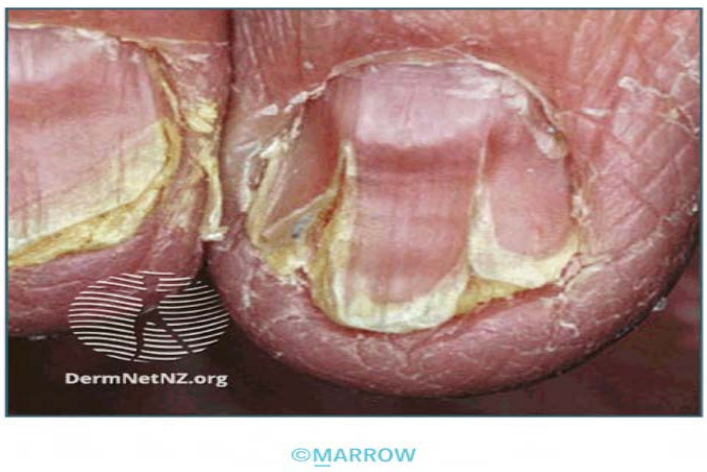
Darier's disease is an autosomal dominant condition that occurs due to dysfunction of the SERCA2 calcium channel (encoded by ATP2A2 gene), which is essential for desmosomal function. It results in acantholysis and dyskeratosis.

The papules begin over sun-exposed areas and gradually expand to form plaques over the seborrheic areas. The following nail changes, also shown in the image below, are characteristic of Darier's disease:

• Longitudinal erythronychia

• Longitudinal leukonychia

• Distal v-shaped nicks



Note: Hailey-Hailey disease is due to a mutation in ATP2C1 gene, which also encodes the SERCA protein.

Solution to Question 28:

Corps ronds are seen in keratosis follicularis or Darier's disease.

It is an autosomal dominant condition that is characterized by keratotic papules over the seborrheic areas. The following histopathology findings are seen:

• Acantholysis - loss of cohesion between keratinocytes

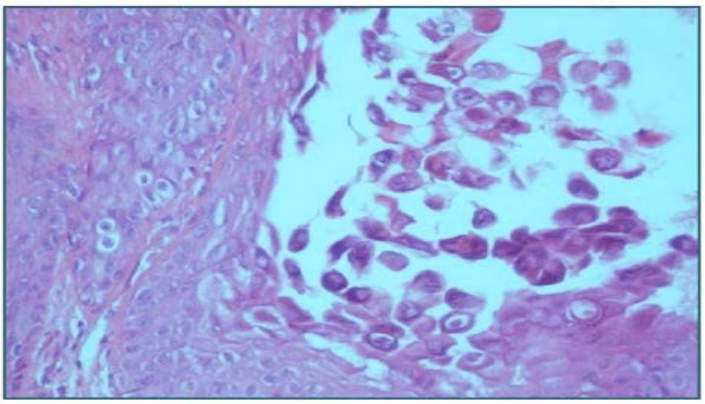
• Dyskeratosis - abnormal premature keratinization in the epidermis

• Lacunae - in suprabasal area

• Corps ronds - rounded dyskeratotic cells with eosinophilic cytoplasm in the epidermis

• Corps grains - small cells with shrunken cytoplasm

Darier's disease - Corps ronds



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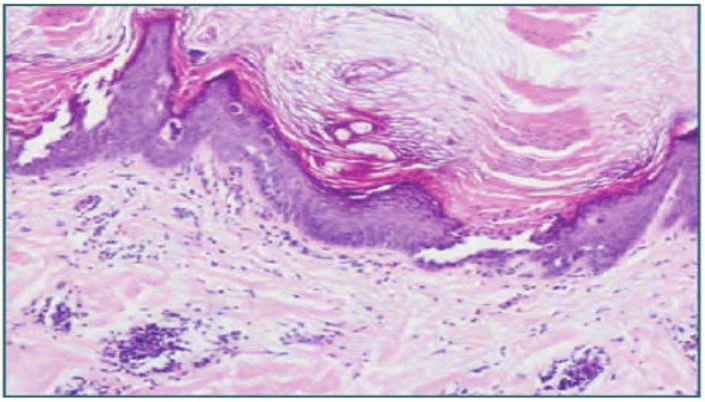
Darier's disease - Acantholysis



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Solution to Question 29:

Dilapidated brick wall appearance is characteristically seen in Hailey-Hailey disease.

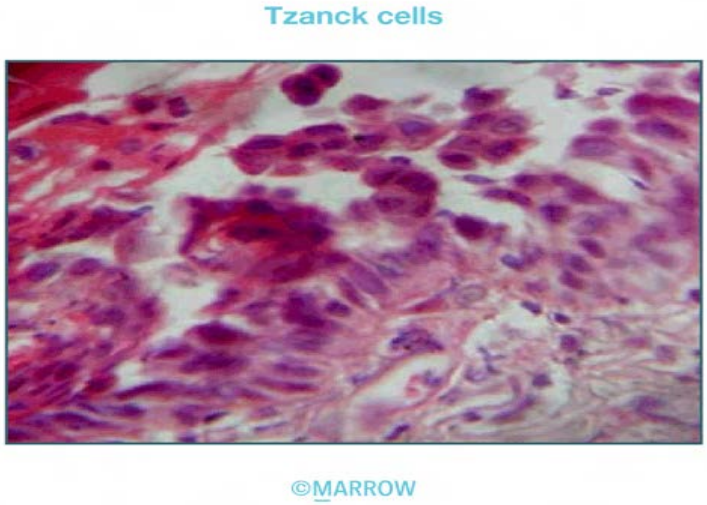
It is an autosomal dominant disorder occurring due to a mutation in the ATP2C1 gene encoding the SERCA calcium channel ATPase. It causes blistering, particularly in the intertriginous areas.

On histology, there is a widespread loss of cohesion between suprabasal keratinocytes leading to acantholysis, which is incomplete. Hence, separated keratinocytes are still partially connected to each other giving the appearance of a dilapidated or broken brick wall, as shown in the following image.

Solution to Question 30:

Tzanck cells are keratinocytes.

These cells are seen in vesiculobullous disorders, as a result of acantholysis. The keratinocytes lose their polyhedral shapes and characteristically become round with hyperchromatic nuclei and perinuclear halo, as seen in the following image.



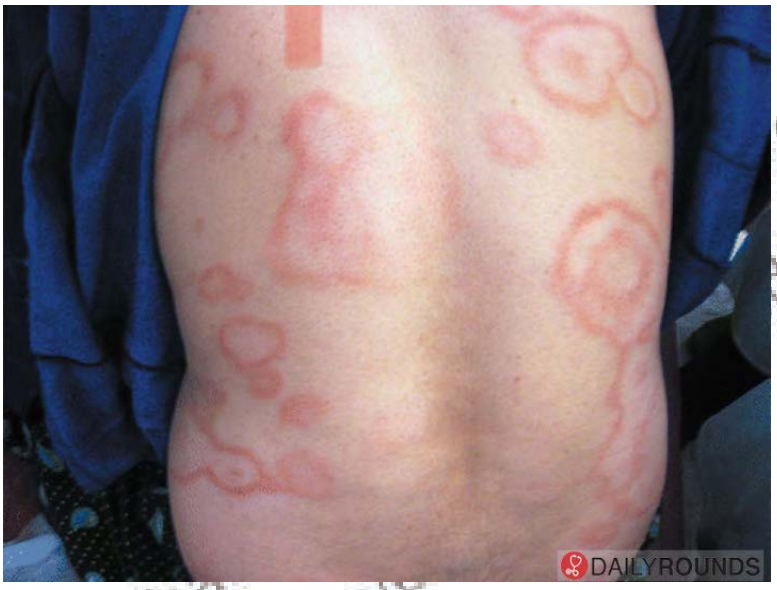
Solution to Question 31:

Multinucleated giant cells on a Tzanck smear are seen in varicella-zoster and herpes simplex infections.

Mycobacterial Infections

Question 1:

A patient presents to the OPD with skin lesions that are associated with loss of sensation. What is the most unstable form of this patient's disease?



a) Borderline tuberculoid

b) Lepromatous leprosy

c) Borderline borderline

d) Borderline lepromatous

Question 2:

Which of the following is the most common type of leprosy seen in India?

a) Tuberculoid leprosy

b) Borderline tuberculoid

c) Borderline lepromatous

d) Lepromatous leprosy

Question 3:

A 40-year-old man presented with the following skin lesions that are associated with loss of sensation. What type of leprosy are these lesions suggestive of?

a) Lepromatous

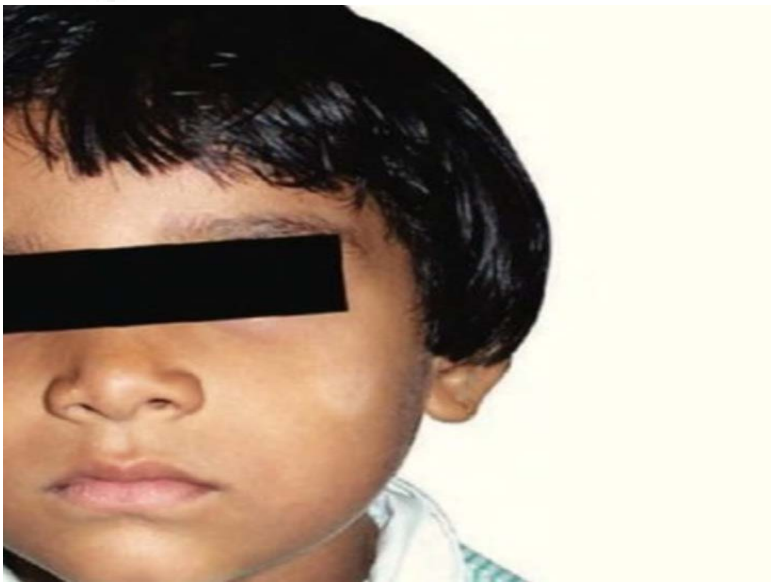
b) Borderline lepromatous

c) Tuberculoid

d) Borderline tuberculoid

Question 4:

While examining a 7-year-old child, you note the given lesion. It is not associated with sensory loss or loss of sweating. Slit-skin smear is negative. What is the most likely diagnosis?



a) Borderline tuberculoid leprosy

b) Pityriasis alba

c) Indeterminate leprosy

d) Nevus depigmentosus

Question 5:

While counseling the wife of a man diagnosed with leprosy, you give her a list of symptoms to watch for. If she were to develop leprosy, which of the following sensations would be lost first?

a) Pain

b) Temperature

c) Fine touch

d) Vibration sense

Question 6:

Your dermatology consultant wishes to conduct a study on leprosy in your district. He has tasked you with collecting data on the patients and classifying them based on Ridley Jopling classification. Which of the following patients would not belong under any of the categories in this classification system?

a) 55-year-old with lepromatous leprosy

b) 30-year old with borderline leprosy

c) 67-year-old with tuberculoid leprosy

d) 42-year-old with pure neuritic type leprosy

Question 7:

Which is the most common nerve involved in leprosy?

a) Posterior tibial nerve

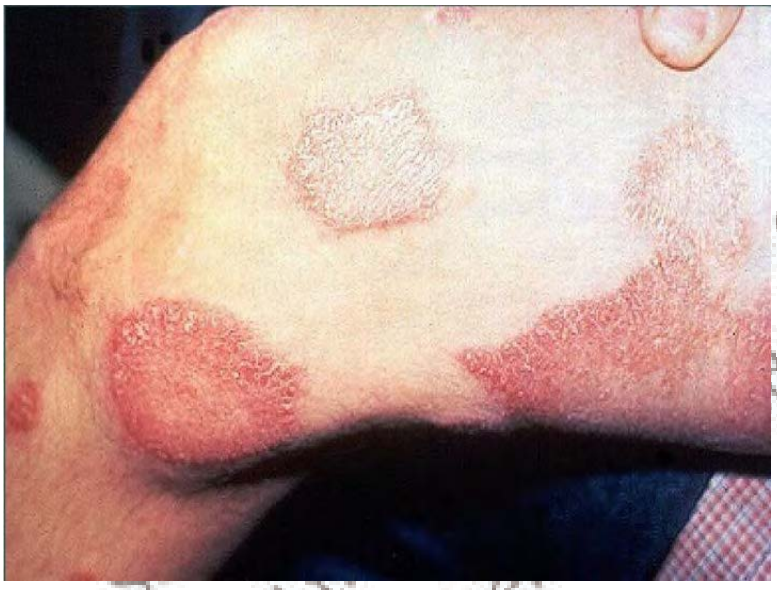
b) Ulnar nerve

c) Common peroneal nerve

d) Facial nerve

Question 8:

A 32-year-old woman presents with the following hypoesthetic skin lesions. Which type of disease is this lesion characteristic of?



a) Indeterminate type

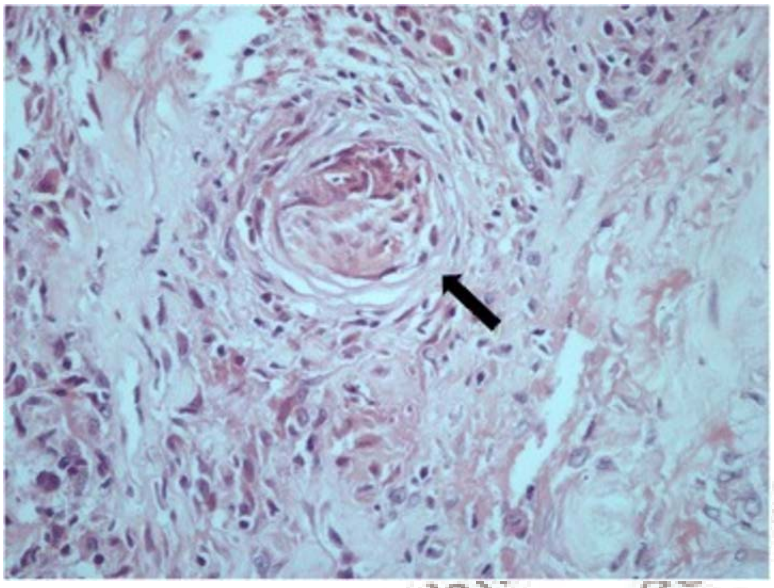
b) Pure neuritic type

c) Lepromatous type

d) Borderline type

Question 9:

A 50-year-old woman is being evaluated for a solitary skin lesion. Biopsy shows the following finding associated with nerve destruction. What is the likely diagnosis?



a) Tuberculoid leprosy

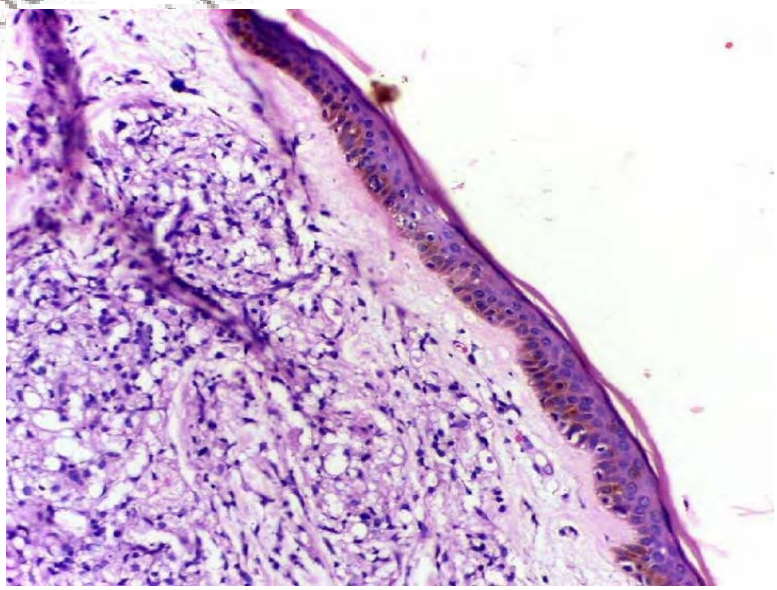
b) Borderline tuberculoid leprosy

c) Borderline lepromatous leprosy

d) Lepromatous leprosy

Question 10:

Histopathology of a tissue sample from a patient with leprosy is shown below. Which form of the disease is this patient unlikely to have?



a) Tuberculoid leprosy

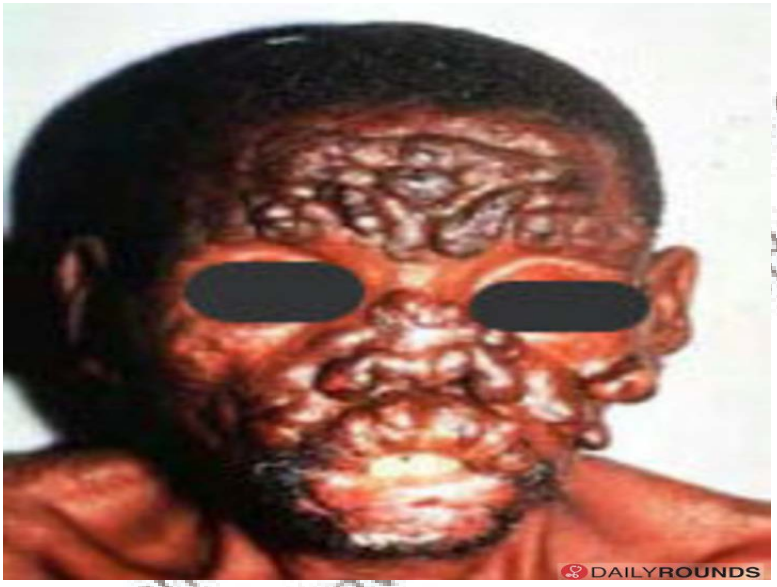
b) Lepromatous leprosy

c) Pure neuritic leprosy

d) Borderline leprosy

Question 11:

Which of the following is not an early feature of the condition depicted below?



a) Indistinct shiny macules with normal sensation

b) Nasal stuffiness, crusting and epistaxis

c) Oedema of ankles and legs

d) Stocking and glove anaesthesia

Question 12:

You volunteer at a leprosy colony with 300 residents, where you encounter several patients with pure neuritic leprosy. Among them, which of the following presentations will you encounter most commonly?

a) Symmetric involvement of multiple nerves

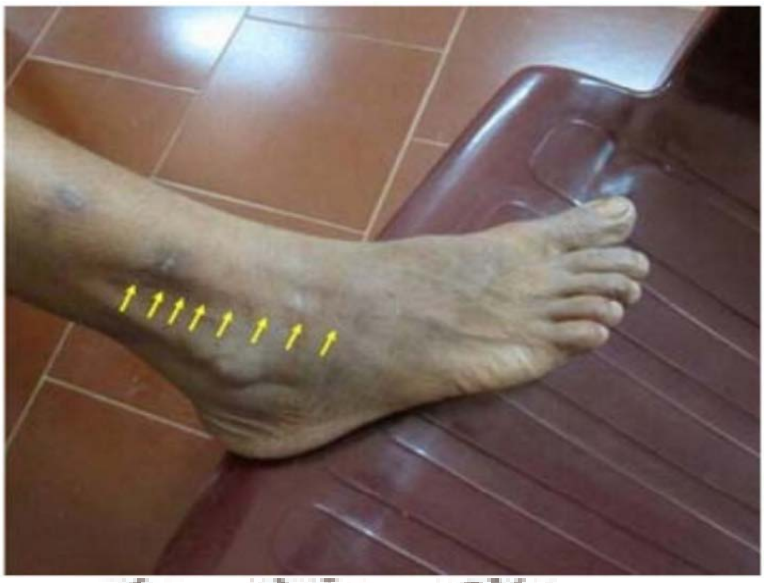
b) Asymmetric involvement of multiple nerves

c) Nerve abscess

d) Mononeuritis

Question 13:

A 35-year-old man with a history of anesthetic skin lesions presents to you with difficulty in moving his foot. On inspection, the following finding is seen. Additionally, you note a high-stepping gait when he enters the clinic. Which of the following is not a feature of this disease?



a) Cranial nerve involvement

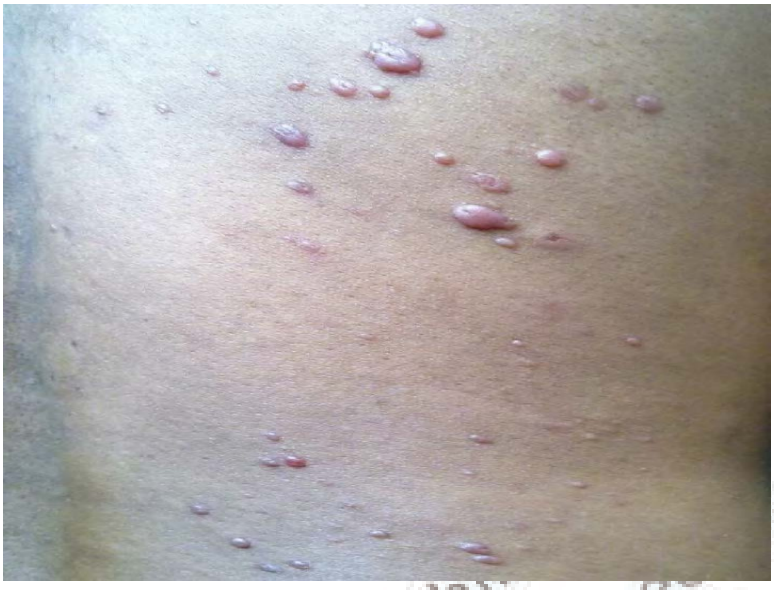
b) Affects superficial nerve trunks more commonly

c) Burning and shooting pain

d) Treatment stops the progression of neuropathy

Question 14:

A 40-year-old man, whose wife is a known case of leprosy, presents with the following skin lesions all over his body. Which of the following is incorrect about this condition?



a) Low bacillary load in lesions

b) Reactions are rarely seen

c) Associated with dapsone resistance

d) Biopsy shows interlacing histiocytes

Question 15:

Which of the following is not seen in lepra bonita?

a) Appearance of premature aging

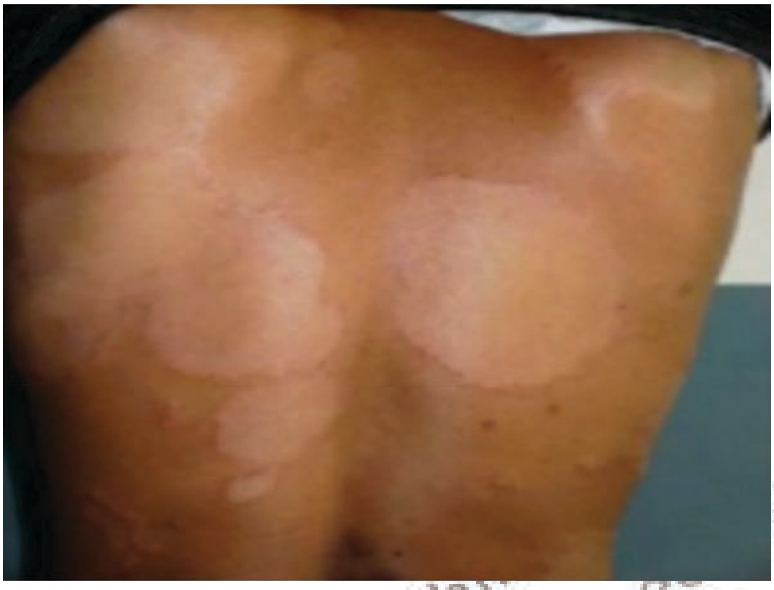
b) Obliteration of wrinkles and healthy-looking face

c) Lucio phenomenon

d) Absent nerve involvement

Question 16:

A 50-year-old man was referred to you with the following lesions. Slit skin smear showed a bacillary index of 3+. What duration of treatment will you recommend for this patient?



a) 24 months

b) 18 months

c) 12 months

d) 9 months

Question 17:

Which of the following statements is not true regarding dapsone?

a) It acts by inhibiting folic acid synthesis

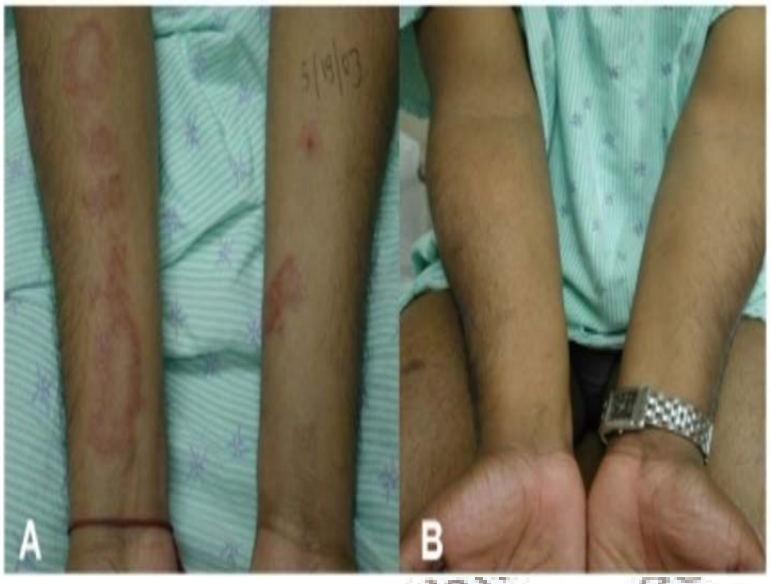
b) Poor oral absorption

c) It can cause DDS syndrome

d) Can cause hemolysis

Question 18:

A woman presents with painful lesions, during the course of her treatment for leprosy, that resolve with medications, as seen below. Which of the following statements is incorrect regarding this condition?



a) It is seen in the borderline spectrum of disease

b) Systemic symptoms are not a feature

c) It presents with new red, painful lesions

d) Neuritis and nerve abscesses may occur

Question 19:

A woman presents to the dermatology OPD with the following painful lesions that developed rapidly over the course of 3 weeks. She says that she has been undergoing leprosy treatment at her local PHC for the past 8 months. What form of leprosy is her condition most commonly associated with?

a) Borderline borderline

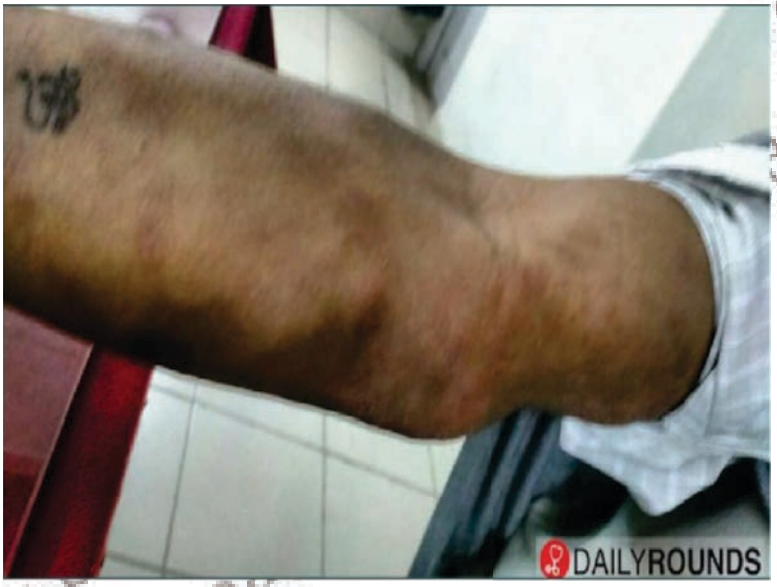
b) Borderline tuberculoid

c) Borderline lepromatous

d) Lepromatous leprosy

Question 20:

A known case of leprosy presents with the following new-onset painful lesions. Which of the statements is false about this condition?



a) It is more common in tuberculoid type of leprosy

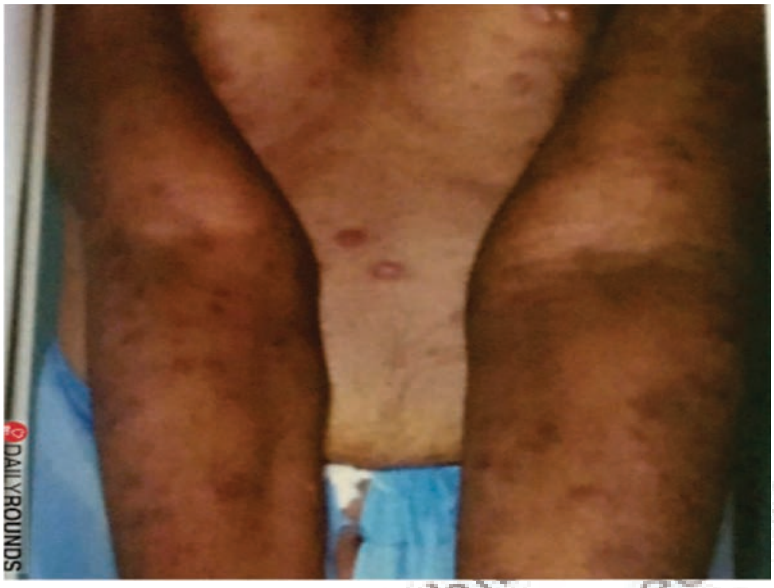
b) It may occur after completion of treatment

c) Keratitis, uveitis, dactylitis and orchitis may occur

d) It occurs due to immune complex deposition

Question 21:

A middle-aged man on treatment for lepromatous leprosy presents with the following painful lesions for one month. On examination, glove and stocking pattern of anesthesia is noted. What is the drug of choice for this condition?



a) Steroids

b) Thalidomide

c) Clofazimine

d) Rifamipicin

Question 22:

A 24-year-old post-transplant patient on multidrug therapy for multibacillary leprosy now presents with painful nodules on her forearms. You start her on a single drug regimen. Which of the following is not an adverse effect of this drug?

a) Crystal deposits in small bowel

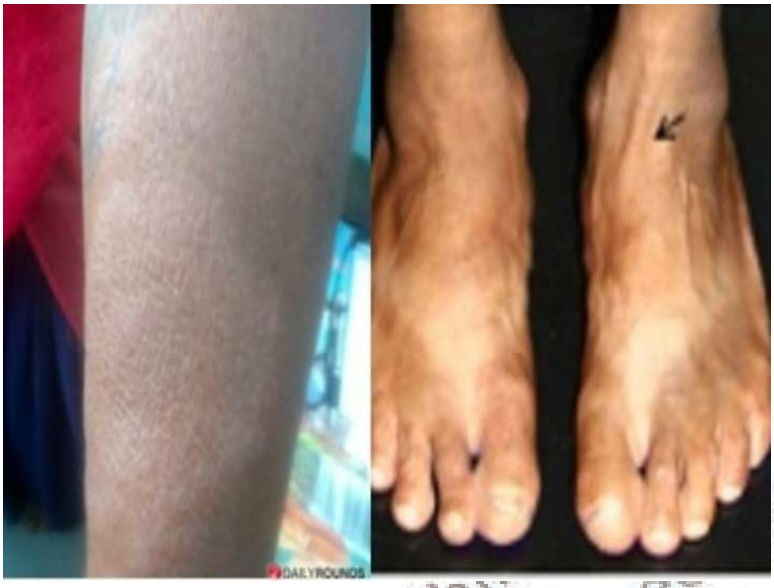
b) Ichthyosis on shins and forearms

c) Discolouration of skin

d) Crystal deposits in renal tubules

Question 23:

A 48-year-old man is referred to the dermatology OPD with the following findings. Which of the following would not be useful in diagnosing this condition?



a) Sensation testing

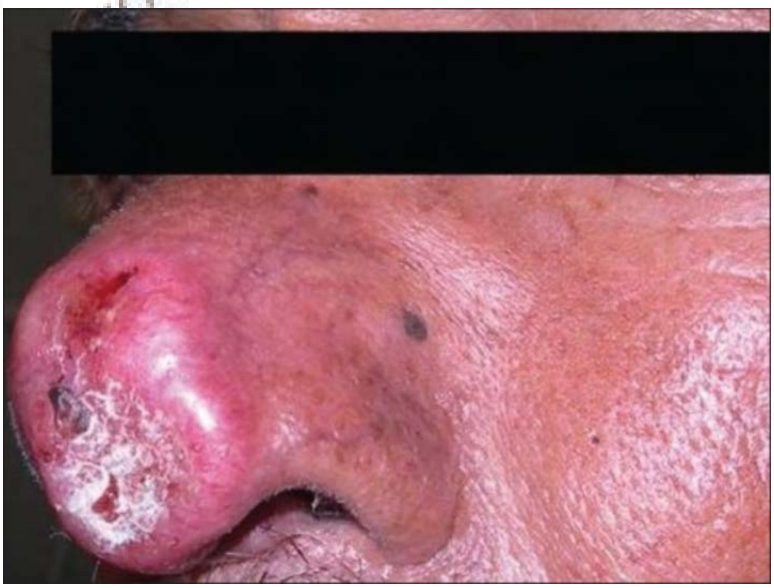
b) Skin smear

c) Lepromin test

d) Skin biopsy

Question 24:

A man comes to the dermatology OPD with the following lesion. Further probing reveals a history of tuberculosis in his wife. Which of the following statements is false about this skin lesion?



a) It is a multibacillary lesion

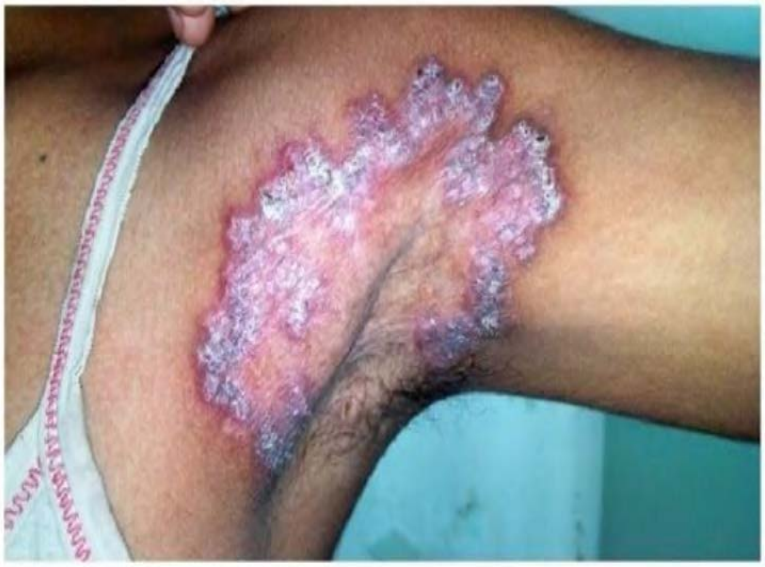
b) It occurs in previously sensitised patients

c) Lesions heal with central scarring

d) It is the most common cutaneous manifestation of TB in India

Question 25:

Identify the drug used to treat the condition shown below:



a) Anti-fungal therapy

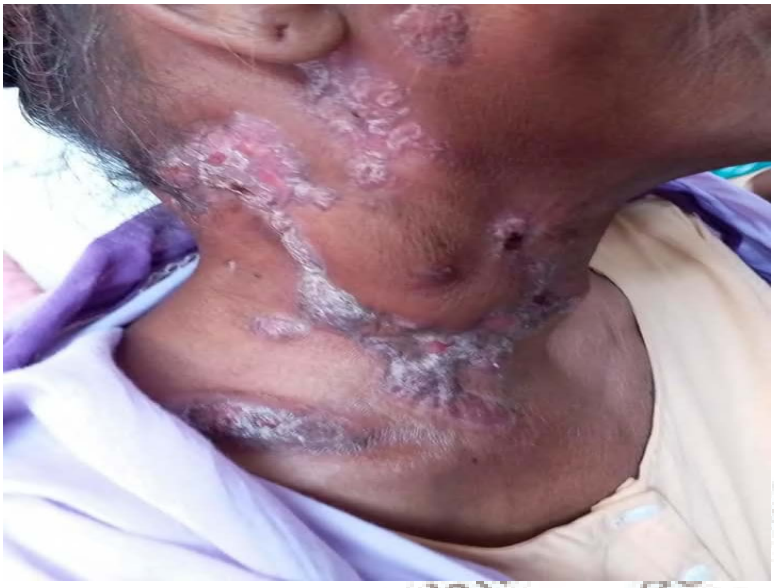
b) Anti-tubercular therapy

c) Topical steroids therapy

d) Anti-leprosy treatment

Question 26:

A 21-year-old man presents to the general surgery OPD with the following lesions. Which of the following statements about this condition is incorrect?



a) It is due to contiguous spread

b) Most common form of cutaneous tuberculosis in world

c) It can form a fungating mass

d) It is a paucibacillary lesion

Question 27:

Which of the following best describes the pathogenesis of tuberculosis verrucosa cutis?

a) Hypersensitivity reaction to tuberculosis antigens

b) Hematogenous spread from primary focus

c) Post primary tuberculosis with poor immunity

d) Post primary tuberculosis with good immunity

Question 28:

The skin biopsy of a 23-year-old tuberculosis patient with a long-standing skin rash showed non-caseating epithelioid granuloma around sweat glands and hair follicles. What is the diagnosis?

a) Lichen scrofulosorum

b) Miliary tuberculosis

c) Papulonecrotic tuberculid

d) Lupus vulgaris

Question 29:

Which of the following statements describes the pathophysiology of erythema induratum of Bazin?

a) Inoculation of M. tuberculosis through trauma

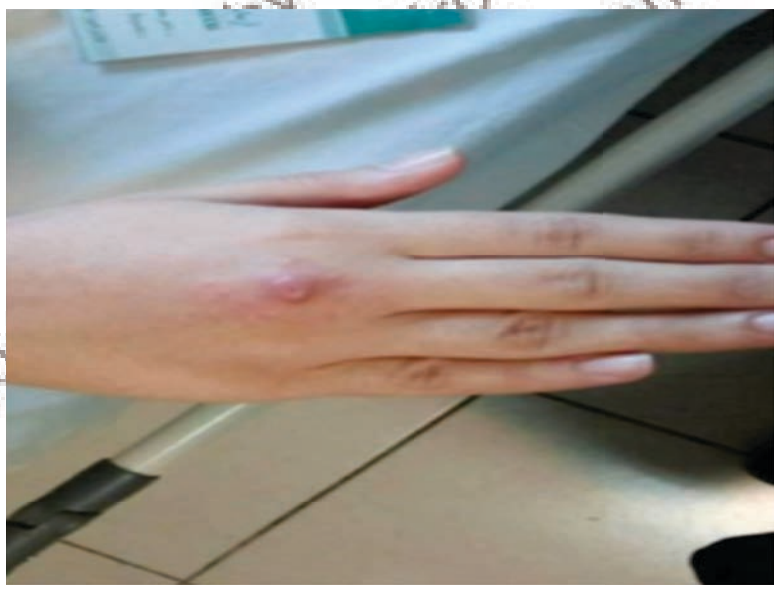
b) Hypersensitivity reaction to M. tuberculosis

c) Direct contiguous spread of infection

d) Hematogenous spread of M. tuberculosis

Question 30:

A 47-year-old woman, who cleans aquariums in a pet shop, presents with the following lesion. What is the likely causative organism?



a) M.avium-intercellulare

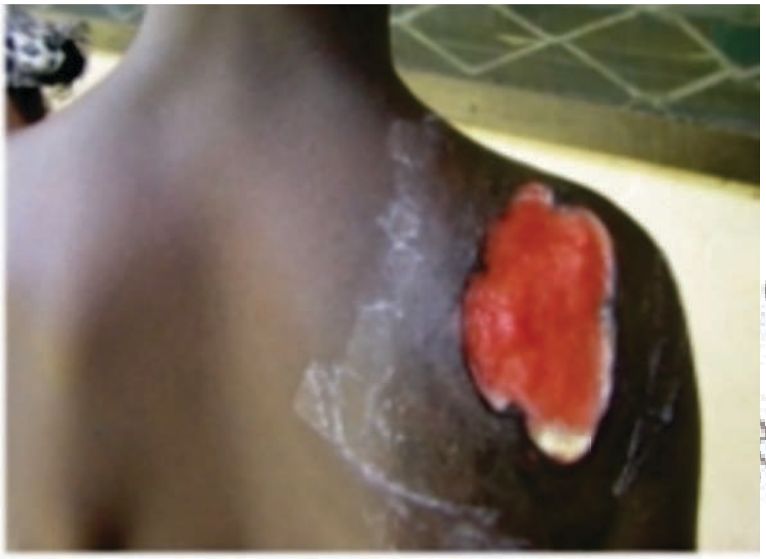
b) M. kansasi

c) M. ulcerans

d) M. marinum

Question 31:

A 20-year-old Nigerian tourist presents with the following painless lesion. He had noticed a hard nodule over the same area two weeks ago in his home country, prior to coming to India. As he had no pain, he did not pay attention to the progression of the ulcer. What is the causative agent?



a) M. avium-intracellulare

b) M. ulcerans

c) M. kansasi

d) M. tuberculosis

Answer Key

Question No.	Correct Option
1	c
2	b
3	d
4	c
5	b
6	d
7	b
8	d
9	a
10	a

11	d
12	d
13	d
14	a
15	d
16	c
17	b
18	c
19	c
20	a
21	a
22	d
23	c
24	a
25	b
26	d
27	d
28	a
29	b
30	d
31	b

Detailed Explanations

Solution to Question 1:

The image shows punched-out anesthetic lesions characteristic of the borderline spectrum of leprosy. The most unstable form of leprosy is the borderline-borderline type.

This type is rarely seen as it rapidly upgrades towards tuberculoid or downgrades towards lepromatous, based on the immune status of the individual. However, clinical features may lag behind the immunological and histological findings. This leads to numerous skin lesions and with features of both ends of the spectrum.

Lepromatous and tuberculoid types are the most stable.

Classification systems of leprosy:

• Ridley Jopling classification:

• Tuberculoid (TT)

• Borderline tubercular (BT)

• Borderline (BB)
• Borderline lepromatous (BL)
• Lepromatous (LL)
• Madrid classification:
• Lepromatous (LL)
• Tuberculoid (TT)
• Borderline/dimorphous
• Indeterminate (early unstable type)
• Indian classification - includes categories under Madrid classification + pure neuritic type
• WHO classification:

	Paucibacillary Leprosy	Multibacillary Leprosy
Number of skin lesions	up to 5	6 or more
Nerve involvement	0-1	2 or more
Slit skin smear	Negative on all sites	Positive at any site
Ridley-Jopling	TT, BT	BB, LL, BL

Solution to Question 2:

The most common type of leprosy in India is borderline tuberculoid (BT).

The spectrum of leprosy in India in decreasing order of prevalence:

• Borderline tuberculoid
• Borderline lepromatous
• Lepromatous leprosy
• Pure neuritic type
• Borderline-borderline
• Indeterminate type
• Histoid type

Solution to Question 3:

The image shows a hypopigmented skin lesion with pseudopodia and satellite lesions, suggestive of borderline tuberculoid (BT) leprosy.

Features of the lesions of BT leprosy:

• Macules and plaques of various sizes

• Dry, scaly surface

• Pseudopodia or finger-like extensions

• Satellite lesions

• Anesthetic patches

• Anhidrosis over the lesion

• Hair loss

There is asymmetric nerve involvement.

Solution to Question 4:

The image shows an ill-defined hypopigmented patch over the face. Normal sensations and a negative slit skin smear suggest indeterminate leprosy.

Indeterminate leprosy is usually the first sign of the disease, found during the screening of contacts of a known case. Clinical features include:

• Hypopigmented or coppery-brown macules, or patches of variable sizes.

• Number of lesions depends on the cell-mediated immunity.

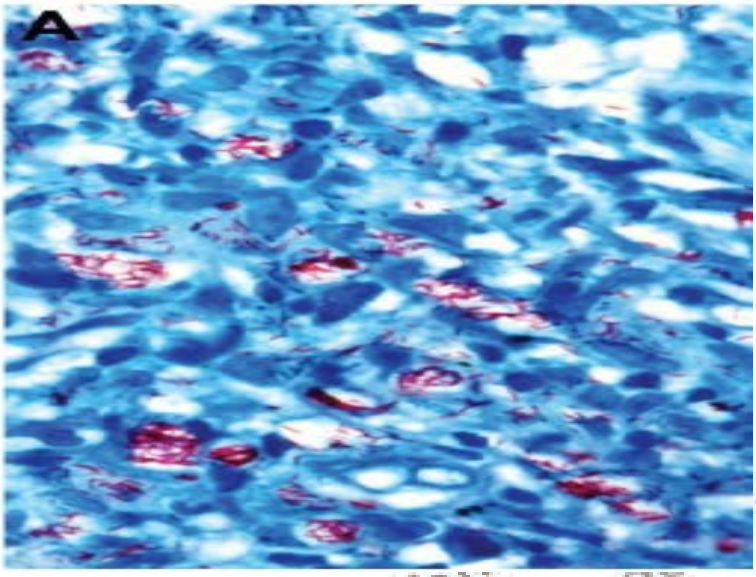
• Sensory loss- rare

• Loss of ability to differentiate temperature

A slit-skin smear is usually negative. It is confirmed by the demonstration of acid-fast bacilli in Fite-stained sections.

Most cases resolve spontaneously. With treatment, the prognosis is good.

The image below shows a high-power Fite-Faraco staining of a skin lesion showing globi of M.leprae.



Option A: Borderline tuberculoid type presents with 1-10 dry, scaly, hypopigmented lesions with or without satellite lesions with diminished sensations and slit skin smear showing scanty bacilli.

Option B: Pityriasis alba presents with single or few hypopigmented macules on the face with normal sensation, normal sweating. There is a history of atopy and waxing and waning of lesions.

Option D- Nevus depigmentosus is a congenital pigmentary disorder that presents with a non-progressive hypopigmented macule. It usually is present from birth or early childhood and remains stable throughout life.

Solution to Question 5:

The earliest sign of leprosy is loss of temperature, usually over the hands and feet.

The onset of leprosy is insidious, with sensory changes often preceding skin lesions by several years. Dysesthesia develops in a progressive manner. The ability to differentiate between hot and cold may be lost before the pinprick sensation. This type of dissociated sensory loss is suspicious for leprosy.

The sensations are lost in the following order:

Temperature > Fine Touch > Pain > Deep touch or pressure

Vibration and proprioception are lost in the later stages.

Solution to Question 6:

Pure neuritic type leprosy is not included in the Ridley Jopling classification. It is present under the Indian classification.

Classification systems of leprosy:

• Ridley Jopling classification:

• Tuberculoid (TT)

• Borderline tubercular (BT)

• Borderline (BB),

• Borderline lepromatous (BL)

• Lepromatous (LL)

• Madrid classification:

• Lepromatous (LL)

• Tuberculoid (TT)

• Borderline/dimorphous

• Indeterminate (early unstable type)

• Indian classification- includes categories under Madrid classification + pure neuritic type

Solution to Question 7:

The ulnar nerve is the most commonly affected nerve in leprosy.

A thickened ulnar nerve may be palpated at the elbow. There can be sensory loss over the palm (medial) and motor deficit causing a claw hand.

The commonly affected nerves in the order of frequency are:

Ulnar > Posterior tibial > Median > Lateral popliteal > Facial

Posterior tibial nerve: Paralysis and contracture of the small muscles of the foot and anesthesia of the sole.

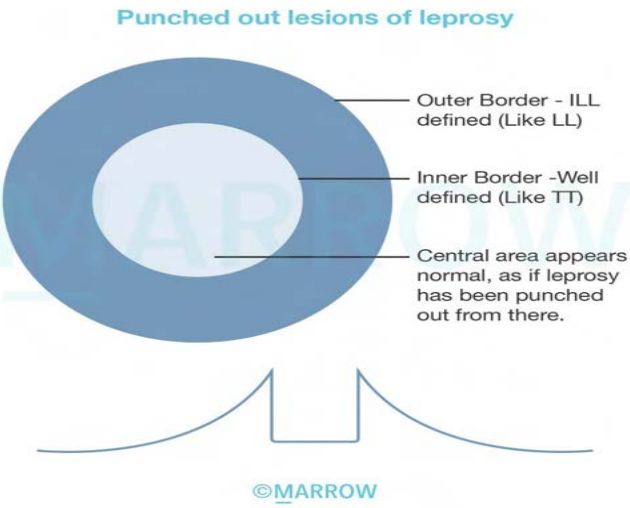
Common peroneal nerve: Difficulty in dorsiflexion and eversion of the foot and anesthesia of the outer border of the foot, causing trauma and plantar ulceration.

Solution to Question 8:

The given image shows punched-out lesions, which are characteristic of borderline disease, particularly borderline-borderline and borderline lepromatous.

Polymorphic lesions in borderline-borderline disease produce a geographical or map-like appearance. The two characteristic lesions seen are punched out and inverted saucer lesions.

In the given lesion, two borders are visible. The outer border is ill-defined and the inner border is well-defined. The term punched out refers to the center of the lesions, which look like leprosy has been punched out from that area. It is also called Swiss cheese or annular appearance.



Inverted saucer lesions are raised lesions with ill-defined borders as shown below.

Solution to Question 9:

A single skin lesion and histological finding of a granuloma with nerve destruction are suggestive of tuberculoid leprosy.

Borderline types: Granulomas are more prominent in BT than BL types. The nerves may be moderately swollen with infiltrates, but there is no nerve destruction.

Lepromatous leprosy: Granulomas are less and dense uniform macrophage infiltration may be seen. Large numbers of AFBs are also seen, forming clumps.

Solution to Question 10:

The given image shows a grenz zone or Band of Unna, which is a band of uninvolved papillary dermis that does not contain granulomas or inflammatory infiltrate. It is absent in tuberculoid leprosy.

The Grenz zone is most prominent in lepromatous leprosy, as there are scarce granulomas to fill up the space. It is also seen in the borderline spectrum.

In tuberculoid leprosy, dermal granulomas, consisting of groups of epithelioid cells with giant cells, are seen. The granulomas are elongated and generally run parallel to the surface, following neurovascular bundles. The granulomas extend up to the epidermis, thereby obscuring the Grenz zone.

The grenz zone is also seen in granuloma faciale and B-cell lymphoma.

Solution to Question 11:

The given image depicts lepromatous leprosy. Glove and stocking anesthesia is a late feature.

In lepromatous leprosy, the earliest clinical manifestations are dermal.

The early features include:

• Numerous, ill-defined, shiny macules

• Anhidrosis

• Normal sensation

• Nasal symptoms - stuffiness, discharge, epistaxis

• Peripheral oedema due to capillary stasis

Early nerve involvement is asymptomatic. Peripheral nerves are affected first. In the late stages, even facial and corneal nerves can be involved. Loss of sensation begins as patchy and later

becomes extensive. Stocking and glove anesthesia is a late manifestation. The affected skin can become dry and ichthyotic.

The late stage of lepromatous leprosy gives rise to the following features:

• Leonine facies - infiltration of skin folds

• Madarosis - loss of eyelashes eyebrow hair

• Rat-bitten ear - repeated ulceration and healing

• Saddle nose deformity - breakdown of nasal cartilage

Lepromatous leprosy develops in three stages:

• Early macular stage

• Infiltrated stage - induration due to dermal infiltration, marked in face and ear lobe

• Late nodulo-plaque stage - progress to papules, nodules, and plaques, which ulcerate.

Solution to Question 12:

Mononeuritis is the most common form of presentation of pure neuritic form of leprosy.

Pure neuritic form is a variant of leprosy characterized by the isolated involvement of peripheral nerve trunks with the absence of skin lesions. It is more common in India and Nepal.

The clinical features of this variant of leprosy include:

• Nerve thickening

• Sensory neuropathy - pain, tenderness (predominant)

• Loss of function

Nerve trunks of upper limb are more commonly involved. Asymmetric involvement of multiple nerve trunks is also seen. Symmetric polyneuritis is a rare feature. Occasionally, it may present as a nerve abscess.

Nerve biopsy is the gold standard method for diagnosis of pure neuritic leprosy.

Solution to Question 13:

The given clinical scenario of a patient with foot drop, skin lesions, and nerve thickening, as shown in the image, is suggestive of leprosy or Hansen's disease. Neuropathy may continue to progress even after effective MDT. This can lead to secondary impairment for years after completion of therapy.

The superficially located nerves are more commonly involved, especially ulnar, median, radial, peroneal, posterior tibial, greater auricular as well as 5th and 7th cranial nerves.

Solution to Question 14:

The given image with shiny papules and nodules on normal skin is suggestive of histoid leprosy. It is characterized by a very high bacillary load.

Histoid leprosy is a rare type of multibacillary leprosy where the bacilli are confined to the lesions and hence, globi are relatively few. The name arises from the microscopic finding of spindle-shaped histiocytes forming interlacing bands and whorls.

It was initially associated with dapsone monotherapy and irregular treatment, leading to the development of dapsone-resistant bacteria. It is now recognized to arise de novo also.

Lepra reactions are considered to be uncommon in histoid leprosy.

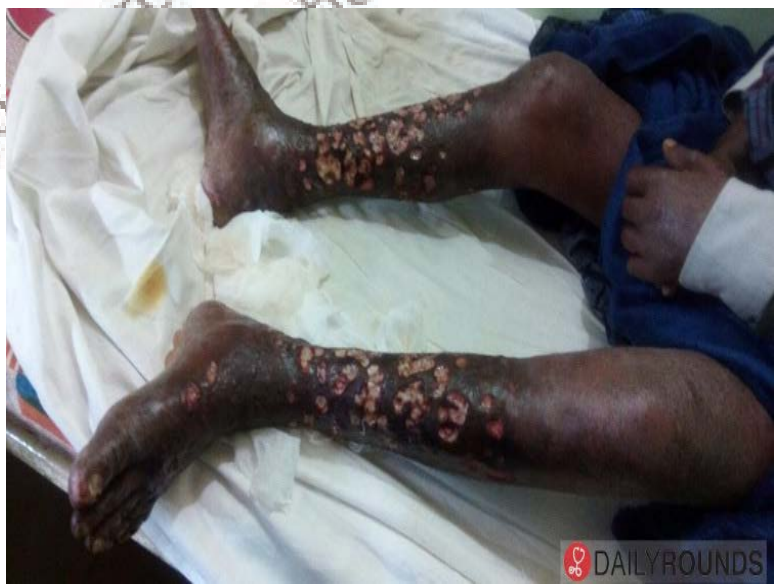
Solution to Question 15:

Lepra bonita usually presents with pan-neuritis. It is a diffuse form of lepromatous leprosy and is also called the leprosy of Lucio and Latapi.

Diffuse infiltration of the skin of the face causes obliteration of wrinkles giving a myxedema-like appearance. It appears as a healthy look, leading to the name lepra bonita (beautiful leprosy).

As the disease progresses, the infiltration persists but the skin becomes thinner and atrophic and, consequently, the patient appears to have prematurely aged. Generalized hair loss is also seen.

Lucio phenomenon is a type of lepra reaction seen in these patients and is characterized by well-defined, angular, jagged, purpuric lesions evolving into ulcerations and spreading in ascending fashion and healing with atrophic white scarring, as seen below.



Solution to Question 16:

A patient presenting with multiple skin lesions and bacillary index > 2+ is classified as multibacillary according to WHO classification. The recommended duration of treatment is 12 months.

Solution to Question 17:

Dapsone has good oral absorption and it has a long half■life, averaging 28 hours.

Dapsone or DDS (4,4■diamino-diphenyl sulphone) is weakly bactericidal due to the inhibition of dihydropteroate synthase, which inhibits folate synthesis. It is a part of the multidrug therapy for leprosy.

Adverse effects include:

• Mild hemolysis and anemia

• Psychosis.

• DDS syndrome or five-week dermatitis - occurs 5-6 weeks after starting dapsone. It may be fatal. It presents with:

• Exfoliative dermatitis

• Hepatosplenomegaly

• Lymphadenopathy

• Fever

• Hepatitis.

Uses of dapsone:

• Steroid sparing drug - long-term therapy for autoimmune blistering diseases

• Adjuvant therapy - bronchial asthma

• CNS-protective - seizure disorders, strokes, glioblastoma

Solution to Question 18:

The given scenario of painful lesions in the context of leprosy treatment is suggestive of type 1 lepra reaction, which presents with inflammation of existing skin lesions.

Solution to Question 19:

Development of ulcerating lesions following initiation of treatment for leprosy is suggestive of a severe type 1 lepra reaction. They are commonly seen in the borderline spectrum but are most severe in borderline lepromatous leprosy.

Lepra 1 reactions are due to an enhanced cell-mediated immune response to M.leprae. They usually present abruptly with redness and inflammation of existing lesions but can cause ulceration in severe cases. It occurs due to a large amount of M. leprae antigens in these patients which results in prolonged and repeated reactions during treatment.

Note: Another form of lepra reaction with ulcerating lesions is the Lucio reaction. It is a rare type of lepra reaction that is seen in patients with lepra bonita. It is often the initial presentation in untreated patients. It is common over extremities and spreads in an ascending fashion. It presents as tender nodules that form jagged ulcers.

Solution to Question 20:

The given scenario of painful, erythematous nodules over the limbs in a patient with leprosy is suggestive of erythema nodosum leprosum or type 2 lepra reaction.

It occurs in patients with multibacillary disease - lepromatous and borderline lepromatous leprosy.

Solution to Question 21:

The given scenario points to a diagnosis of erythema nodosum leprosum or type 2 lepra reaction. The drug of choice is oral corticosteroids.

Clofazimine is indicated in chronic ENL, which is steroid-refractory or when steroids are contraindicated.

Thalidomide is superior to steroids in controlling ENL and can be used for severe ENL in young men. However, it is generally avoided in women due to its devastating teratogenic side effects. It may be considered in severe ENL but must be used cautiously, with double contraception measures. It also causes peripheral neuropathy and, hence, would be avoided in this patient with lepromatous neuropathy. The high cost and restricted availability also limit the use of this drug.

Rifampicin should be avoided as it is highly bactericidal. The massive release of bacterial antigens may aggravate the lepra reaction.

Solution to Question 22:

The given scenario of painful nodules in a woman with leprosy is suggestive of erythema nodosum leprosum (ENL). The likely drug used in this immunosuppressed young woman is clofazimine, which causes deposition of crystals in the intestinal mucosa, liver, lymph nodes, and spleen, not renal tubules.

Clofazimine is a brick red, fat■soluble crystalline dye with a weak bactericidal action against M. leprae through an unknown mechanism. It also has an anti■inflammatory effect, which is useful in the management of ENL reactions.

The most noticeable side effect is skin discoloration, ranging from red to purple-black, the degree of discoloration depends on the dose and amount of leprous infiltration. It generally fades within 6–12 months after stopping clofazimine, however, traces of discoloration may remain even for up to 4 years. Urine, sputum, and sweat may turn pink.

It also produces scaling and ichthyosis of the shin and forearms.

Crystal deposition in the wall of the small bowel occurs as the drug is excreted into the bile. This causes GI side effects that range from mild cramps to diarrhea and weight loss.

Note: Corticosteroids are the first-line drugs in the treatment of ENL but would be avoided in this immunosuppressed patient.

Solution to Question 23:

The given images showing a hypopigmented lesion along with tibial nerve thickening are is suggestive of leprosy. Lepromin test is a prognostic test used in the classification of Leprosy. It has no diagnostic purpose.

It involves performing an intradermal injection of the lepromin antigen (synthesized from M. leprae) on the flexor surface of the forearm. It is a skin test for delayed hypersensitivity, is the only method for studying immunity in leprosy.

• Positive test - good cell-mediated immunity and points towards the tuberculoid side of the spectrum

• Negative test - poor cell-mediated immunity and POINTS towards the lepromatous side of the spectrum.

The antigens used in lepromin test are:

• Lepromin A (from armadillo-derived lepra bacilli)

• Dharmendra antigen

First is the early reaction of Fernandez, which consists of erythema and induration developing in 24-48 hours and usually remaining for 3-5 days; it is usually poorly defined and carries less significance.

The second and more meaningful result is the late reaction of Mitsuda, starting at 1-2 weeks (7-10 days), reaching a peak in three or four weeks, and gradually subsiding over the next few weeks. At end of 21 days, if there is a nodule >5mm in diameter, the reaction is said to be positive.

The test is used for the following purposes:

• To classify the lesions of leprosy patients.

• To assess the prognosis and response to treatment.

• To assess the resistance of individuals to leprosy.

• To verify the identity of candidate lepra bacilli.

Option A: Sensory testing is useful to detect hypoesthesia and nerve involvement of leprosy.

Option B: Slit skin smear shows the presence of acid-fast bacilli.

Option D: Biopsy would reveal few tuberculoid granulomas and plenty of foam cells, which are diagnostic of leprosy.

Solution to Question 24:

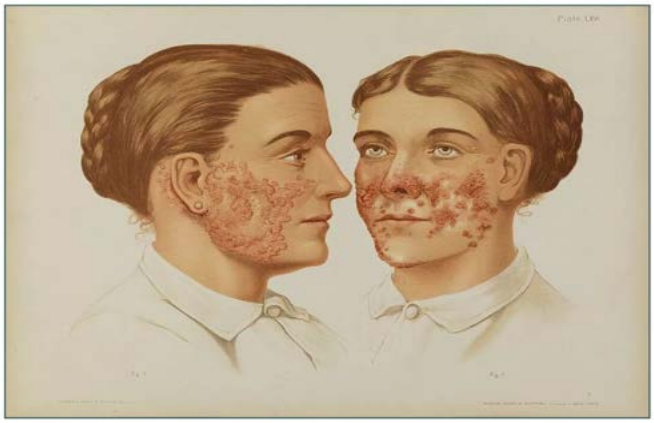
This clinical scenario with a history of exposure to tuberculosis is suggestive of lupus vulgaris, which often presents as atrophic warty plaques. It is a paucibacillary lesion.

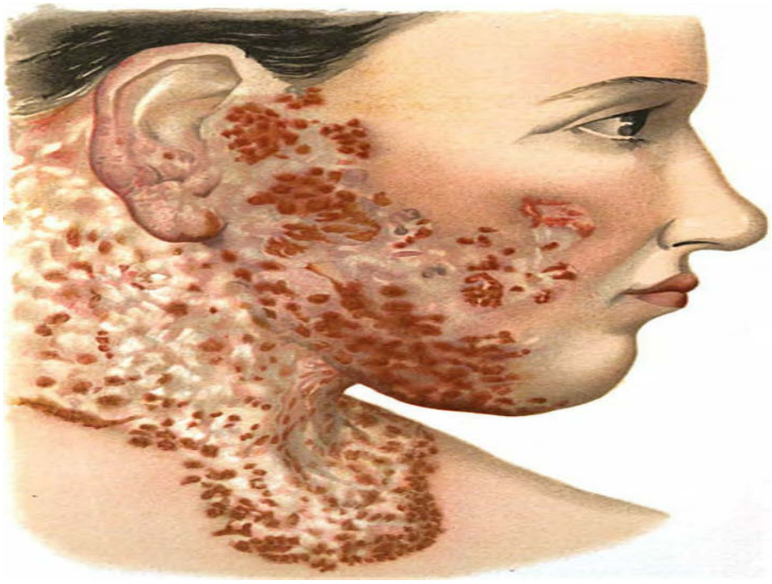
It occurs in previously sensitized hosts with good immunity. On histology, granulomas with scanty or absent caseation are seen.

It is the most common cutaneous tuberculosis in India. In India, it commonly occurs over the buttocks or the trunk, whereas, in Europe, it is common over the head and neck.

The lesions occur in the form of plaques with serpiginous edges or mutilating ulcers. They heal with central scarring.

Depiction of lupus vulgaris over face



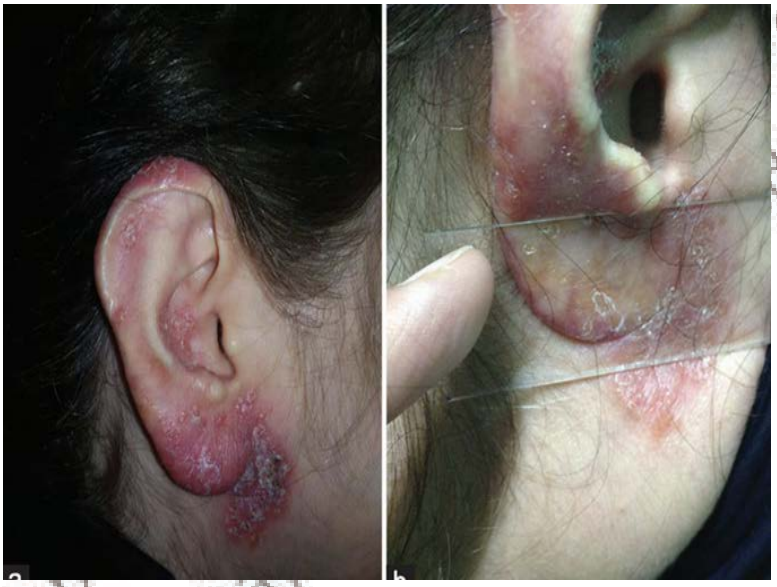


Solution to Question 25:

The given image shows an annular plaque with central scarring points to lupus vulgaris, which is treated using anti-tubercular drugs.

It is the most common cutaneous tuberculosis in India. The characteristic lesions are annular, infiltrated plaques with serpiginous edges, central atrophy and scarring and are commonly seen on face, buttocks and extremities.

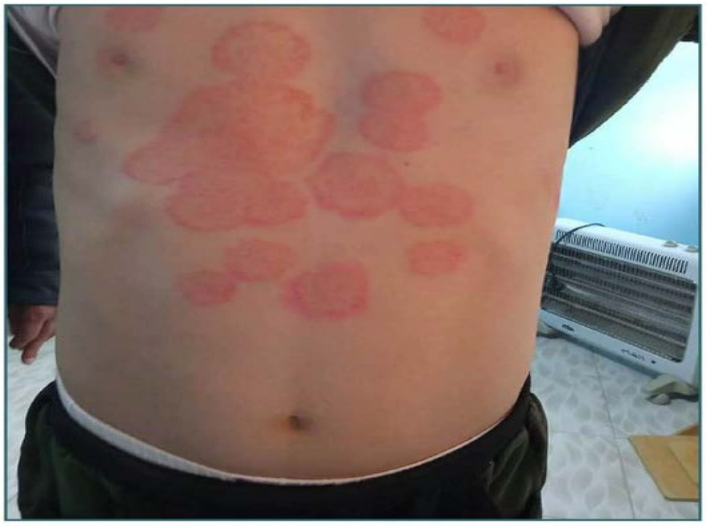
On diascopy, apple jelly nodules are seen.



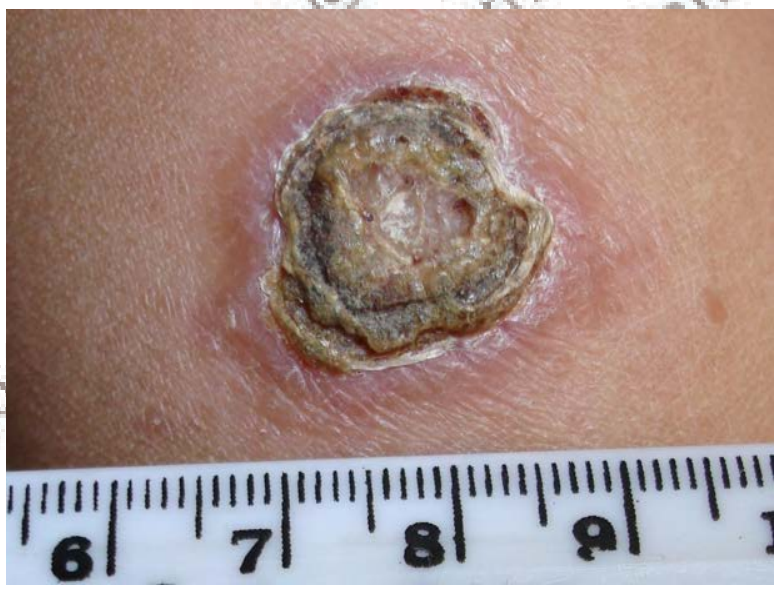
Histologically, tubercles are seen in the superficial dermis showing scanty or absent central caseation with surrounding epithelioid histiocytes and giant cells.

Other differential diagnoses for annular plaque include:

• Tinea corporis shows central clearing, peripherally raised scaly margins and presents with an itch.



• Cutaneous leishmaniasis lesions have central crusting and are seen on the face in patients from areas of high leishmaniasis prevalence.



Solution to Question 26:

The given image shows non-healing sinuses in the cervical region, which are a feature of scrofuloderma. It is a multibacillary manifestation of cutaneous tuberculosis.

It is the most common form of cutaneous tuberculosis worldwide. However, in India, lupus vulgaris is the most common type in adults.

It results from contiguous spread to the skin from an underlying tuberculous focus. The lesions evolve as follows:

• Begins as asymptomatic, bluish-red, subcutaneous swellings (persist for months)

• Break down to form undermined ulcers

• Proliferation of granulation tissue in ulcers forms fungating masses

• Numerous fistulae may occur, which can form draining sinuses onto the skin.

Histology shows marked caseating necrosis, in which there are usually numerous bacteria.

Spontaneous healing can occur, but the course is very protracted and leaves typical, cord■like scars.

Antituberculous therapy should be commenced promptly.

Solution to Question 27:

Tuberculosis verrucosa cutis is a form of post-primary tuberculosis that occurs in previously sensitized people with good immunity.

It is also called:

• Warty tuberculosis

• Anatomist's warts

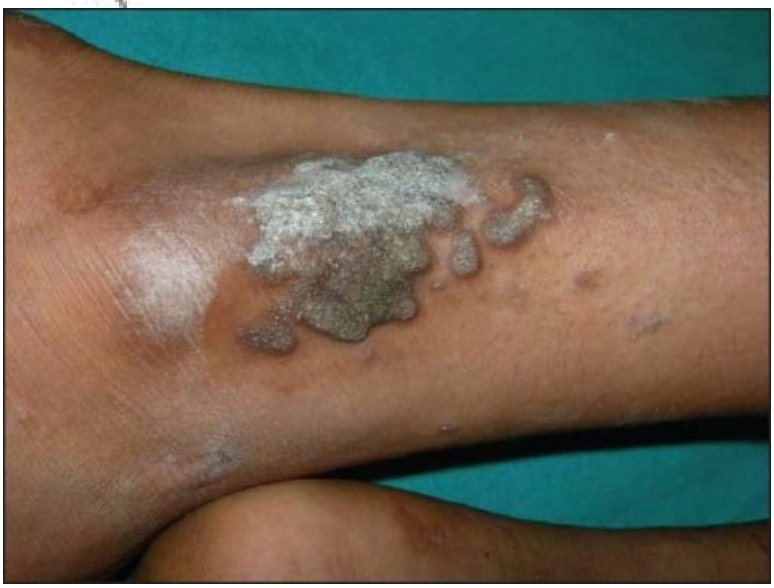
• Prosector's warts

• Verruca necrogenica

It is caused by exogenous inoculation of M. tuberculosis into the skin through open wounds or abrasions. Due to the strong immune response, the lesion is paucibacillary. Histology shows hyperkeratosis with no granulomas.

The lesions are typically asymptomatic and start as a small, indurated, warty papule which by gradual extension, form a verrucous plaque, as shown below. Irregular extension at the edges leads to a serpiginous outline with finger■like projections.

Management: Antitubercular therapy



Solution to Question 28:

Non-caseating epithelioid granulomas surrounding sweat glands and hair follicles are seen in lichen scrofulosorum.

Lichen scrofulosorum is a tuberculid. It is a cutaneous hypersensitivity reaction to the hematogenous spread of M.tuberculosis antigens.

It presents as a lichenoid eruption of tiny papules occurring predominantly in children and adolescents with active tuberculosis.

The tuberculin test is usually strongly positive.

With specific ATT, the lesions usually clear within 4 weeks without scarring.

Option B: Miliary tuberculosis refers to disseminated internal tuberculosis. Histology shows caseating tuberculous granulomas with multiple acid■fast bacilli.

Option C: Papulonecrotic type of tuberculid occurs due to thrombosis and destruction of small dermal vessels as a result of vasculitis.

Option D: Lupus vulgaris, on histology, shows tuberculous granulomas with scanty or absent caseation in the superficial dermis. There is no specific involvement around the hair follicles and sweat glands.

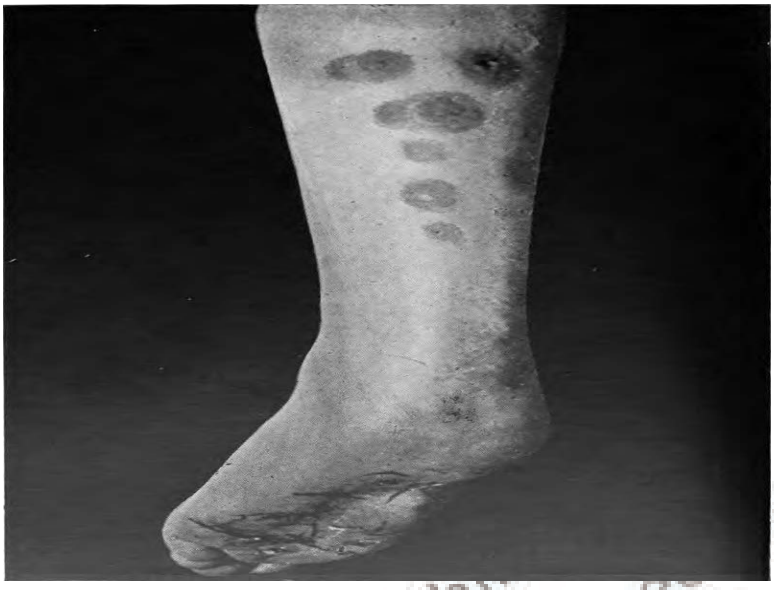
Solution to Question 29:

Erythema induratum of Bazin is a hypersensitivity reaction due to tuberculosis.

It is the most common form of tuberculid. It mostly affects middle-aged females.

The pathology is granulomatous vasculitis and panniculitis. It classically presents as crops of small, tender, erythematous nodules or plaques on the calves, which may ulcerate.

The following image shows plaques over the calf region:

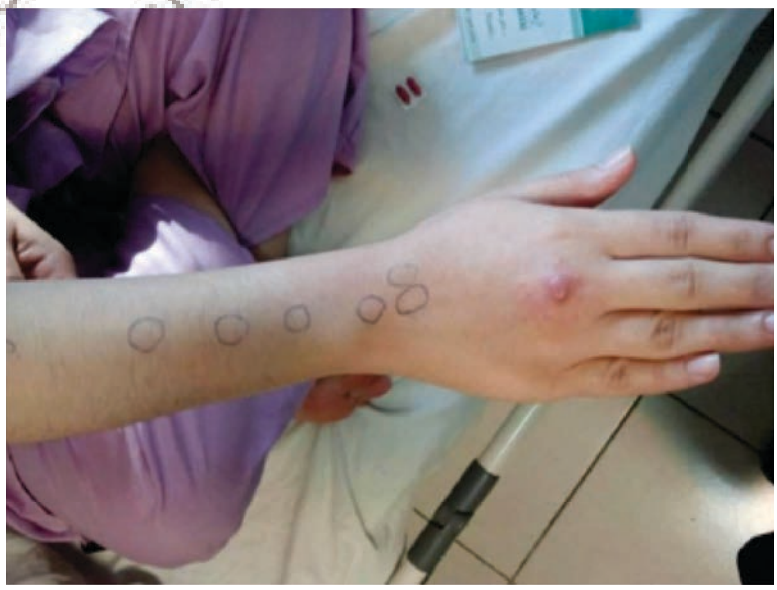


Solution to Question 30:

The given image shows a fish tank granuloma or swimming pool granuloma, which is caused by Mycobacterium marinum.

M. marinum enters the body through abrasions or minor cuts on the skin, which come into contact with contaminated fresh or saltwater.

Skin lesions develop after an average incubation period of 2–3 weeks. The most common presentation is a nodule on the hand or arm that spreads in a sporotrichoid fashion, with a succession of nodules along the lymphatics, as shown below. Ulcers and abscesses may occur in immunocompromised patients.



Solution to Question 31:

The given clinical scenario is that of a Buruli ulcer, which is caused by Mycobacterium ulcerans.

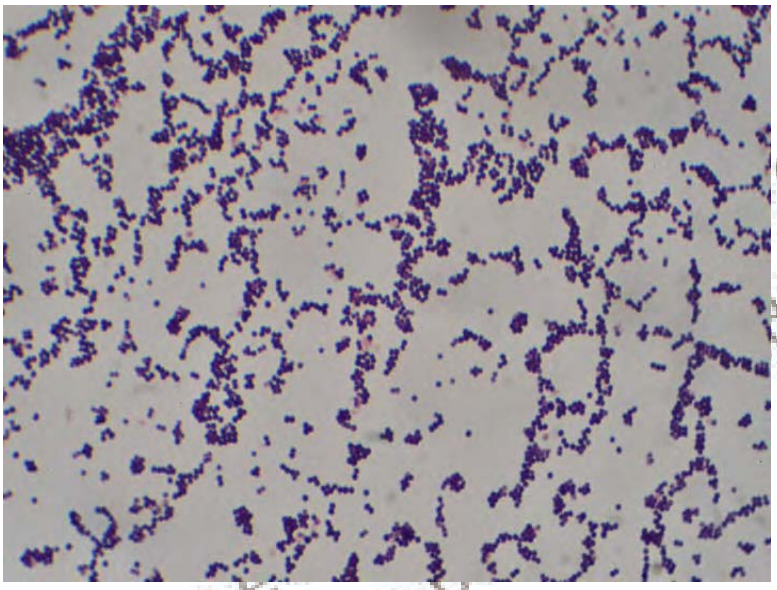
It is the third most common mycobacterial skin infection in immunocompetent people. It is endemic to Africa and Australia, where it affects children and elderly people. It starts as a nodule or papule which progresses further to form an extensive, necrotic ulcer, exposing muscle and tendon. Most lesions occur on the lower extremities. Healing is slow.

Extensive Buruli ulcer

Bacterial Infections

Question 1:

Which of the following skin infections is caused by the organism shown below?



a) Pyoderma gangrenosum

b) Pemphigus neonatarum

c) Impetigo herpetiformis

d) Ecthyma contagiosum

Question 2:

A sample taken from a cutaneous lesion showed growth of the following colonies on blood agar after 24 hours. Catalase test showed no bubble formation. Which of the following diseases is not likely to be associated with this organism?

a) Carbuncle

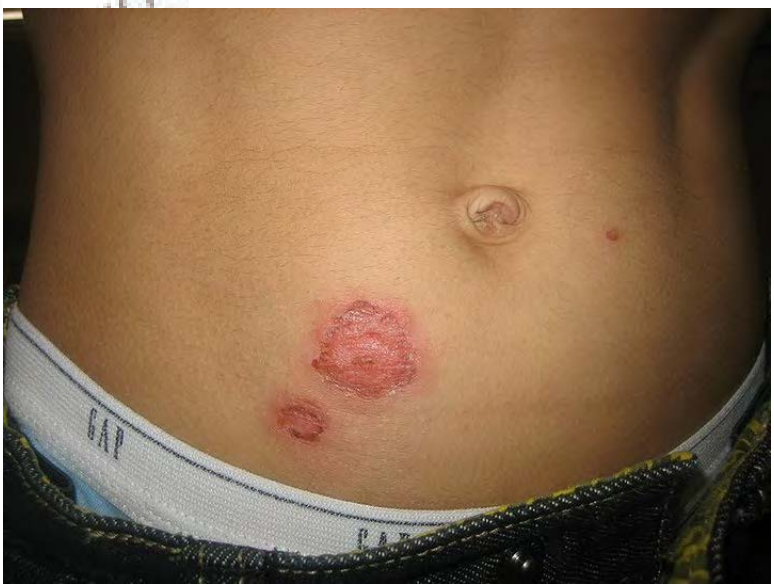
b) Scarlet fever

c) Erythema nodosum

d) Kawasaki disease

Question 3:

A child is brought to the pediatrician's office with the findings shown below. The mother reports that they were initially blisters that started 4 days ago and burst the previous night. What is the most likely causative organism for this condition?



a) Staphylococcus aureus

b) Streptococcus pyogenes

c) Staphylococcus epidermidis

d) Streptococcus agalactiae

Question 4:

An 11-year-old boy is brought with complaints of itchy lesions on his face for 5 days. On examination, multiple ruptured blisters with honey-colored crusting are seen. What is the most likely diagnosis?

a) Bullous Impetigo

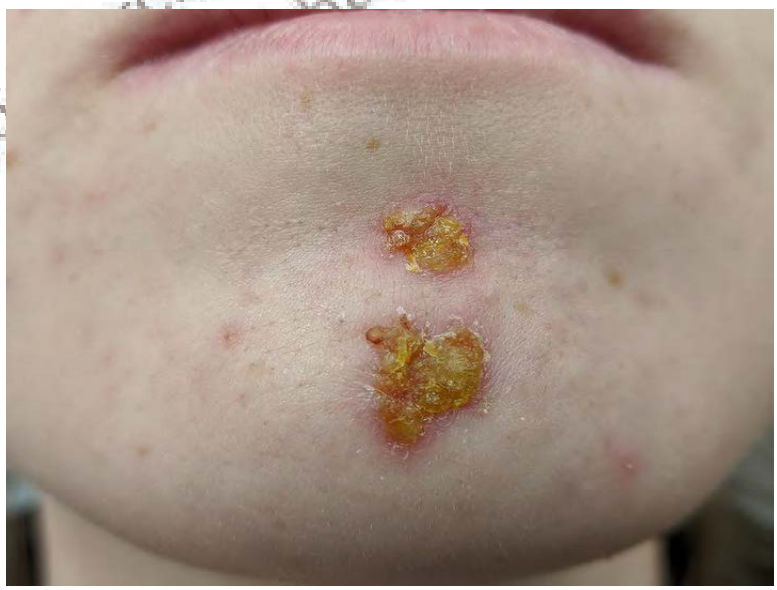
b) Ecthyma

c) Non-bullous Impetigo

d) Erysipelas

Question 5:

A patient presented with a pruritic lesion on his face. Microbiological examination of swabs taken from the lesion showed Gram-positive cocci arranged in pairs and chains. Which of the following is not a possible complication of his condition?



a) Scarlet fever

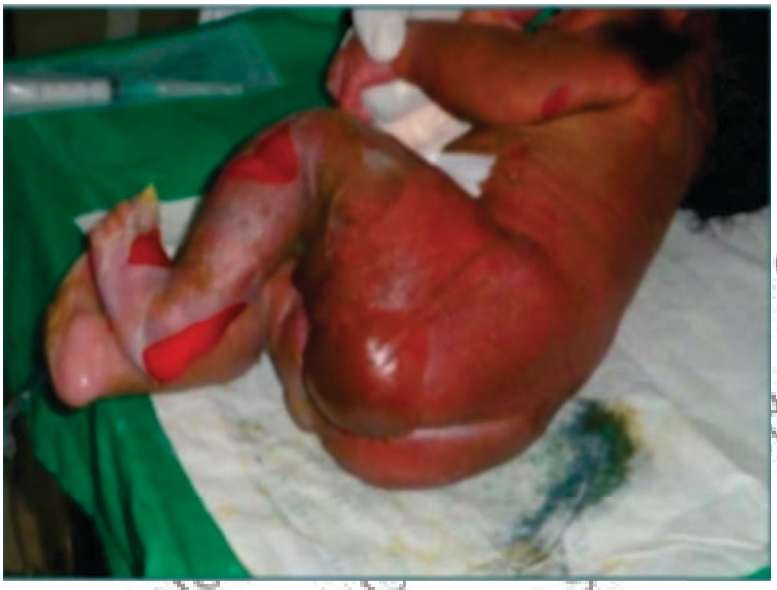
b) Post-streptococcal glomerulonephritis

c) Rheumatic fever

d) Erythema multiforme

Question 6:

In the condition shown below, which toxin is implicated, and what is its target protein?



a) Exfoliative toxin, Desmoglein 1

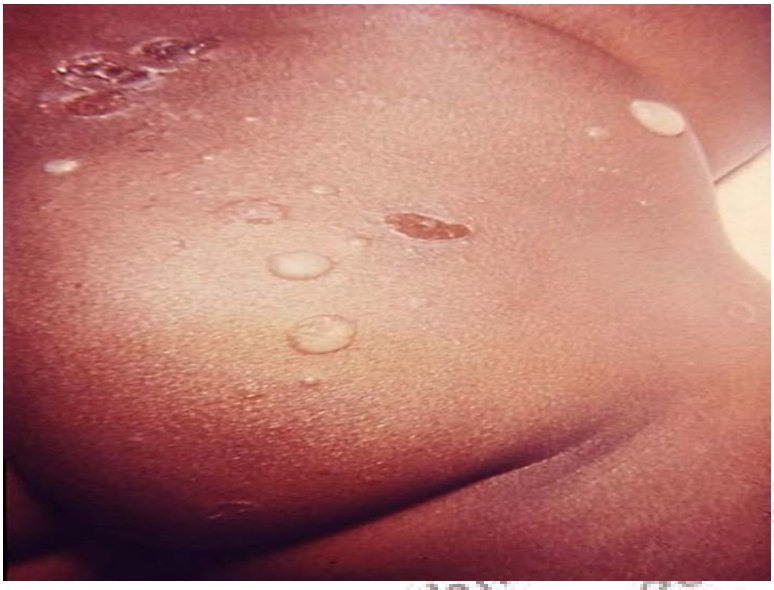
b) TSST-1, Desmoglein 3

c) Exfoliative toxin, Desmoglein 3

d) TSST-1, Desmoglein 1

Question 7:

Which of the following statements regarding the condition shown below is false?



a) Intraepidermal bullae are formed

b) Regional lymphadenitis is common

c) Varnish crusts are seen

d) Exclusively produced by S. aureus

Question 8:

Which of the following organisms causes erythrasma?

a) Corynebacterium diphtheria

b) Corynebacterium minutissimum

c) Corynebacterium tenuis

d) Diphtheriods

Question 9:

A 51-year-old woman complains of yellowish discoloration of her axillary sweat and staining of the clothing for 15 days. She has no other complaints. On examination, yellowish concretions are noted on the hair shafts of the left axilla which have formed hard nodular masses. Underlying skin is normal. What is the most likely causative organism for this condition?

a) Mycobacterium canis

b) Trichophyton rubrum

c) Corynebacterium tenuis

d) Trichophyton tonsurans

Question 10:

A 21-year-old fisherman presents with multiple pustular lesions mounted with thick adherent crusts on his left leg for 7 days. What is the most likely diagnosis?

a) Botryomycosis

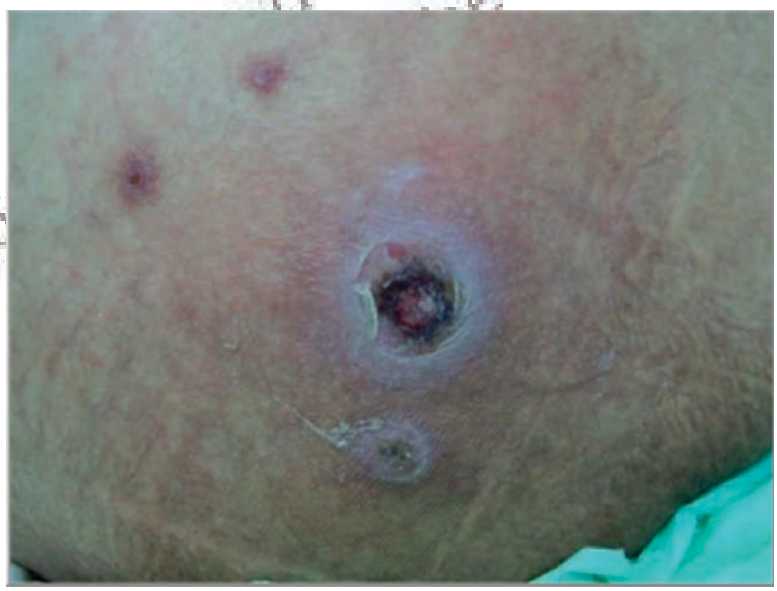
b) Erysipelas

c) Carbuncle

d) Ecthyma

Question 11:

A 46-year-old woman presents with painless lesions on her back as shown below which started 2 months ago. She is a known case of CKD receiving dialysis. Blood counts revealed neutropenia. Which organism is most likely to be seen in the culture of the biopsy from this lesion?



a) Staphylococcus

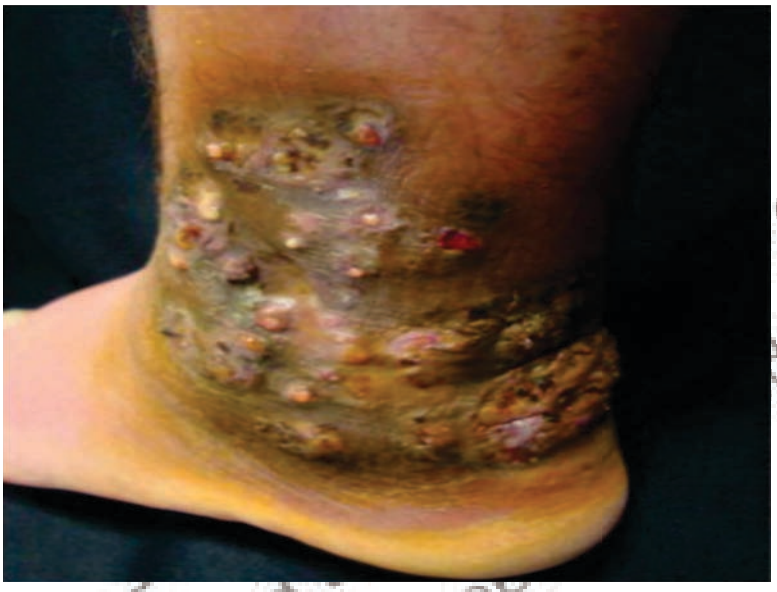
b) Streptococcus

c) Pseudomonas

d) Clostridium

Question 12:

A 31-year-old male patient presents with fever and painful lesions with mucopurulent discharge for 10 days. Histochemical examination of the discharge with Gomori methenamine silver (GMS) stain was negative. Which is the most likely organism to be seen in the culture performed from the lesions?



a) Mycobacteria

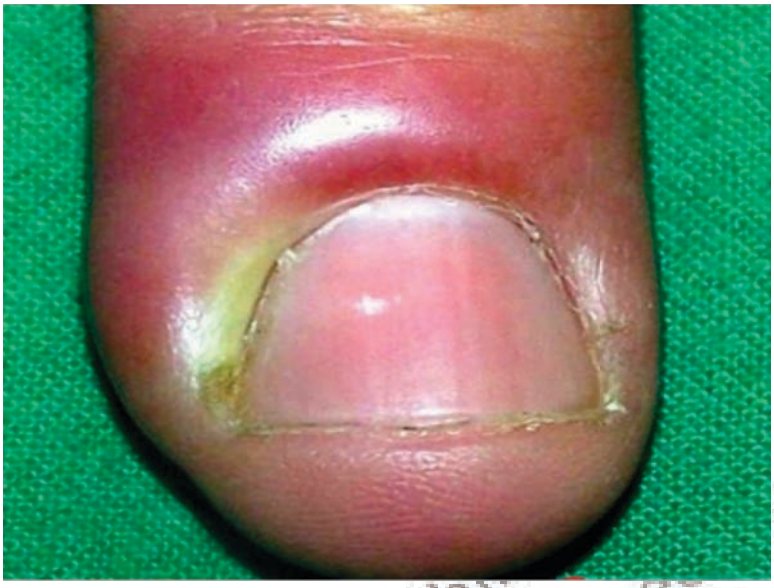
b) Dermatophyte

c) Actinomycetes

d) Staphylococcus

Question 13:

A 34-year-old carpenter presents with painful swelling in his left index finger for 1 day. Which organism is commonly responsible for his condition?



a) Candida albicans

b) Pseudomonas aeruginosa

c) Streptococcus pyogenes

d) Staphylococcus aureus

Question 14:

A 4-month-old male infant developed otitis media for which he was given a course of cotrimoxazole. A few days later, he developed fever, irritability, and skin tenderness followed by extensive peeling of the skin. There were no mucosal lesions. What is the most likely diagnosis?

a) Infantile pemphigus

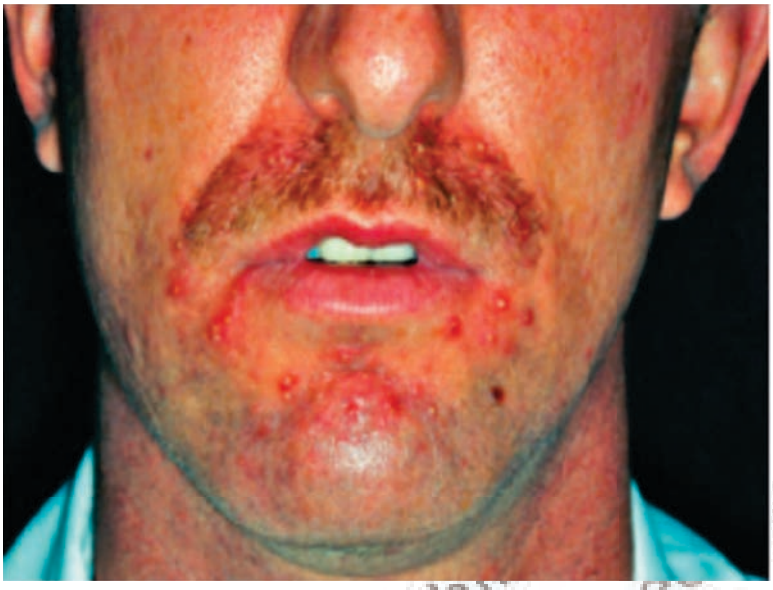
b) Stevens-Johnson syndrome

c) Toxic epidermal necrolysis

d) Staphylococcal scalded skin syndrome

Question 15:

A 25-year-old man presents with multiple pustular lesions on the face. On examination, slight crusting and scaling are present but the hairs are retained with no underlying scarring. Which is the most likely causative organism in this condition?



a) Staphylococcus aureus

b) Pseudomonas aeruginosa

c) Varicella-zoster virus

d) Trichophyton tonsurans

Question 16:

Which of the following is responsible for the transmission of erysepeloid infection in humans?

a) Droplet

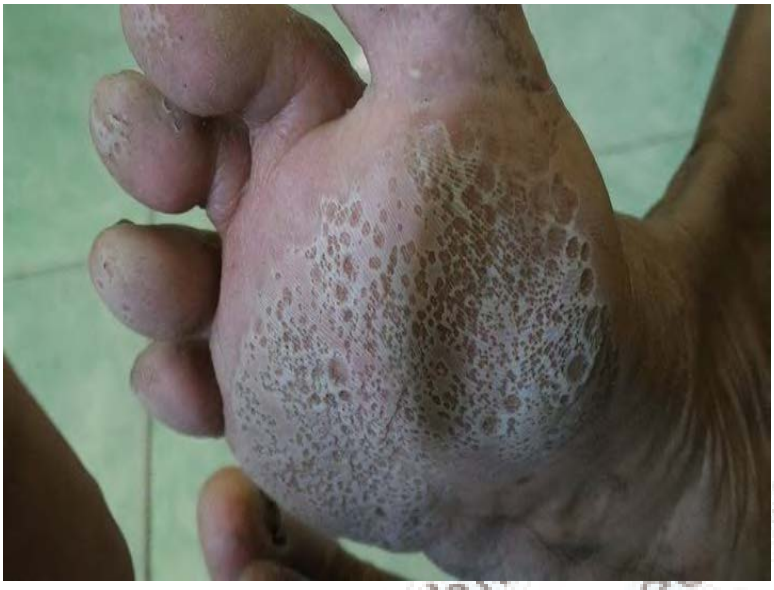
b) Parasite

c) Mosquito bite

d) Contact with animal

Question 17:

Choose the incorrect statement regarding the condition shown in the image below.



a) Serine proteases degrade keratin in the horny layer

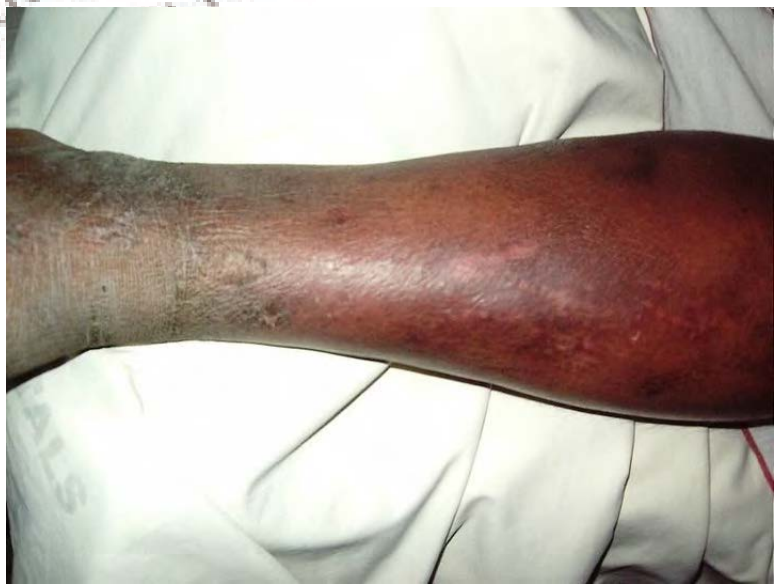
b) Often associated with malodour and maceration

c) Mainly caused by corynebacterial infection

d) Usually associated with anhidrosis

Question 18:

The image shows a bacterial skin infection. Identify the correct statement regarding the diagnosis.



a) Also known as St. Anthony's fire

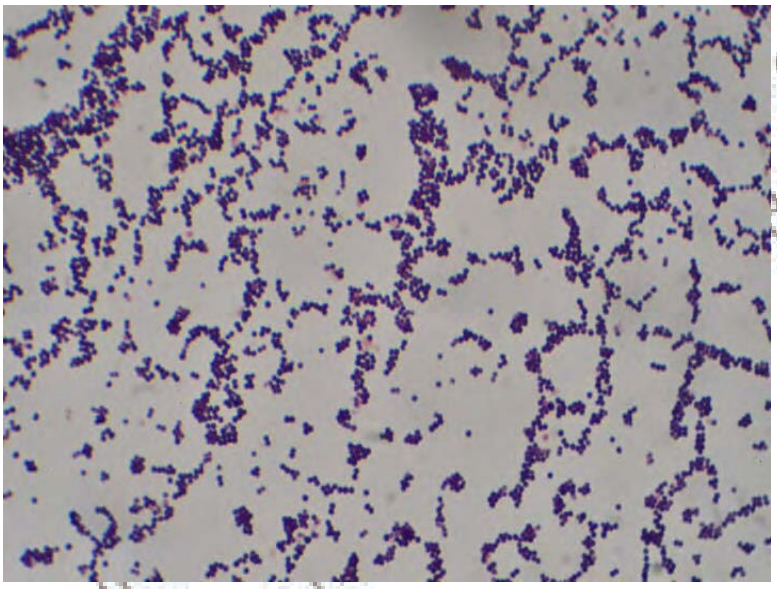
b) Infection of the superficial dermal lymphatics

c) Does not extend into the pinna in facial infection

d) Presents as erythematous tender lesion with well defined margins

Question 19:

Given below is a Gram-stain appearance of an organism. Which of the following cutaneous infections are not caused by this organism?



a) Sycosis

b) Folliculitis

c) Furunculosis

d) Scarlet fever

Question 20:

In which of the following conditions would you see coral pink fluorescence in the groin region on Wood's lamp examination?

a) Erysipeloid

b) Erythrasma

c) Erysipelas

d) Ecthyma

Answer Key

Question No.	Correct Option
1	b
2	a
3	a
4	c
5	c
6	a
7	b
8	b
9	c
10	d
11	c
12	d
13	d
14	d
15	a
16	d
17	d
18	c
19	d
20	b

Detailed Explanations

Solution to Question 1:

The above image shows Gram-positive cocci in clusters, suggestive of staphylococcus. It causes pemphigus neonatorum or bullous impetigo of the newborn.

Option A: Pyoderma gangrenosum is a neutrophilic dermatosis characterized by chronic, recurrent, very painful ulcers with undermined borders usually found on the lower limbs. It is usually associated with inflammatory bowel disease.

Option C: Impetigo herpetiformis is severe pustular psoriasis in pregnancy.

Option D: Ecthyma contagiosum is a contagious pustular dermatitis and a viral zoonotic disease caused by the parapox virus.

Solution to Question 2:

Beta-hemolysis on blood agar and the catalase-negative test is suggestive of Streptococcus pyogenes. It causes scarlet fever, erythema nodosum and can be a provocative factor for Kawasaki disease.

Carbuncle is caused by Staphylococcus aureus.

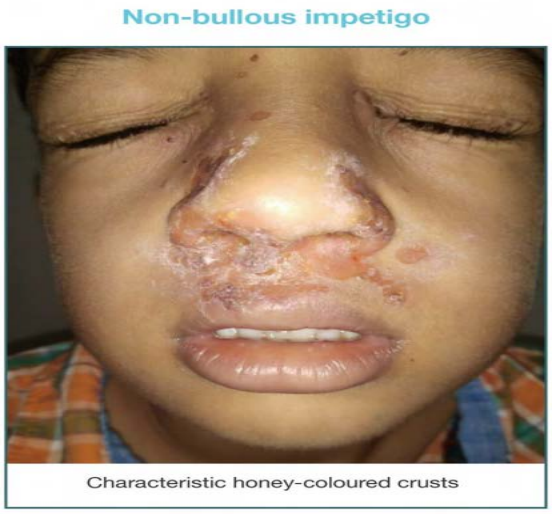
Solution to Question 3:

The above image showing a bullous lesion which has ruptured is suggestive of bullous impetigo. It is caused by Staphylococcus aureus.

Solution to Question 4:

The above scenario is suggestive of non-bullous impetigo.

It starts as very flaccid blisters, which soon rupture, creating erosions that are covered by characteristic golden yellow or honey-colored crusts.



Solution to Question 5:

The above scenario is suggestive of streptococcal impetigo. Rheumatic fever is a complication of streptococcal pharyngitis, not impetigo.

The complications of streptococcal impetigo include:

• Scarlet fever

• Erythema multiforme

• Post-streptococcal glomerulonephritis.

• Cellulitis

Infective complications are uncommon in the absence of systemic disease or malnutrition.

Solution to Question 6:

The above image is suggestive of staphylococcal scalded skin syndrome or SSSS. Exfoliative toxin (ETA and ETB) is produced by the cocci which targets the cell adhesion protein desmoglein 1 (DG1) resulting in the separation of intraepidermal keratinocytes.

A widespread erythematous eruption is seen more in flexures leading to blister formation (Nikolsky positive) and ultimately painful raw areas. Dislodgement of the intact superficial epidermis by a shearing force, indicating a plane of cleavage is called the Nikolsky sign.

Children (<6 years) and neonates are most commonly affected by the generalized form of SSSS, rarely adults may be affected. In children, SSSS is known as Ritter disease. Staphylococcal scalded skin syndrome usually settles within a few weeks when treated with appropriate systemic antibiotics.

Solution to Question 7:

The image shows several bullae filled with turbid pus-like fluid indicating a diagnosis of bullous impetigo. Regional lymphadenitis is rare in bullous impetigo.

Impetigo is a contagious, superficial pyogenic infection of the skin. The face, especially around the nose, mouth, and limbs, is most commonly affected, but lesions may occur anywhere.

Superficial intraepidermal bullae are formed as desmoglein-1 is targetted by the exfoliative toxins produced by S. aureus. After the bullae rupture, they leave behind varnish crust. Central healing and peripheral extension may give rise to circinate lesions which are eroded.

Treatment involves topical fucidin or mupirocin, retapamulin in resistant cases. Systemically therapy with flucloxacillin and erythromycin may be given.

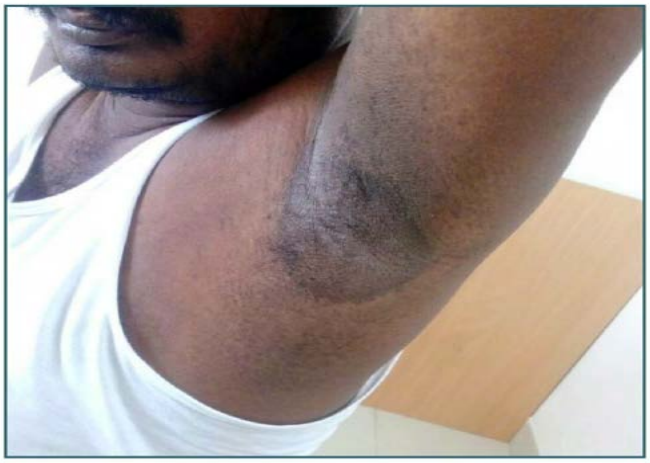
Solution to Question 8:

Erythrasma is an infection of the skin caused by Corynebacterium minutissimum.

Lesions are sharp hyperpigmented patches that may be symptomless or show mild discomfort and itching. It usually affects the axilla, groin, inter-gluteal, and submammary regions.

Coral pink/red fluorescence due to coproporphyrin III under Wood's lamp indicates erythrasma.

Erythrasma of Axila



Solution to Question 9:

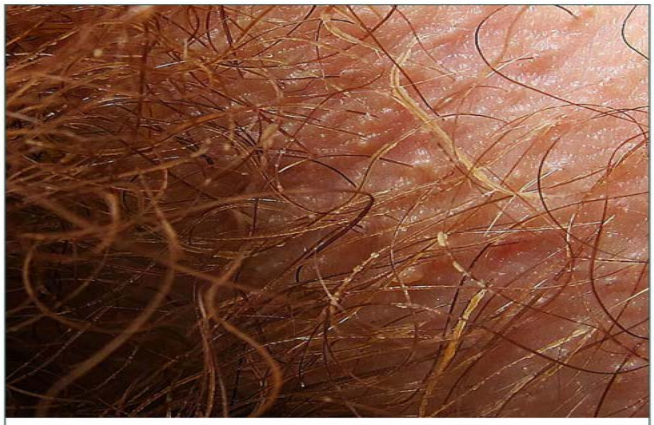
The above scenario is suggestive of trichomycosis axillaris which is caused by Corynebacterium tenuis.

It is a superficial infection of axillary and pubic hairs with the formation of yellow, black, or red nodular concretions on the hair shaft. The axillary sweat may be yellow, black, or red according to the color of the concretions, and the clothing may be stained.

The condition is usually asymptomatic and the patient is often unaware of its presence. The use of an effective antiperspirant such as aluminum chloride is a rapid means of therapy.

The image below shows trichomycosis axillaris in the axilla with a close-up view of nodules on the hair shaft.

Trichomycosis axillaris in axilla



Nodules seen on hair shafts

Solution to Question 10:

The above scenario is suggestive of ecthyma which is characterized by thick adherent crusts over the pustular lesions.

It is a pyogenic infection of the skin characterized by the formation of adherent crusts, beneath which ulceration occurs. It most commonly results from mixed infection of group A streptococci > staphylococci and causes a deeper infection than impetigo. The buttocks, thighs, and legs are most commonly affected.

Risk factors include:

• Extremes of age

• Immunocompromised

• Diabetes

• Poor hygiene.

Treatment: Topical fucidin, topical mupirocin, and systemic cloxacillin.

Option A: Botryomycosis presents as multiple indurated draining sinuses mimicking actinomycosis.

Option B: In erysipelas, well-defined raised margin erythematous lesions are seen.

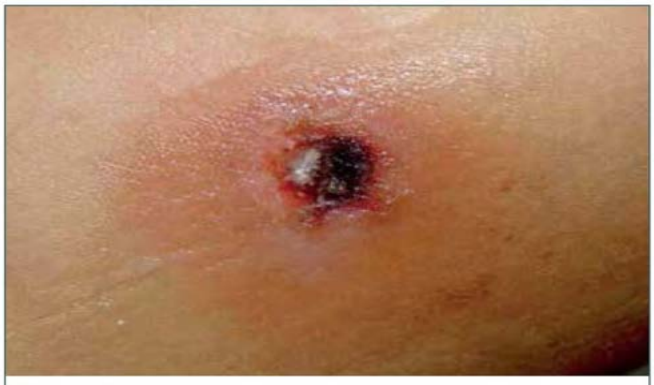
Option C: Carbuncle is a deep-seated cutaneous infection around a group of hair follicles with sieve-like multiple openings discharging pus.

Solution to Question 11:

The above image showing necrotic ulcers in an immunocompromised patient is suggestive of ecthyma gangrenosum. It is caused by Pseudomonas aeruginosa.

The characteristic lesions of ecthyma gangrenosum are hemorrhagic pustules that evolve into a necrotic (black) ulcer. It commonly occurs in the axillae, perineum, buttocks.

Ecthyma gangrenosum



Black central eschar surrounded by an erythematous-edematous halo

Solution to Question 12:

The above image showing multiple skin abscesses with mucopurulent discharge through multiple sinuses which does not show filamentous organisms on staining with Gomori methenamine silver (GMS negative) is suggestive of botryomycosis. It is caused by staphylococci.

Botryomycosis is a misnomer. It is a bacterial infection caused usually by staphylococcus. It is a chronic granulomatous reaction to bacterial infection, containing granules resembling the sulfur granules of actinomycosis.

Etiological agents include:

- Staphylococcus aureus (most common)
- Pseudomonas
- Escherichia coli
- Proteus
- Streptococcus.

Most lesions are on the limbs, but other sites including the perianal region and the face are affected.

Treatment is with antibiotics against S.aureus - flucloxacillin or erythromycin.

Solution to Question 13:

The above scenario depicts acute suppurative infection of the nail beds and folds which is called acute paronychia. It is most commonly caused by Staphylococcus aureus.

Acute paronychia is infection of the nail fold are represented by inflammation, swelling and abscess formation.

It presents as tender, purulent swellings around the nail.

Diagnosis is clinical and a cover of systemic antibiotics may be needed for deep infections.

Treatment of pyogenic paronychia:

• Protection against trauma

• Keep affected fingernails dry.

• Abscesses - incised and drained. (abscess is often opened by pushing the nail fold away from the nail plate)

• Antibiotics- Semisynthetic penicillin/ cephalosporin with excellent anti-staphylococcal orally.

Complications of acute paronychia may include osteitis and amputation.

Solution to Question 14:

The infant presents with an infection focus (otitis media) that is followed by generalized peeling of the skin and toxic state of the baby without any mucosal involvement which is suggestive of staphylococcal scalded skin syndrome.

	Staphylococcal scalded skin s yndrome	Stevens-Johnson syndrome/ Toxic epidermal necrolysis
Age	Infants and children under a ge of 6	Adults
Mucosal involvem ent	No	Yes
Nikolsky sign	Positive	Pseudo-Nikolsky sign Positiv e
Targetoid lesions	Absent	Present
Histopathology	Acantholytic cells with subco rneal or subgranular blister	Necrotic keratinocytesDermo -epidermal separation

Solution to Question 15:

The above clinical scenario is suggestive of sycosis barbae which is caused by Staphylococcus aureus.

Sycosis is a subacute or chronic infection involving the whole depth of the follicle. It is a disease of the beard area. The essential lesion is an oedematous erythematous follicular papule or pustule centered on a hair. The individual papules may coalesce to produce the appearance of a ripe fig. It is a non-scarring pyogenic infection.

If the follicles are destroyed with evident scarring, the term lupoid sycosis is used.

Tinea barbae/tinea sycosis is a dermatophyte infection caused by Trichophyton tonsurans, the upper lip is spared.

Herpetic sycosis is caused by the herpes simplex virus.

Solution to Question 16:

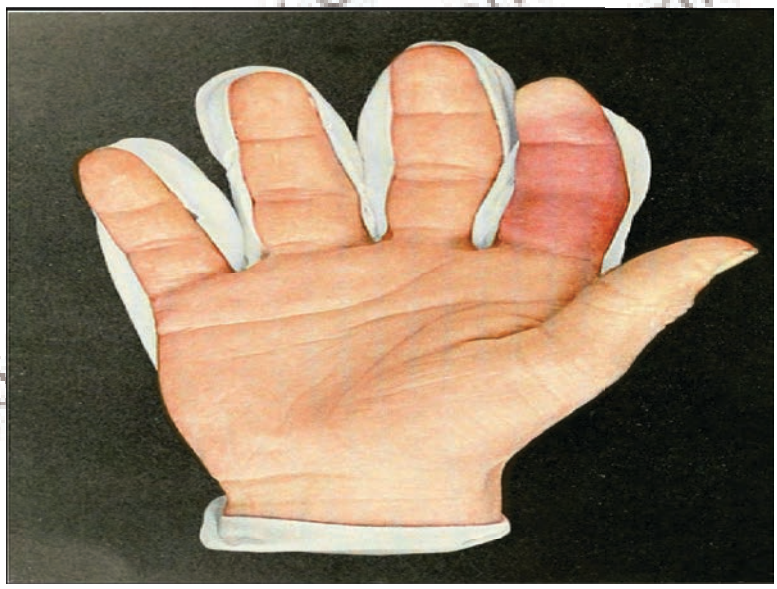
In erysepeloid, human infection is contracted by direct contact with animals.

Erysipeloid is an acute infection with Erysipelothrix rusiopathiae, a Gram■positive bacillus living mainly on dead animal matter. It causes diseases in many animals, especially in pigs. It usually affects butchers, cooks, fishermen, farmers, and veterinary surgeons.

About 3 days after inoculation, hot violaceous and tender erythema develops around the inoculation site and spreads centrifugally.

Without treatment, healing normally occurs spontaneously in 2 weeks without desquamation or suppuration.

Antibiotic therapy: Penicillin, erythromycin, and ciprofloxacin



Solution to Question 17:

The above image shows numerous small, shallow, circular erosions with punched-out appearance over pressure bearing area of soles, characteristic of pitted keratolysis.

It is usually associated with hyperhidrosis (not anhidrosis). Pitted keratolysis is caused most commonly due to infection by Corynebacterium and also by Kytococcus sedentarius. The pits are produced by serine proteases that can degrade keratin in the horny layer.

Most patients are unaware of the condition due to minimal irritation. This condition is diagnosed by its clinical appearance. Cultures are not useful due to mixed infections.

Treatment of hyperhidrosis slowly brings the condition under control including potassium permanganate soaks, aluminum chloride, and iontophoresis. Topical fucidin ointment may be used.

Solution to Question 18:

This image shows a large erythematous lesion with diffuse and ill-defined borders suggestive of celullitis of the foot. The pinna is not involved in cellulitis of face. All the other features mentioned are that of erysipelas.

Milians's ear sign is used to distinguish between erysipelas and cellulitis of the facial region, where there is involvement of ear in erysipelas and sparing in cellulitis, as there is no deeper dermal tissue and subcutaneous fat in the pinna.

Current usage tends to regard erysipelas as a form of cellulitis rather than a distinct entity, so that the definition of cellulitis would include inflammation of dermal as well as subcutaneous tissue.

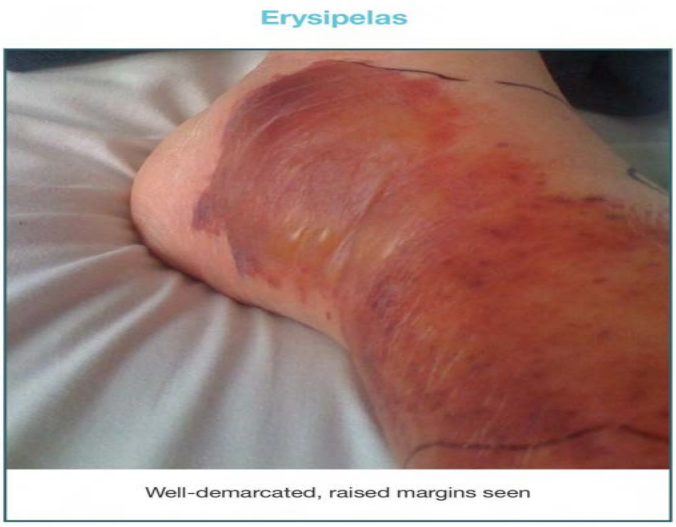
Similarities include the presence of group A beta-hemolytic streptococci > Staphylococcus aureus, Hemophilus influenza and often a region of portal of entry for infection like tinea or trauma.

Usually the disease settles over 1–2 weeks with appropriate systemic antibiotics like Flucloxacillin

Note: St. Anthony's Fire is also used for ergotism caused by the fungus Claviceps purpura as it causes burning sensations resulting in gangrene of limbs.

The image below shows erysipelas, with well demarcated raised margins.

Erysipelas(St.Anthony's fire)	Cellulitis
Infection of superficial dermal lymphatics	Suppurative inflammation involving the subcutaneous tissue
Raised and sharply demarcated edge that spreads by peripheral extension	Diffuse, ill-defined margins
Blistering is common with superficial hemorrhage	Severe cellulitis may show bullae and progress to dermal necrosis
Extends over the ear	Does not extend over the ear



Solution to Question 19:

The above image is suggestive of staphylococcus which causes sycosis, folliculitis, and furunculosis.

Scarlet fever is caused by Streptococcus pyogenes.

Solution to Question 20:

The coral pink fluorescence in the groin region on Wood's Lamp examination is characteristically seen in erythrasma. Coral pink fluorescence is due to the presence of porphyrins. Corynebacterium minutissimum is the bacterium responsible for erythrasma and the conversion of aminolaevulinic acid to protoporphyrin.

Viral Infections

Question 1:

Which of the following statements is incorrect regarding smallpox?

a) Palms and soles are not involved

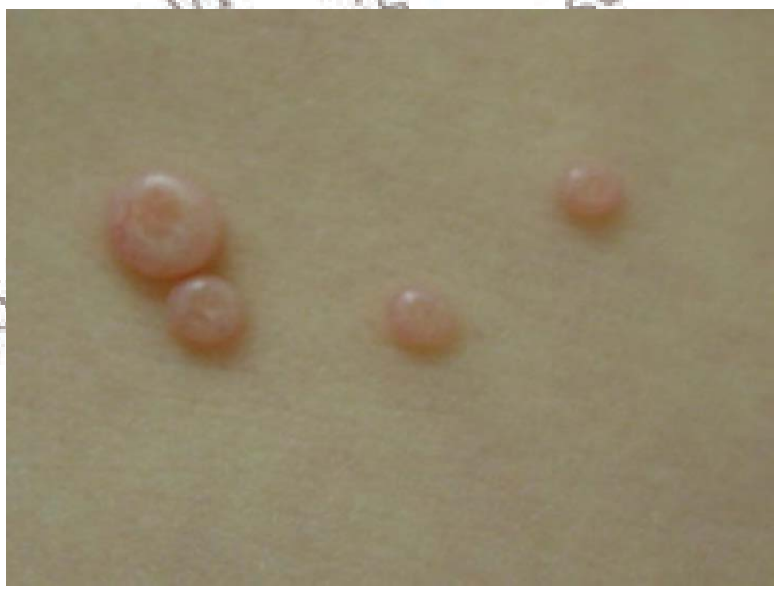
b) Rash is monomorphic

c) Scarring is common in recovery

d) Fever, headache and malaise appear 10-14 days after infection

Question 2:

A 3-year-old child develops the following lesions over the face. What is the probable diagnosis?



a) Variola

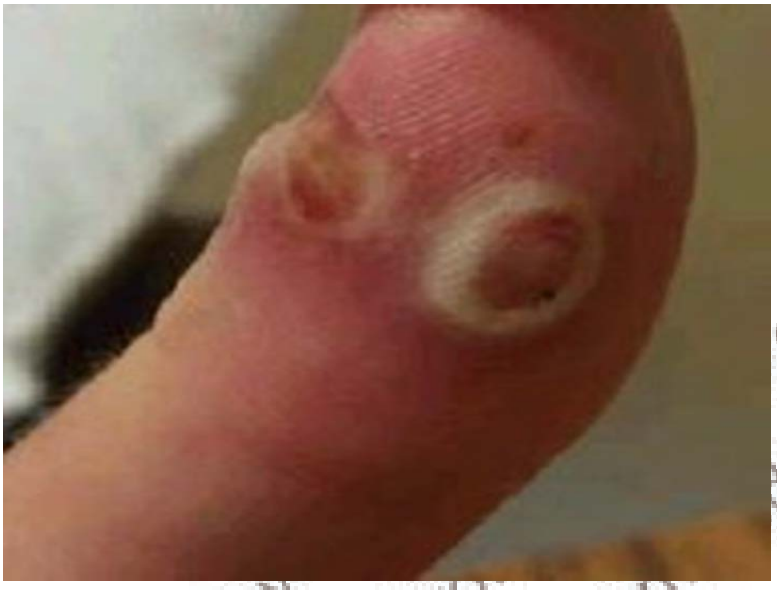
b) Chicken pox

c) Molluscum contagiosum

d) Vaccinia

Question 3:

A wool farmer presents with a hemorrhagic lesion on his left index finger for 3 days. On examination, he is febrile and lymphadenopathy is present. What is the most likely diagnosis?



a) Erysipeloid

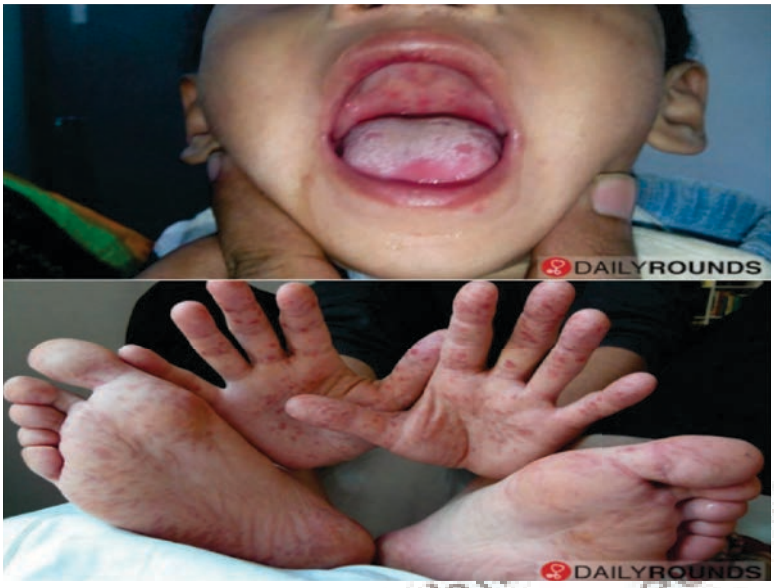
b) Ecthyma contagiosum

c) Ecthyma gangrenosum

d) Anthrax

Question 4:

A 5-year-old boy had painful sores in the mouth with a rash over the hands along with fever. Which of these is the causative agent?



a) Pox virus

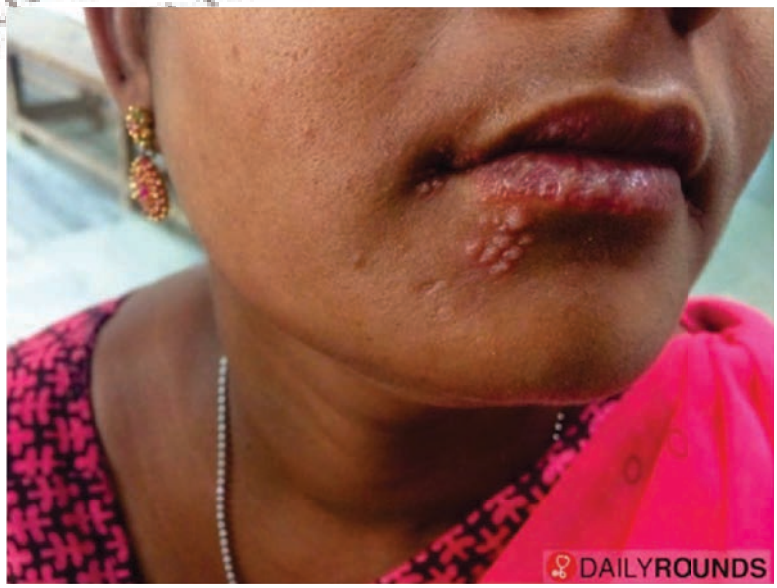
b) Coxsackievirus

c) HHV-7

d) Parvovirus

Question 5:

A 40-year-old woman presents with the following pruritic lesion 2 days after developing a fever. What is the likely diagnosis?



a) Varicella

b) Cold sore

c) Molluscum contagiosum

d) Whitlow

Question 6:

A primigravida in labor presents to the emergency with fever, headache, and itching around her genitals. On examination, the cervix is 7cm dilated and small painful blisters with ulceration are seen around the vulva. Inguinal lymphadenopathy is present. Choose the incorrect statement.

a) Cesarean section will reduce the chances of infection in the baby

b) Incase of neonatal transmission, the mortality is low

c) Commonly caused by HSV-2

d) Prophylactic acyclovir should be considered for her neonate

Question 7:

Which of the following can be used in a patient suffering from acyclovir-resistant recurrent herpes labialis?

a) Lamivudine

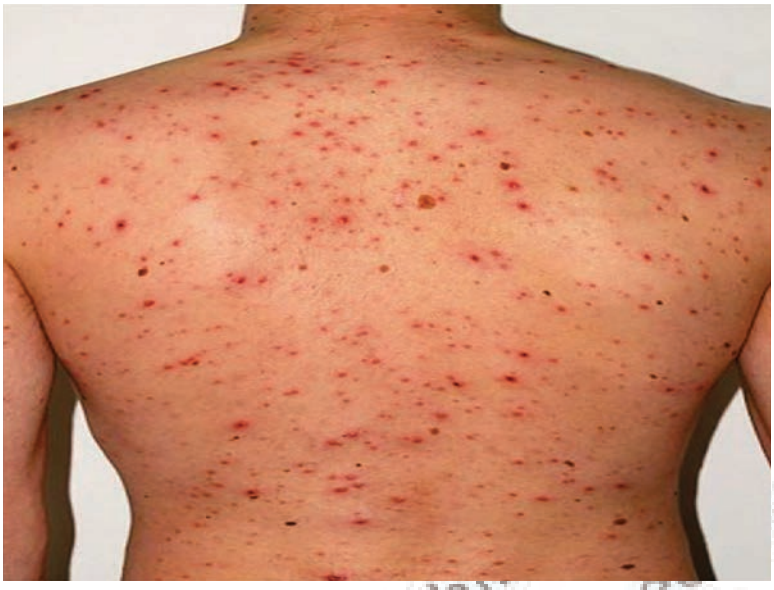
b) Foscarnet

c) Valacyclovir

d) Ganciclovir

Question 8:

An adolescent presents with the following lesions that started 2 days after he developed a fever. When is it safe for him to resume school?



a) 4 days after appearance of lesions

b) 7 days after appearance of lesions

c) 14 days after appearance of fever

d) After crusting of the lesions

Question 9:

Varicella-zoster virus remains dormant in the:

a) Medulla oblongata

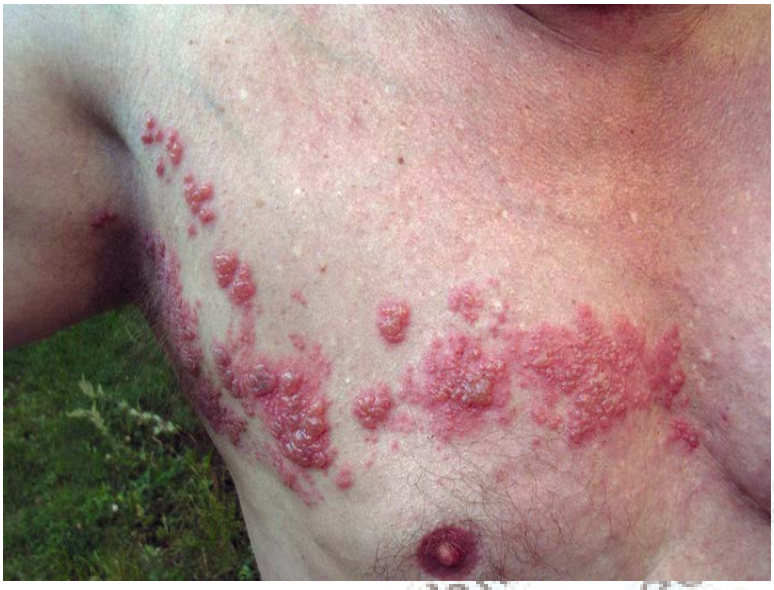
b) Dorsal root ganglion

c) Skin

d) Ventral root

Question 10:

What is correct regarding the diagnosis based on the given image?



a) The lesions are not infectious

b) Trigeminal dermatome is most commonly affected

c) Anterior nerve roots are more commonly involved

d) Mucous membranes within the affected dermatomes are involved

Question 11:

Post-herpetic neuralgia is commonly associated with zoster of which nerve?

a) Dorsal

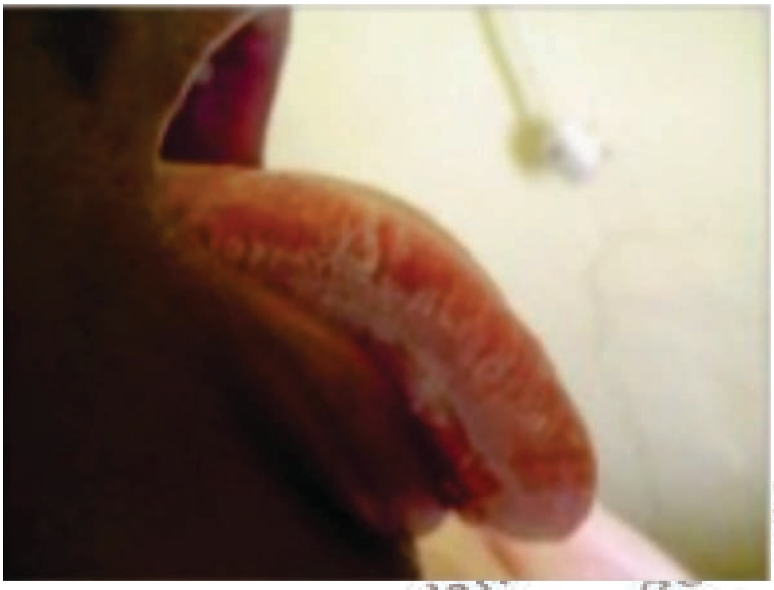
b) Trigeminal

c) Cervical

d) Lumbosacral

Question 12:

A 43-year-old HIV-positive male patient presented with the following finding. The plaque could not be rubbed off. Which virus is associated with this condition?



a) Cytomegalovirus

b) Human papillomavirus

c) Herpes simplex 1 virus

d) Epstein-Barr virus

Question 13:

Which is the most common exanthematic fever in children under the age of 2 years?

a) Varicella

b) Measles

c) Rubella

d) Roseola

Question 14:

Which of the following is correct regarding Kaposi varicelliform eruption?

a) Varicella like grouped lesions in Kaposi sarcoma

b) Occurs in an immunocompetent host

c) Infection with HHV-8 resulting in a cutaneous exanthem distributed centripetally

d) Maculopapular rash due to cutaneous hypersensitivity following Kaposi sarcoma virus infection

Question 15:

What is the most common causative organism for verruca vulgaris?

a) Human papillomavirus-1

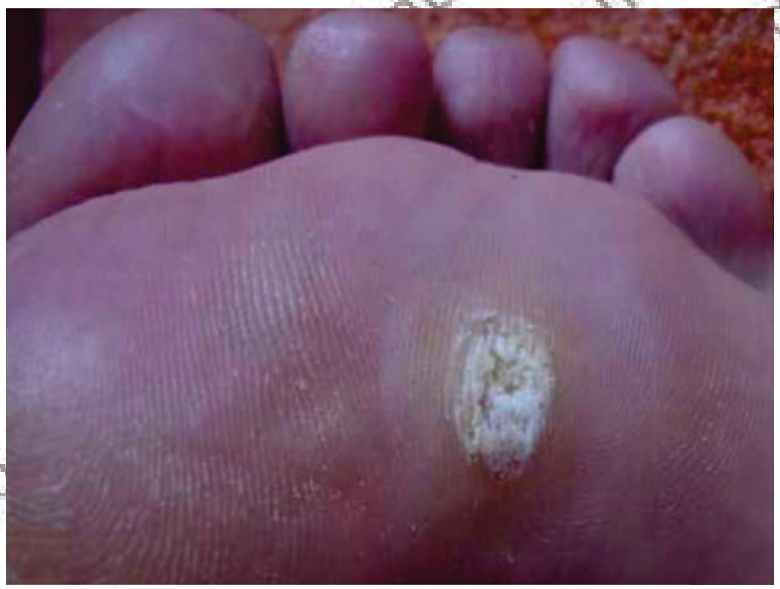
b) Human papillomavirus-3

c) Human papillomavirus-10

d) Human papillomavirus-2

Question 16:

A 32-year-old man presents to the dermatology clinic with the following painful skin lesion. What is the most likely diagnosis?



a) Verrucous wart

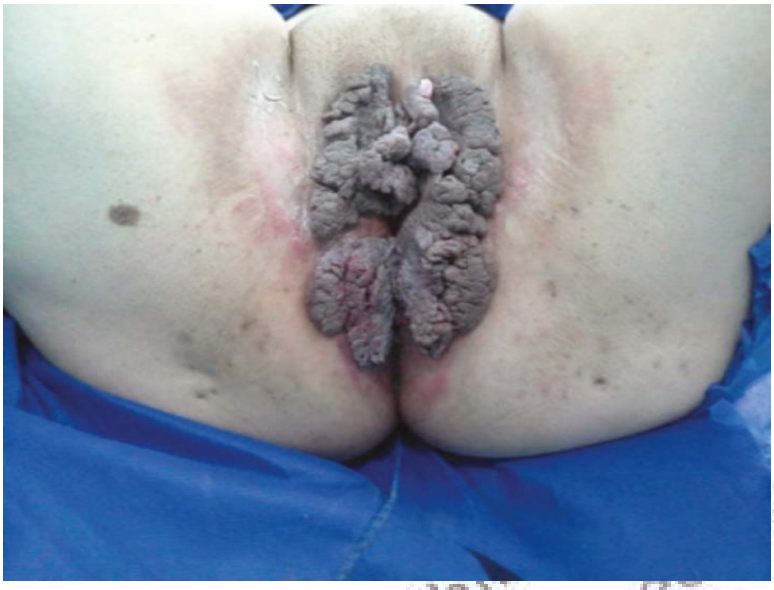
b) Filliform wart

c) Planar wart

d) Myrmecia wart

Question 17:

Which is the most common organism implicated in the condition depicted below?



a) Human papillomavirus-10

b) Human papillomavirus-6

c) Human papillomavirus-3

d) Human papillomavirus-11

Question 18:

For which of the following conditions is the use of imiquimod not approved?

a) Condyloma acuminata

b) Basal cell carcinoma

c) Squamous cell carcinoma

d) Actinic keratosis

Question 19:

The given image shows a treatment modality that employs cold thermal damage to the skin. Identify the incorrect statement regarding this procedure.

a) The procedure is painless

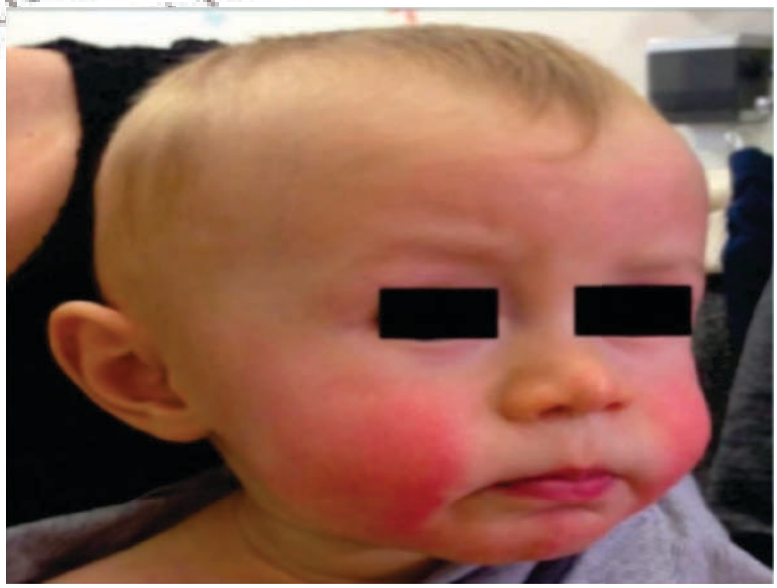
b) It is relatively safe in pregnancy

c) Liquid nitrogen is most frequently employed

d) The treatment is physician administered

Question 20:

A 2-year-old boy was brought by his mother with complaints of low-grade fever and the following rash. What is the diagnosis?



a) Erythema infectiosum

b) Exanthema subitum

c) Rubeola

d) Scarlet fever

Question 21:

Which of the following does not present with maculopapular rash?

a) Zoster (shingles)

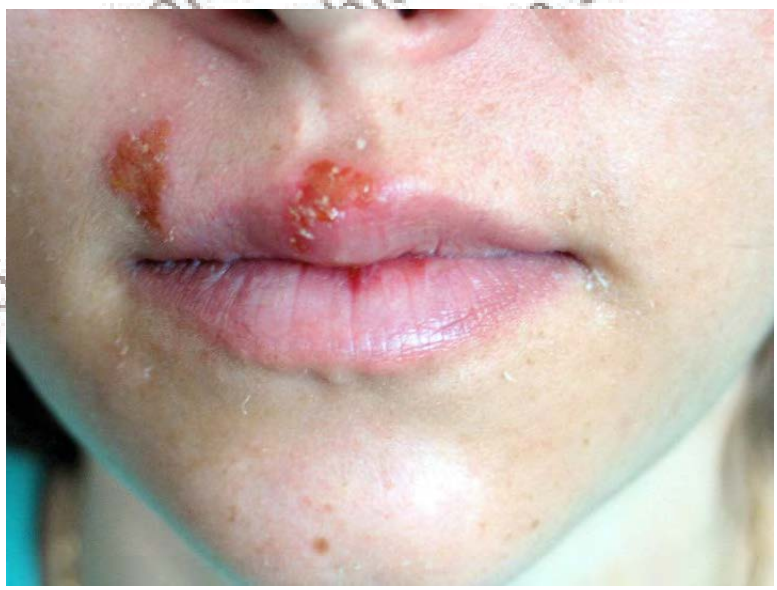
b) Rubella

c) Dengue (during febrile phase)

d) Measles

Question 22:

Identify the condition shown in the image below:



a) Herpes labialis

b) Herpangina

c) Molluscum contagiosum

d) Impetigo

Answer Key

Question No.	Correct Option
1	a
2	c
3	b
4	b
5	b
6	b
7	b
8	d
9	b
10	d
11	b
12	d
13	d
14	b
15	d
16	d
17	b
18	c
19	a
20	a
21	a
22	a

Detailed Explanations

Solution to Question 1:

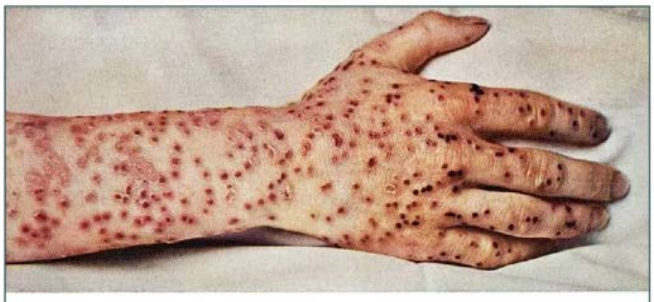
The palms and soles are frequently affected. The rash starts over the face and spreads centrifugally to the extremities (more affected) and the trunk.

Smallpox is caused by the variola virus and was eradicated from the world in May 1980.

Fever, headache, and malaise appear 10-14 days after infection. Lesions are monomorphic (lesions within an area are at the same stage) and initially vesicular/pustular which then dry, scab over, and finally, heal. Skin scarring is common following recovery.

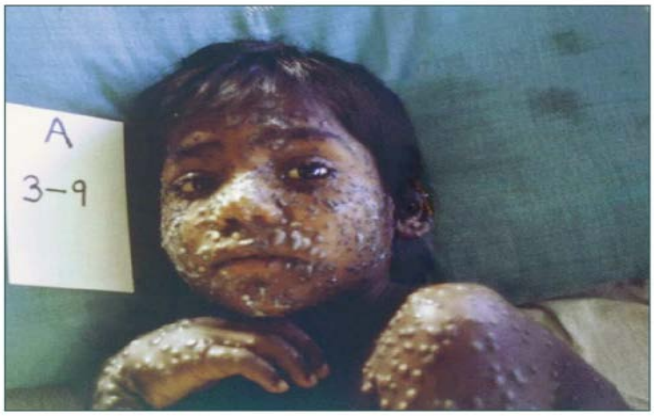
	Smallpox(variola)	Chickenpox(varicella)
Incubation period	10-14 days	14–21 days
Transmission	Respiratory viral sheddingThrough contact with the fluid found in the patient's sores.Rarely airborne route.	Aerosolized droplets from nasopharyngeal secretions.By direct cutaneous contact with vesicle fluid from skin lesions. Airborne transmission rarely
Prodrome	Fever and malaise for 2–4 days before the onset of rash	Minimal to none
Rash	Centrifugal spreadUsually on palms and solesAxilla is usually freeRash on extensor surfaces	Centripetal distributionSeldom on palms and soles; appears in cropsAxilla affectedRash on flexor surfaces
Pock appearance	Vesicle > Pustule >Umbilicated > Scab	Macule > Papule > Vesicles on erythematousbase > Pustule > Scab
Evolution of pocks	Synchronous (monomorphic)	Asynchronous
Scab formation	10–14 days after onset of rash	4–7 days after onset of rash
Scab separation	14–28 days after onset of rash	Within 14 days after onset of rash
Infectivity	From the onset of exanthem until all scabs separate	From 1 day before rash until all vesicles become scabs. Scabs are non-infectious.

Small Pox



Papulovesicular lesions, some with hemorrhagic centers, concentrated on the extremities.

Scarring of the face following smallpox infection



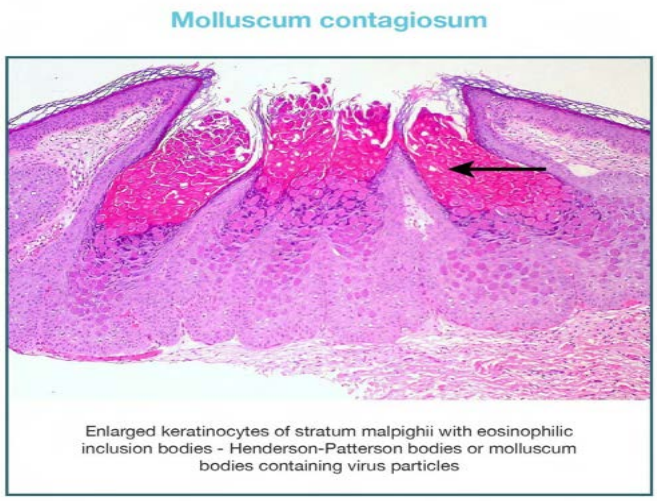
Solution to Question 2:

The above image shows shiny, pearly white, umbilicated papules which are suggestive of molluscum contagiosum.

The peak incidence is between 2-5 years. The incubation period is around 14 days-6 months. It is mainly caused by type-I molluscum contagiosum virus (MCV-1) in children and type-II (MCV■2) in adults and HIV patients. New lesions develop along the line of trauma (pseudo-Koebner phenomenon). Sexually transmitted molluscum contagiosum may be present over the genital area.

Microscopic examination of the lesions shows eosinophilic inclusions called Henderson-Patterson bodies.

The condition is usually self-limiting but treatment is required for non-resolving symptomatic lesions. Destruction with cantharidin, trichloroacetic acid, diluted liquefied phenol, or surgical removal are a few options.



Solution to Question 3:

The above image showing small, red hemorrhagic pustules with the given scenario is suggestive of orf or ecthyma contagiosum.

It is caused by the parapox virus. The commonly affected sites are hands and forearms. Lymphadenitis, lymphangitis, and fever are often present.

It presents with a single lesion—a small, firm, red, or reddish-blue papule that develops after 5–6 days at the site of contact with an infected animal (mostly sheep and goats) and enlarges into a hemorrhagic pustule. The epidermis of an orf lesion shows ballooning degeneration of keratinocytes with eosinophilic cytoplasmic inclusions.

Treatment is usually not necessary, and the lesions heal after 3-6 weeks.

Solution to Question 4:

The presence of fever, along with painful sores in the mouth and small, tense vescicles with surrounding erythema on the palms and soles in a child point towards the diagnosis of hand-foot-mouth disease. The most common cause of which worldwide is coxackievirus A16.

Spread is by droplets or faecal contamination and the incubation period is 7 days. The fever is generally mild, and is followed by the appearance of lesions. The characteristic lesions are slightly oval, with a grey blister roof and a narrow rim of erythema. The oral lesions are aphthoid and are less painful than aphthous ulcers.

Only symptomatic treatment is given. The lesions generally disappear in 7 - 10 days.

Solution to Question 5:

The above image shows small, closely grouped vesicles on an inflamed base which are suggestive of herpes labialis or cold sore.

It is caused by HSV-1 (less frequently HSV-2) and commonly affects the face.

The lesions are painful and pruritic. Fever is often present which subsides in 3–5 days followed by the initial vesicular lesions becoming pustular and then crusted before healing in 7–10 days without scarring. Recurrent herpetic lesions are vesicular and ulcerative and tend to occur in the same region.

Treatment: Oral acyclovir 200 mg and topical 5% acyclovir can be used for treatment. In case of resistance to acyclovir, foscarnet or cidofovir can be used.

Option A: Varicella presents with papules and vesicles with a centripetal distribution associated with systemic symptoms of fever and malaise.

Option C: Molluscum contagiosum presents with shiny, pearly white umbilicated papules.

Option D: Whitlow presents with painful swelling of the fingertips and periungual area due to herpes infection by inoculation.

Solution to Question 6:

The above scenario is suggestive of active primary genital herpes in the mother. In the case of neonatal transmission, the mortality is high.

Herpes simplex infection of a baby within 28 days of birth is called neonatal herpes. HSV-2 is more commonly implicated than HSV-1. It is usually acquired vertically from the mother or postnatally by contact with non■genital sites.

Features of neonatal herpes:

• Vesicular eruption

• Inflamed and ulcerated mucosae

• Disseminated disease:

• Lethargy

• Seizures

• Respiratory distress

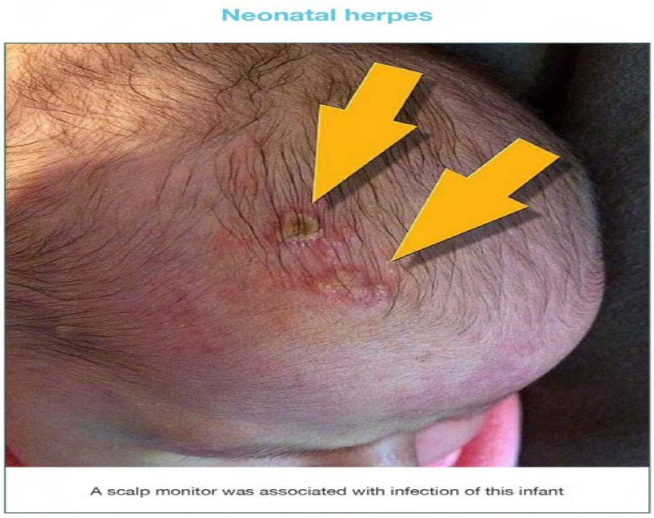
• Hepatosplenomegaly with hepatitis

• Thrombocytopenia.

Primary genital herpes infection in the mother at the time of delivery is associated with a high risk of transmission to the baby during vaginal delivery. Hence cesarean section is indicated and prophylactic aciclovir should be considered for the neonate.

Neonatal herpes is treated with high■dose intravenous acyclovir followed by oral acyclovir for 6 months.

The image below shows neonatal herpes. A scalp monitor was associated with infection in this infant.



Solution to Question 7:

In case of resistance to acyclovir, foscarnet or cidofovir can be used to treat herpes. They act on viral DNA polymerases thus blocking DNA replication.

Solution to Question 8:

The above image showing multiple vesicular lesions on the trunk is suggestive of chickenpox or varicella caused by the varicella-zoster virus. It is non-contagious after the lesions have crusted.

Most infections occur before the age of 5 but can occur in older children and adults. The lesions develop in 3-5 crops and are polymorphic (present at different stages in each site). In 2–4 days, a dry crust forms leaving a shallow pink depression which, in the absence of secondary infection, heals without scarring.

Most common complication is secondary bacterial infection. Varicella confers lasting immunity and second attacks are uncommon.

Solution to Question 9:

Varicella-zoster virus (VZV) is a human herpesvirus that causes varicella (chickenpox) as a primary infection and then remains in a latent form in the dorsal root ganglia for a variable period after which it can reactivate to cause herpes zoster (shingles).

Solution to Question 10:

The above image shows unilateral, painful, grouped vesicles in a single dermatome suggestive of herpes zoster or shingles. The mucous membranes within the affected dermatomes are involved in shingles.

Herpes zoster/shingles is an acute cutaneous segmental eruption due to the reactivation of latent varicella-zoster virus from dorsal root ganglia. An earlier infection with varicella is essential before zoster can occur.

The first symptom of zoster is usually pain, 1-3 days after which the lesions appear. Occasionally, the pain may not be followed by the eruption ('zoster sine eruptione'). The patients are infectious, both from the virus in the lesions and nasopharynx.

The most commonly involved dermatomes in decreasing order of frequency are thoracic > cervical > trigeminal > lumbosacral. The incidence of ophthalmic zoster increase with age. The posterior nerve roots and ganglia show inflammatory changes.

Herpes zoster ophthalmicus is a variant of zoster involving the ophthalmic division of the trigeminal nerve (V1). Herpes zoster oticus/Ramsay Hunt syndrome is another variant involving the geniculate ganglion and presents with ipsilateral facial nerve palsy, otalgia and vesicles over external ear.

Zoster is a self-limiting infection but it is painful and carries a risk of secondary infection and post-herpetic neuralgia. Analgesia and treatment of secondary infections are sufficient for mild infections.

Indications for antivirals in VZV (Acyclovir 800 mg):

• Painful zoster infections in adults

• Facial zoster at any age

• Immunocompromised

Solution to Question 11:

Post-herpetic neuralgia is most frequent when the trigeminal nerve is involved.

The commonest and most intractable complication of zoster is post-herpetic neuralgia. It is generally defined as persistence or recurrence of pain more than 1-3 months after the onset of zoster. The pain may be a continuous burning pain with hyperaesthesia or a spasmodic shooting type or pruritic paraesthesia may also occur. Allodynia (pain caused by normally innocuous stimuli) is often the most distressing symptom and occurs in most people with post■herpetic neuralgia.

A tricyclic antidepressant such as amitriptyline or nortriptyline is useful for hyperaesthesia and constant burning pain.

Solution to Question 12:

The above image showing a white corrugated plaque over the lateral border of the tongue in an HIV-infected patient which cannot be rubbed off is suggestive of oral hairy leukoplakia. It is due to the reactivation of Epstein-Barr Virus (EBV) infection.

Other conditions associated with EBV infection are:

• Glandular fever

• Rash triggered by ampicillin

• Burkitt's Lymphoma

• Nasopharyngeal carcinoma

• EBV■associated lymphoproliferative disease

• Age■related EBV■associated B■cell lymphoma

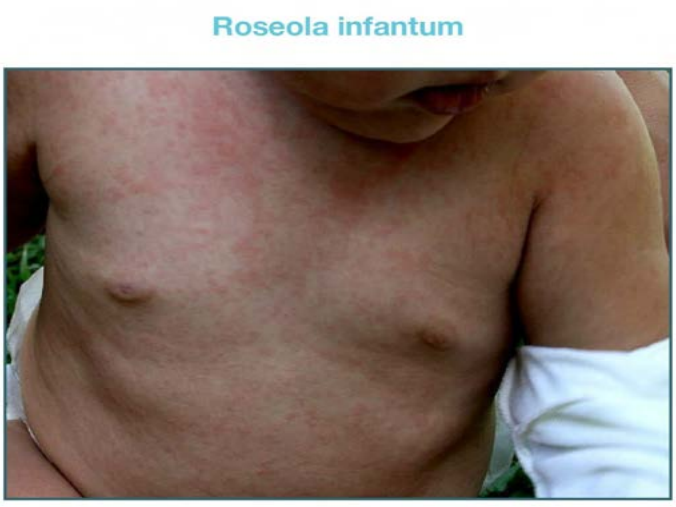
Solution to Question 13:

Roseola infantum is the most common exanthematic fever in children under the age of 2 years.

Roseola infantum or exanthema subitum is an acute febrile illness with a maculopapular eruption. It is also called the 6th disease. Causative organisms are HHV-6 and HHV-7.

It begins with an abrupt onset of fever for 3–5 days followed by an eruption of discrete rose■pink maculopapular rash on the neck and trunk which may later spread to other areas and then fade, leaving no scaling or pigmentation. The lesions may have surrounding pallor. Nagayama spots which are red papules over the palate are pathognomonic. Cervical and occipital lymph nodes are usually enlarged.

Treatment is symptomatic.



Solution to Question 14:

Kaposi varicelliform eruption or eczema herpeticum is a widespread viral skin infection that causes localized or mild vesicular eruptions in a patient with pre■existing skin disease (most commonly in atopic dermatitis).

The implicated viruses are:

• HSV-1 (most common)

• HSV■2

• VZV

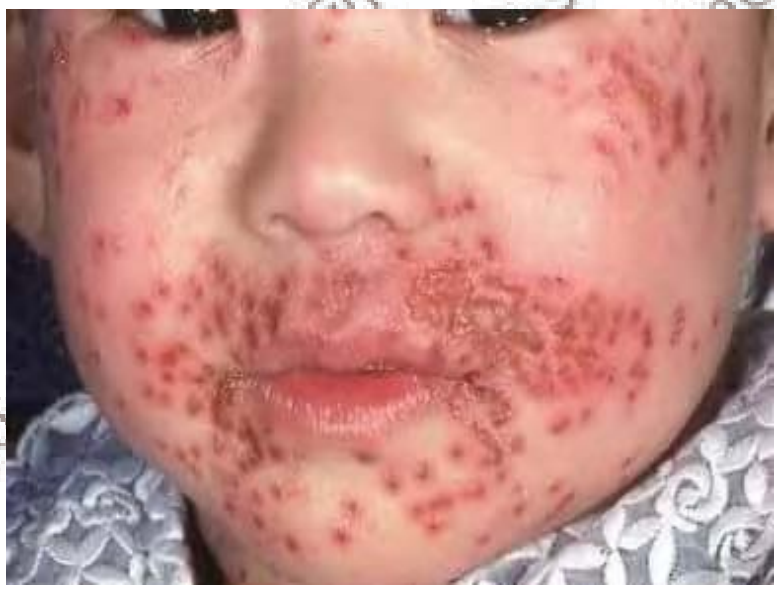
• Coxsackie A6 and A16 (eczema coxsackium)

• Vaccinia (eczema vaccinatum)

It presents with fever and vesicles that are widely disseminated and may become hemorrhagic. The skin is painful and generally erythematous. The fever subsides in 4 to 5 days and the pustules heal with crusting, leaving some permanent scarring.

Oral or intravenous acyclovir is used for the treatment depending on the severity of the infection.

The image below shows an ecxema herpitcum eruption in a child.



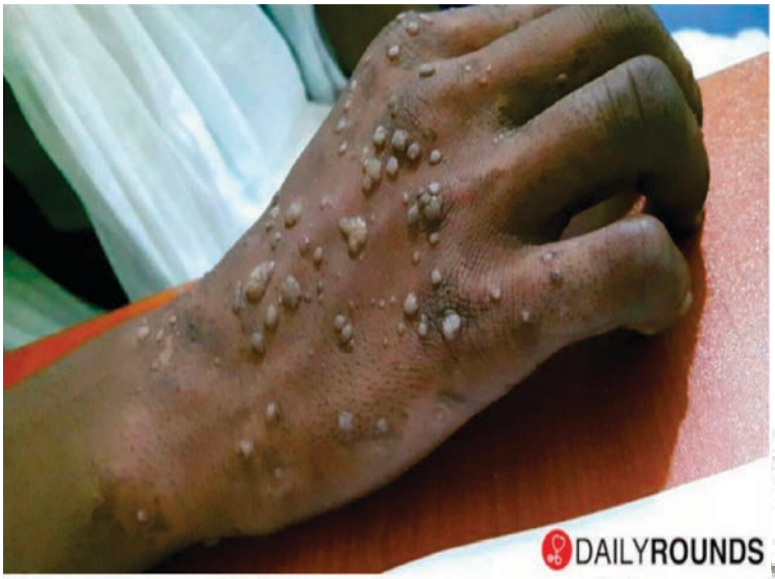
Solution to Question 15:

Verruca vulgaris or common wart is most commonly caused by human papillomavirus-2 (HPV-2) but is also related to types 1, 4, 27, and 57.

Common warts are usually asymptomatic. They show acanthosis, hyperkeratosis, and papillomatosis and present as firm papules with a rough horny surface. The most commonly affected sites are on the backs of the hands and fingers, and, in children on the knees. Pseudo-Koebner phenomenon may be observed.

Treatment is usually with topical agents such as salicylic acid, caustics, glutaraldehyde, formalin, or with laser, cryotherapy, surgical removal.

verruca vulgaris.



Solution to Question 16:

The clinical scenario and image describe a sharply defined, painful, rough keratotic papule (sago grain appearance) seen on the pressure point of the sole. This is suggestive of a deep palmoplantar wart or Myrmecia wart. It is usually caused by human papillomavirus-1 (HPV-1).

The superficial form of plantar warts is called mosaic warts which are caused by HPV-2. They present as a plaque of closely grouped small warts and are usually painless.

Option A: Verrucous warts present as asymptomatic skin colored papules and plaques with rough surfaces.

Option B: Filiform warts are finger-like projections mainly due to HPV-2.

Option C: Planar warts are flat surfaced lesions and hence the name. They are mainly due to HPV■3 and ■10.

Solution to Question 17:

The above image shows rough finger-like growth over the vulva which is suggestive of condyloma acuminata. It is caused by human papillomavirus (HPV-6 > HPV-11).

It is also called genital/venereal warts and has high infectivity. It is acquired most commonly after sexual contact but may also occur non-sexually.

Imiquimod and podophyllotoxin are both the first-line drugs used in the treatment of genital warts.

Solution to Question 18:

Topical immunomodulation with imiquimod cream is approved for the treatment of genital warts, superficial basal cell carcinoma, and actinic keratoses. It is not used for the treatment of squamous cell carcinoma.

Imiquimod is an FDA-approved drug that acts by stimulating toll-like receptors 7 and 8 of macrophages, monocytes, and dendritic cells and induces apoptosis.

Solution to Question 19:

The given image shows cryotherapy which is used for the treatment of certain conditions like warts. The main disadvantage of this procedure is pain.

Cryotherapy is a physician-administered treatment modality and it uses dimethyl ether spray, carbon dioxide snow, or liquid nitrogen to produce cold thermal damage to the skin.

Liquid nitrogen produces the coldest freeze and is most commonly used in practice. It is applied using a cotton wool bud or a cryospray until a rim of iced tissue (seen as a white discoloration) develops around the lesion. The freeze is maintained for 5–30 sec. Scarring is unlikely with freezing times under 30 secs.

Cryotherapy is considered relatively safer in pregnancy.

Solution to Question 20:

The above image shows the characteristic 'slapped cheek appearance' seen in erythema infectiosum caused by parvovirus B19.

It evolves in three phases:

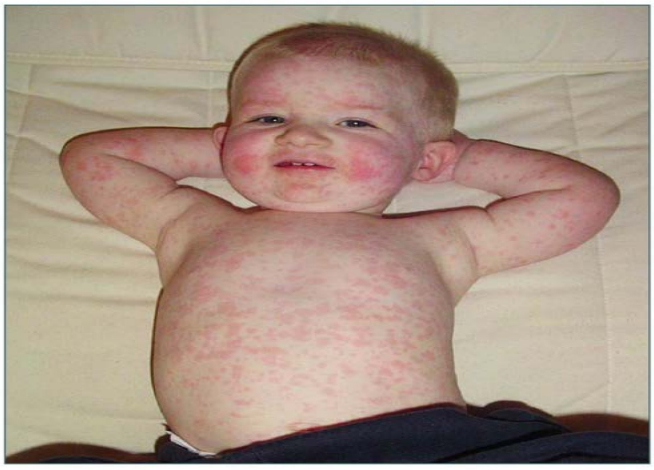
• First phase - sudden onset diffuse and macular, asymptomatic erythema of the cheeks, (slapped cheek). Prodromal symptoms may or may not be present.

• Second phase - begins after 1–4 days, with discrete erythematous macules and papules on the proximal extremities and later the trunk.

• Third phase - Recurring stage, the eruption is greatly reduced or invisible, only to recur after the patient is exposed to heat or sunlight, or in response to crying or exercise.

Only about 7% of children with erythema infectiosum have arthralgias, whereas 80% of adults have joint involvement.

Lacy or reticular pattern of rash

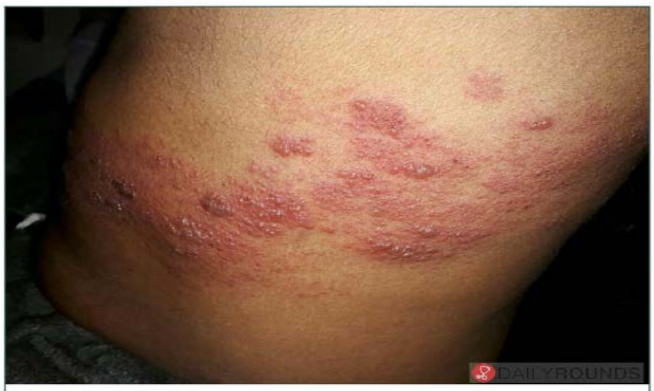


Solution to Question 21:

A maculopapular rash is not seen in zoster (shingles).

Shingles cause vesicular lesions that are grouped together and specific to a dermatome.

Shingles



Vesicular lesions grouped together in a dermatome

Maculopapular rashes are seen in:

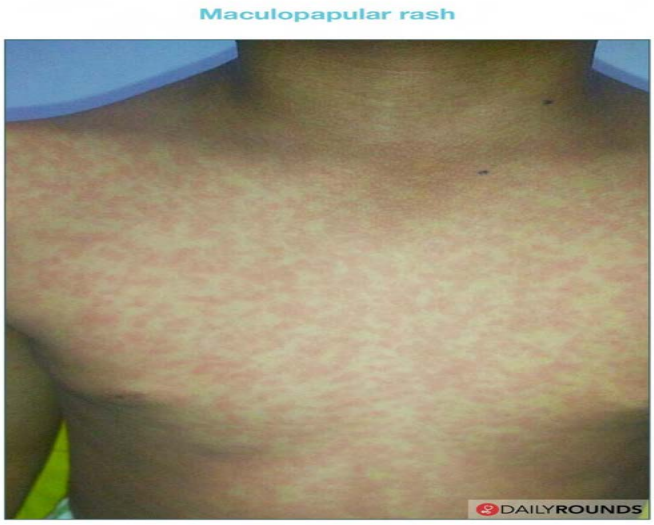
- Rubella
- Dengue (febrile phase)
- Measles
- Chikungunya (acute infectious phase)
- Erythema infectiosum

• Zika virus

• West Nile virus

• Infectious mononucleosis

Type of rash	Description
Macule	Flatlesion with a well-circumscribed change in skin color < 1 cm
Papule	Elevated solidskin lesion < 1 cm
Vesicle	Smallfluidcontaining blister



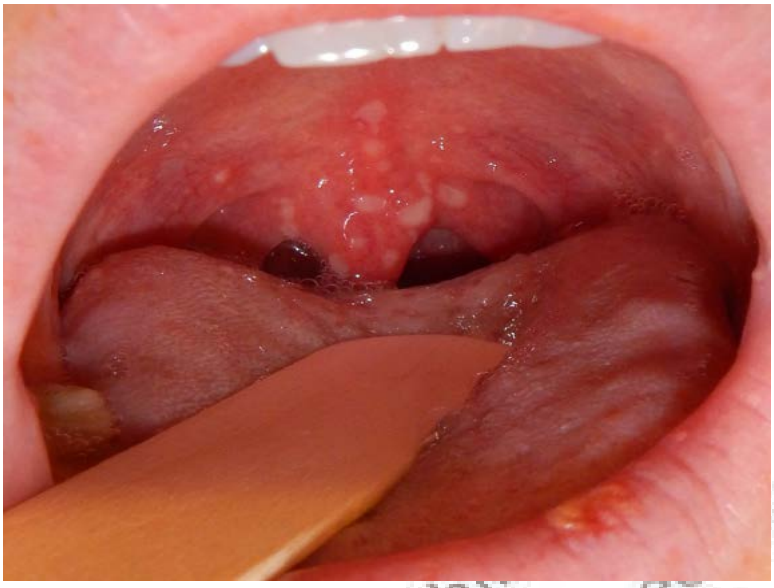
Solution to Question 22:

The above image shows multiple vesicles & crusts clustered on an inflamed base around the lips which is characteristic of herpes labialis or cold sore.

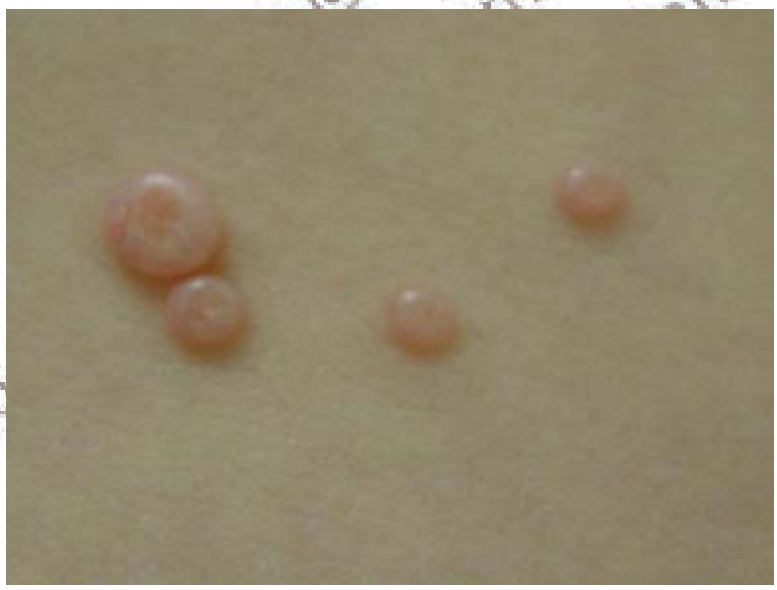
It is commonly caused by herpes simplex virus type 1(HSV-1) and rarely by herpes simplex virus type 2 (HSV-2). It begins with a prodrome of pain, burning, and tingling followed by the appearance of erythematous papules. The papules then become vesicular and may ulcerate.

It is treated with oral acyclovir 200 mg and 5% topical acyclovir.

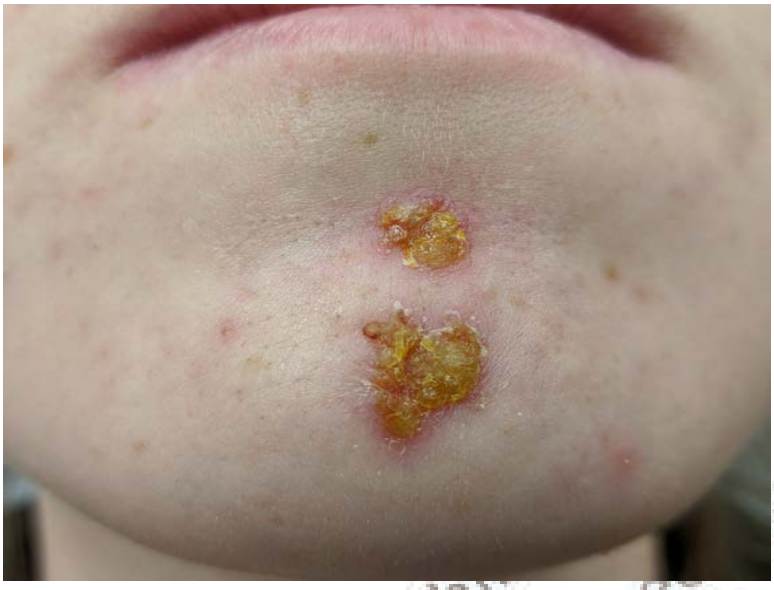
Option B: Herpangina or vesicular pharyngitis is characterized by the presence of ulcerating small vesicles on the oral fauces and the posterior pharyngeal wall. It is commonly caused by the coxsackie virus.



Option C: Molluscum contagiosum is characterized by pearly white, wart-like umbilicated papules. It is caused by the pox virus.



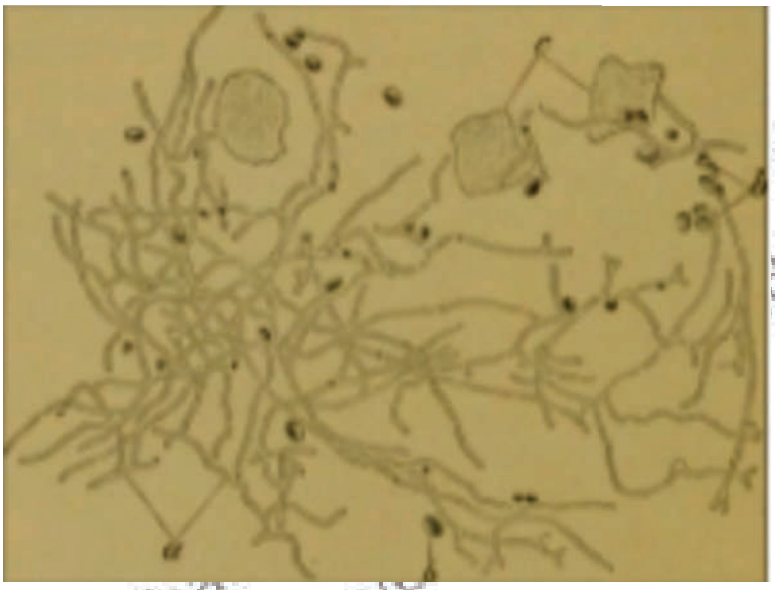
Option D: Impetigo is characterized by golden yellow or honey-coloured crusts that form after the rupture of pustulating vesicles. Non-bullous impetigo is caused by both S. aureus and streptococcus. Bullous impetigo is caused by S. aureus.



Fungal and Protozoal Infections

Question 1:

A patient presented with itchy depigmented scaly macules on his upper back for 5 days. KOH mount shows the following appearance. What is the diagnosis?



a) Pityriasis alba

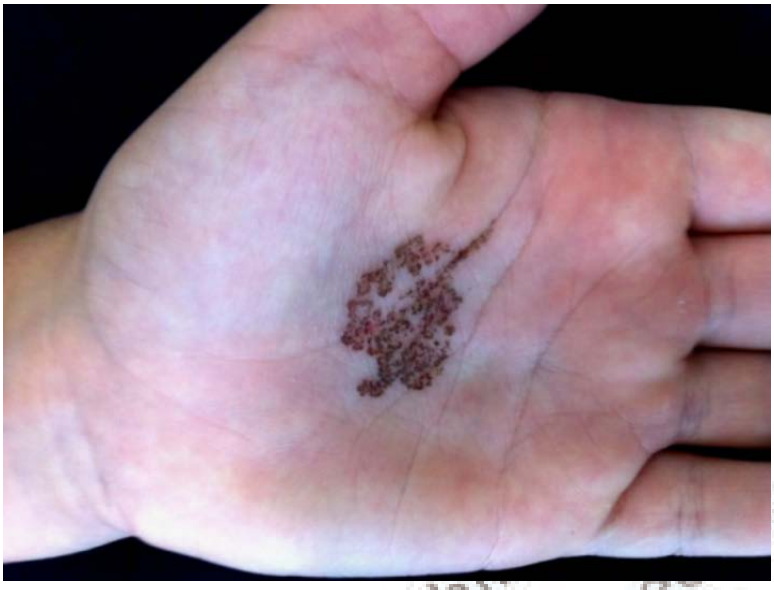
b) Pityriasis versicolor

c) Tinea corporis

d) Candidiasis

Question 2:

A 35-year-old construction worker presented with a non-pruritic lesion for 4 weeks. KOH mount of the epidermal scrapings showed brown, branched, closely septate hyphae and elongated budding cells. What is the most likely causative organism?



a) Hortaea werneckii

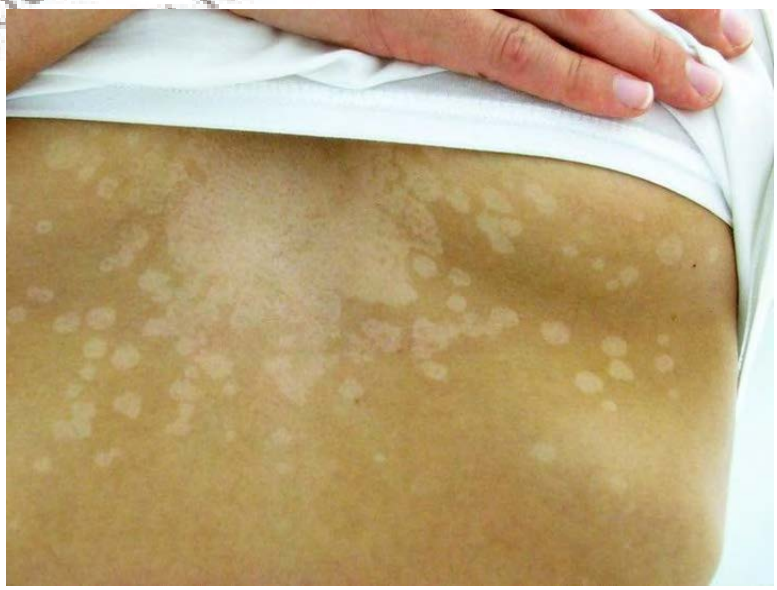
b) Malassezia globosa

c) Fusarium

d) Piedraia hortae

Question 3:

A 24-year-old woman presents with the following lesions over the chest. Identify the incorrect statement about the infection.



a) Topical terbinafine is the first-line treatment

b) Besnier's sign is seen in this condition

c) Wood's lamp examination shows blue-green fluorescence

d) Recurrence is common even after complete treatment

Question 4:

Which of the following organisms causes hard black nodules over scalp hair?

a) Piedraia hortae

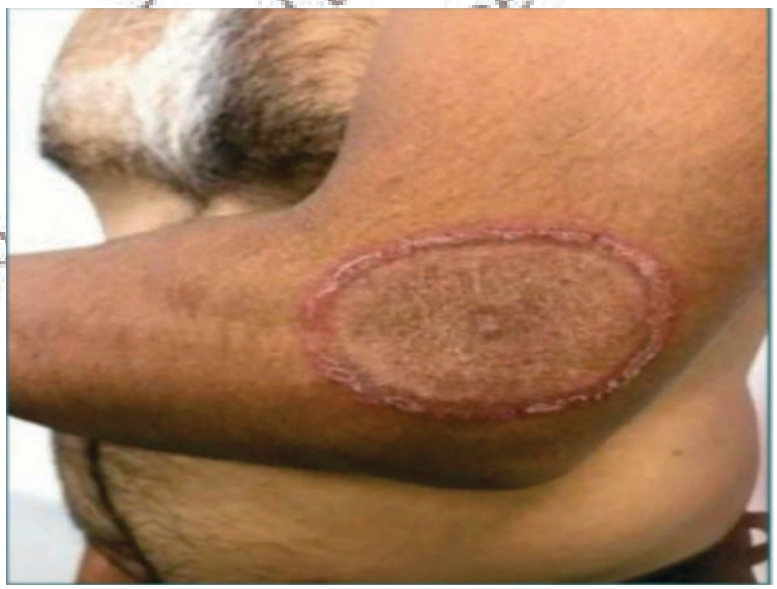
b) Trichosporon beigelii

c) Corynebacterium tenuis

d) Trichophyton tonsurans

Question 5:

A 65-year-old male comes with complaints of an intensely pruritic lesion that started 6 days back. What is the diagnosis?



a) Tinea corporis

b) Pityriasis rubra pilaris

c) Pityriasis versicolor

d) Piedra

Question 6:

Which layer of the epidermis is primarily infected by dermatophytes?

a) Stratum corneum

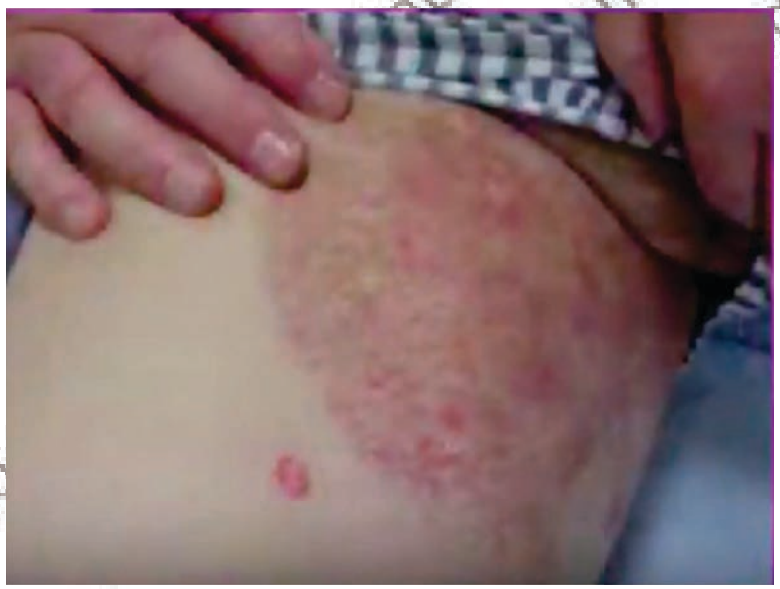
b) Stratum granulosum

c) Stratum basale

d) Stratum spinosum

Question 7:

A 23 year old patient presents with lesions in the groin as shown in the image below. Which of the following cannot be a cause of these lesions?



a) Trichophyton

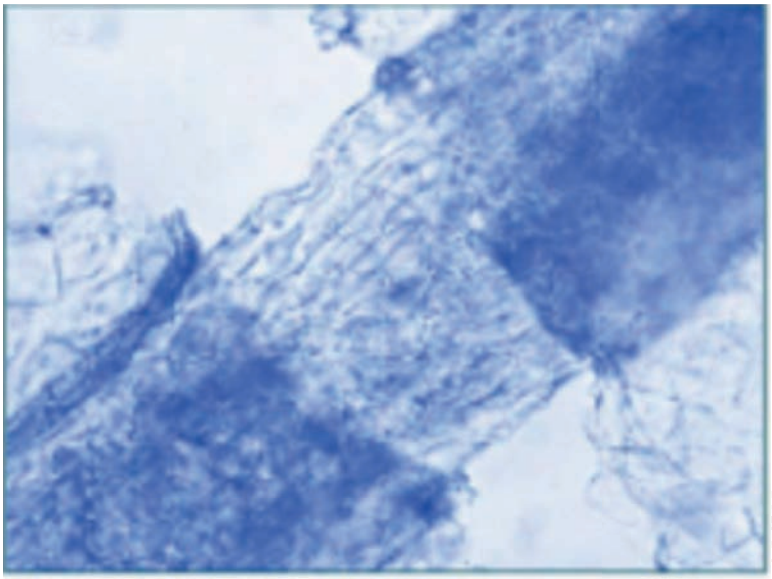
b) Microsporum

c) Aspergillus

d) Epidermophyton

Question 8:

Shown below is the trichogram of a patient suffering from tinea capitis. Which of the following fungi is implicated here?



a) Microsporum ferrugineum

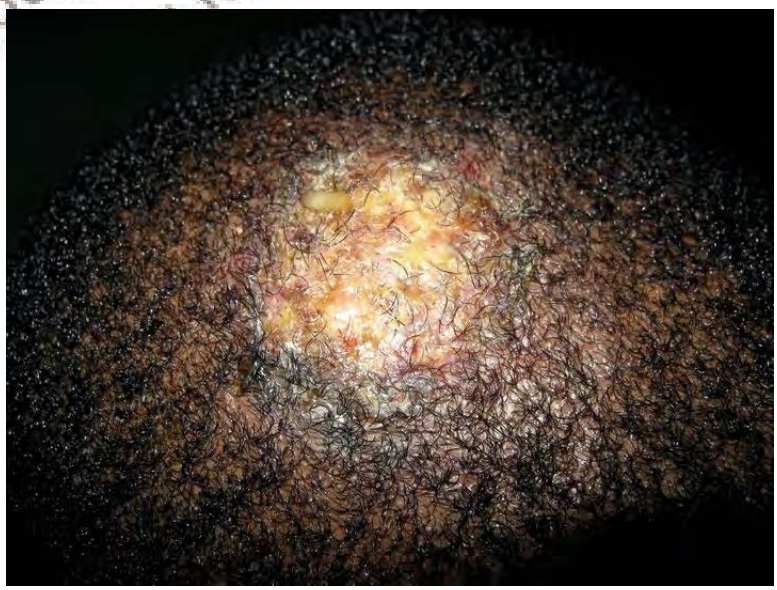
b) Trichophyton tonsurans

c) Trichophyton canis

d) Microsporum audouinii

Question 9:

A 32-year-old cattle farmer presents with a painful lesion of the scalp for 2 weeks. What is the most likely diagnosis?



a) Favus

b) Ectothrix

c) Kerion

d) Endothrix

Question 10:

A 10-year-old child presents with hair loss. The hair loss is patchy as shown in the image below. Black dots are noted in areas of hair loss. Which of the following types of tinea is this child suffering from?

a) Ectothrix

b) Endothrix

c) Kerion

d) Favus

Question 11:

Which of the following is associated with tinea incognito?

a) Trichophyton tonsurans

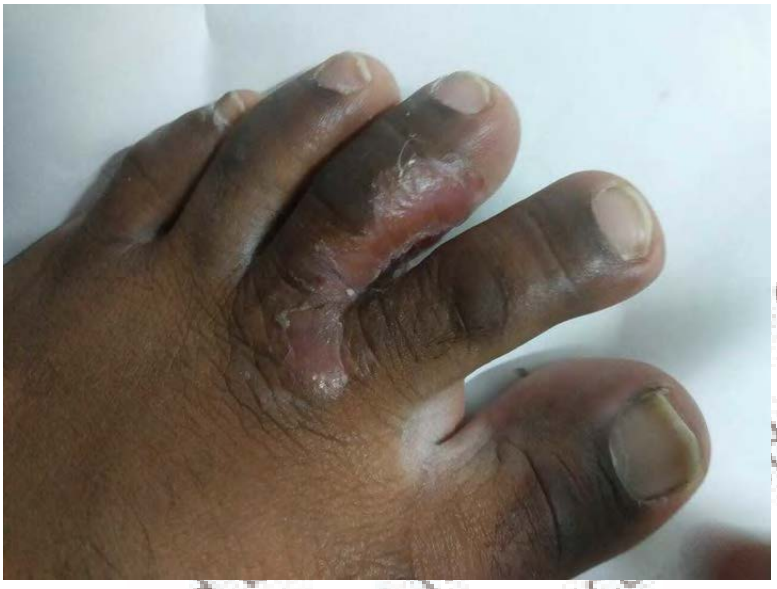
b) Corticosteroids

c) Antimycotic drugs

d) Microsporum canis

Question 12:

A college student presents to the dermatology OPD with a pruritic lesion on his left foot for 5 days. Which is the most common causative organism for this condition?



a) Trichophyton rubrum

b) Trichophyton tonsurans

c) Epidermophyton floccosum

d) Trichophyton interdigitale

Question 13:

Which of the following is known as Dhobi's itch?

a) Tinea corporis

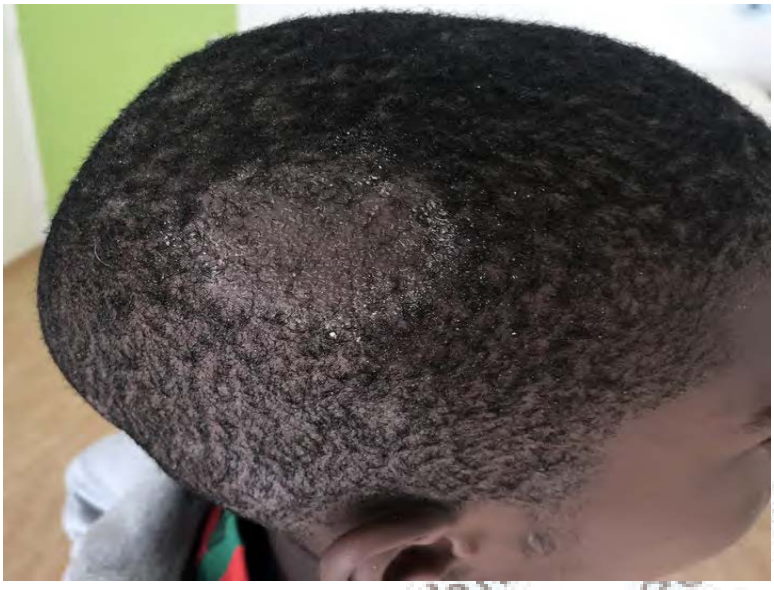
b) Tinea cruris

c) Tinea barbae

d) Tinea capitis

Question 14:

An 11-year-old child presented with a pruritic lesion as shown. Which of the following is the drug of choice for this condition?



a) Terbinafine

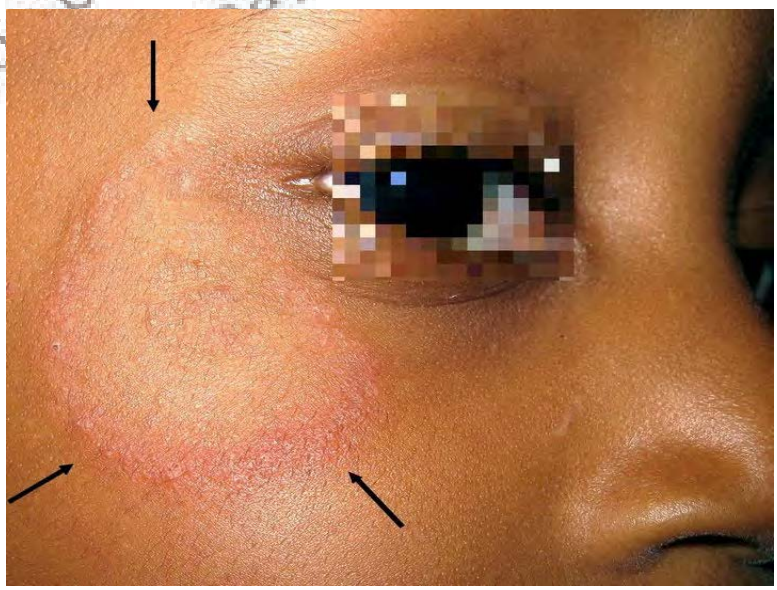
b) Griseofulvin

c) Fluconazole

d) Selenium sulphide shampoo

Question 15:

What test is used to diagnose the given condition?



a) Gram's stain

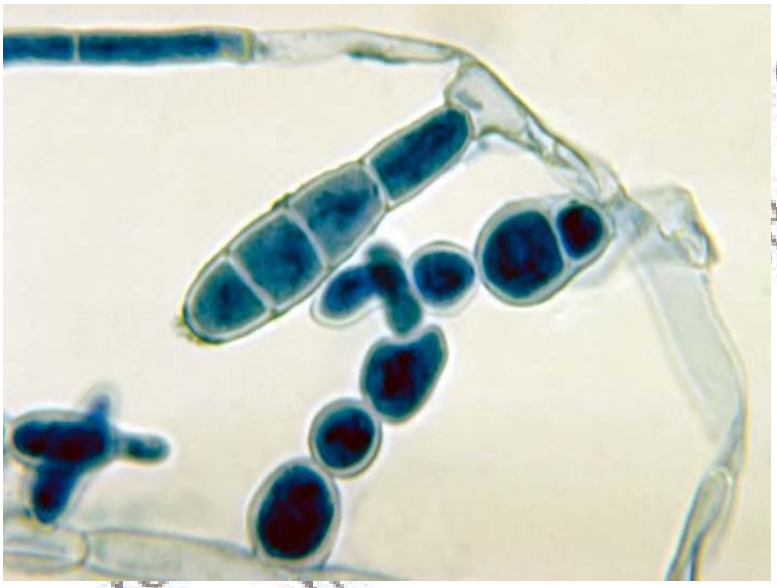
b) KOH mount

c) Tissue smear

d) Wood's lamp

Question 16:

A 33-year-old man presented with a circular, pruritic and scaly lesion on his trunk. A lactophenol cotton blue mount of the scrapings from the lesion showed the following. What is the most probable causative organism?



a) Trichophyton

b) Microsporum

c) Epidermophyton

d) Any of the above

Question 17:

A patient who was diagnosed with kerion now presents with new-onset vesicular eruptions on his fingers. Which of the following is incorrect regarding these lesions?

a) Lesions are extremely pruritic and maybe tender

b) It is a form of allergic response

c) Responds well to topical corticosteroids

d) Dermatophytes can't be demonstrated from this lesion

Question 18:

Tinea unguium is a dermatophyte infection of _____.

a) Nail fold

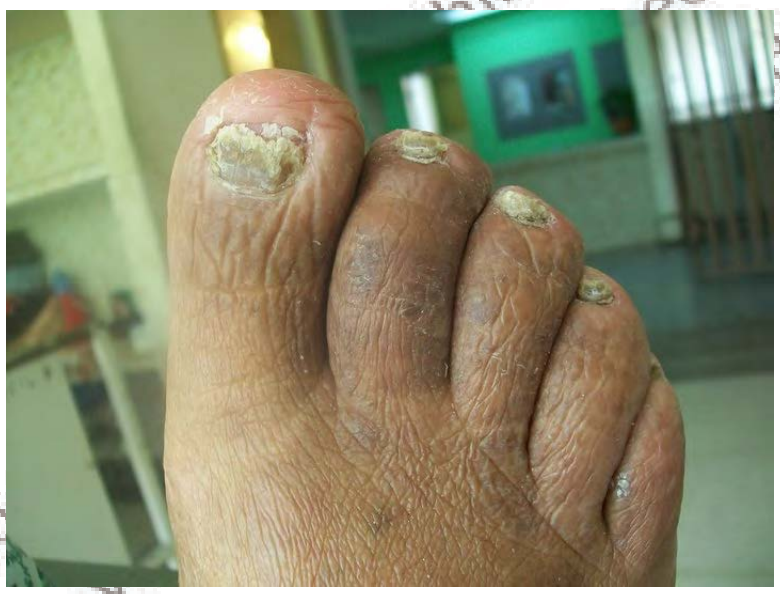
b) Nail plate

c) Periungual region

d) Cuticle

Question 19:

What is the correct treatment regimen for the condition shown?



a) Oral griseofulvin for 3 weeks

b) Oral griseofulvin for 6 weeks

c) Oral terbinafine for 12 weeks

d) Oral terbinafine for 24 weeks

Question 20:

Which of the following statements is correct with respect to Perlèche?

a) Inflammation around the nail involving the nail folds

b) White creamy patch over tongue

c) Cobbled appearance of tongue

d) Soreness and cracking at the angles of the mouth

Question 21:

Which type of oral mucosal candidiasis does not present with a white patch?

a) Chronic atrophic candidiasis

b) Chronic hyperplastic candidiasis

c) Chronic pseudomembranous candidiasis

d) Acute pseudomembranous candidiasis

Question 22:

A 32-year-old man presents with reddish-pink, non-scaly, itchy and moist patches in his left armpit. Small, superficial, white pustules are observed adjacent to the patches. What is the most likely diagnosis?

a) Candidal Balanitis

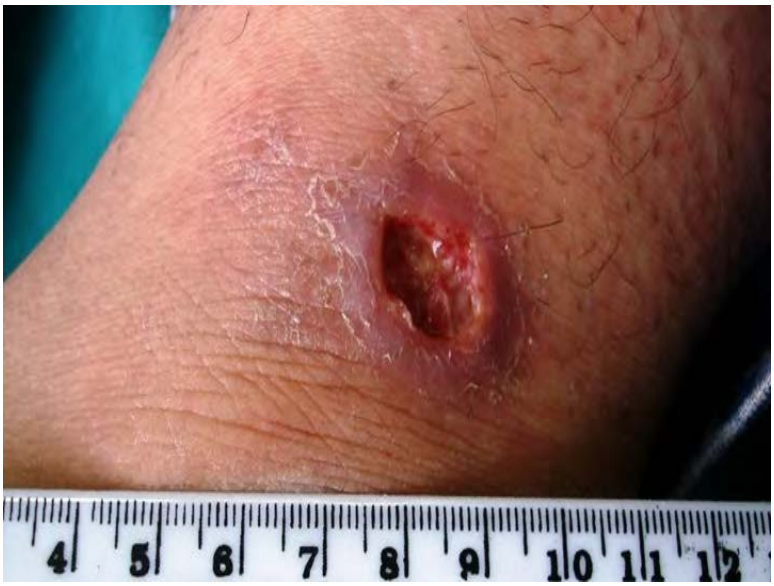
b) Candidal Intertrigo

c) Oropharyneal candidiasis

d) Candidal Paronychia

Question 23:

A patient presents with the following lesion. Which is the diagnosis?



a) Oriental sore

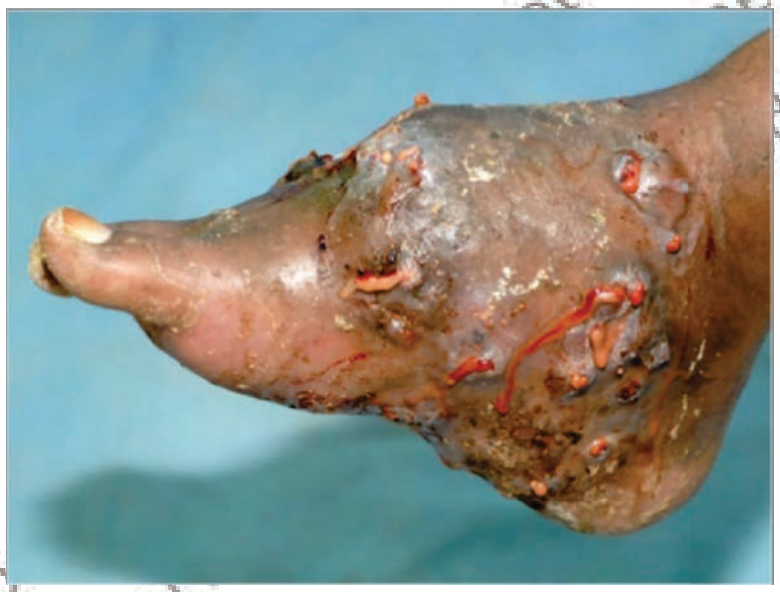
b) Lupus vulgaris

c) Chromoblastomycosis

d) Kerion

Question 24:

A 30-year-old farmer presents with firm, painless nodules with purulent discharge on his left foot for 10 days. What is the likely diagnosis?



a) Sporotrichosis

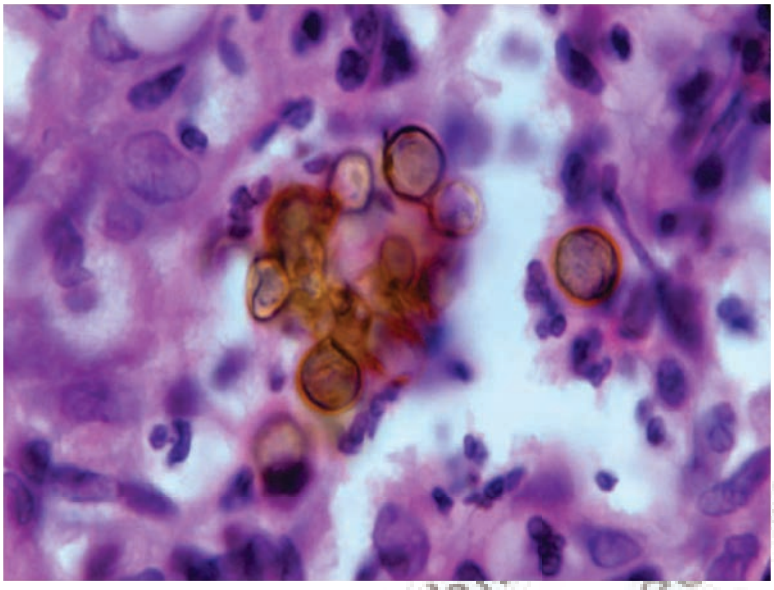
b) Chromoblastomycosis

c) Mycetoma

d) Oriental sores

Question 25:

A patient presents with multiple hypertrophic plaques on his left leg for 6 months. History reveals that the lesions started as warty papules and progressed to the current state. On examination, several satellite lesions noted. Skin biopsy from the lesion is shown below. What is the diagnosis?



a) Chromoblastomycosis

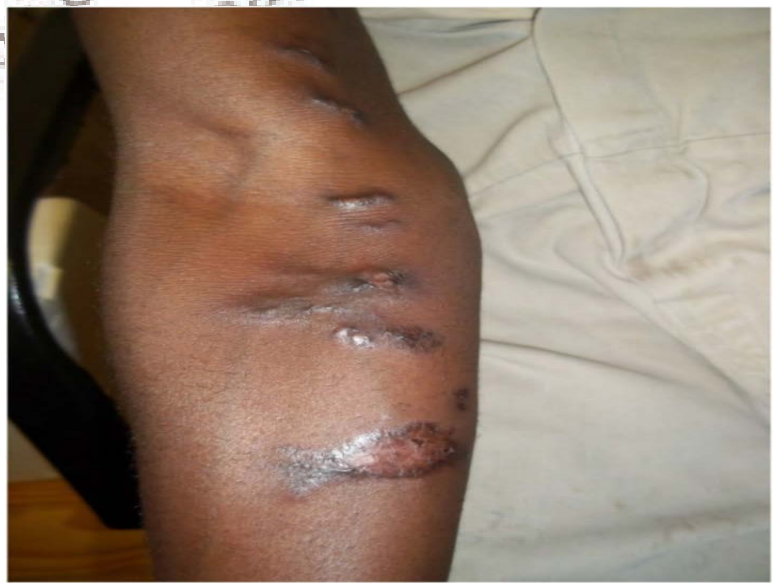
b) Sporotrichosis

c) Phaeohyphomycosis

d) Mycetoma

Question 26:

A patient presents with the following lesions. What is the most likely diagnosis?



a) Lichen planus

b) Sporotrichosis

c) Chromoblastomycosis

d) Tinea circinata

Question 27:

Which of the following is the vector of Chiclero ulcer?

a) Phlebotomus

b) Lutzomyia

c) Reduviid

d) Trombiculid

Question 28:

A 20-year-old man from Jaipur presented with an erythematous nodule on the cheek with central crusting. What is the most likely diagnosis?

a) Systemic lupus erythematosus

b) Lupus vulgaris

c) Chilblain

d) Cutaneous leishmaniasis

Question 29:

A 36-year-old male patient from Bihar comes with complaints of hypopigmented macules over the trunk and face. The nerves and sensations are found to be normal and there is no visible scaling. The patient gives a history of prolonged fever 2 years back for which he was treated. What is the drug of choice for this condition?

a) Multidrug therapy for leprosy

b) Amphotericin B deoxycholate

c) Sodium stibogluconate

d) Miltefosine

Answer Key

Question No.	Correct Option
1	b
2	a
3	c
4	a
5	a
6	a
7	c
8	b
9	c
10	b
11	b
12	a
13	b
14	b
15	b
16	c
17	c
18	b
19	c
20	d
21	a
22	b
23	a
24	c
25	a
26	b
27	b
28	d
29	d

Detailed Explanations

Solution to Question 1:

The given clinical scenario with 'spaghetti and meatballs' appearance on the KOH mount is suggestive of pityriasis versicolor.

It is a mild, chronic infection of the skin most commonly caused by the lipophilic fungus Malassezia globosa. It may also be caused by M. furfur and M. sympodialis.

The KOH mount reveals fungal hyphae that are short and thick (like spaghetti or banana) and a large number of variously sized spores (like meatballs or grapes) referred to as 'spaghetti & meatballs' or 'bananas & grapes'.

Option A: Pityriasis alba is not a fungal infection, associated with eczema.

Option C: In tinea corporis infection, microconidia and macroconidia are seen under a KOH mount.

Option D: In candidiasis, spores and pseudohyphae of candida are seen in the KOH mount.

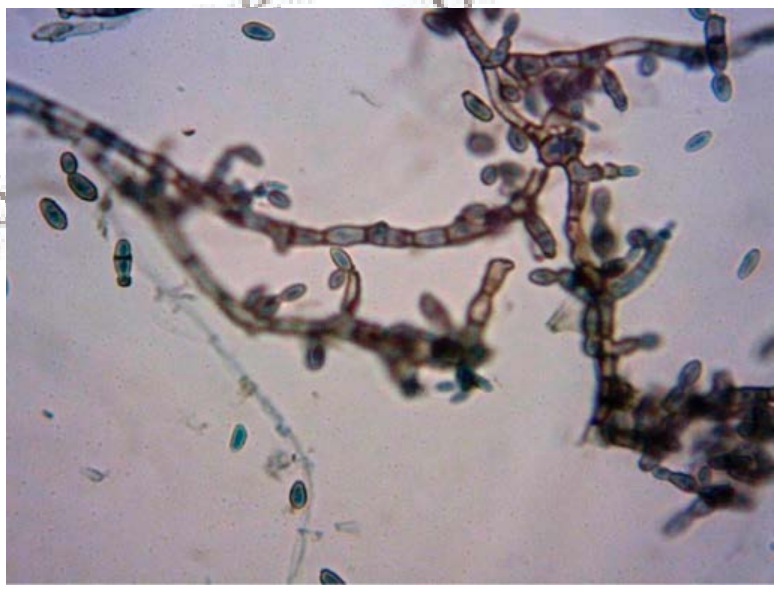
Solution to Question 2:

The above clinical scenario and image are suggestive of tinea nigra (pityriasis nigra). It is a rare superficial fungal infection caused by Hortaea werneckii.

The infection occurs by direct inoculation through the skin. It causes deeply pigmented, macular, non-scaly patches commonly on palms.

First-line treatment is topical azole creams such as econazole and ketoconazole.

The image below shows a microscopic image of tinea nigra, with pigmented filaments with conidia.



Option B: Malassezia globosa causes tinea versicolor.

Option C: Fusarium causes mycotoxicosis.

Option D: Piedraia hortae causes black piedra.

Solution to Question 3:

The given image shows multiple hypopigmented macules and patches with fine scales (branny/furfuraceous) suggestive of tinea versicolor (pityriasis versicolor).

Hypopigmentation is due to azelaic acid produced by Malassezia species that causes competitive inhibition of tyrosinase and a direct cytotoxic effect on hyperactive melanocytes.

Under Wood's lamp examination, lesions show a pale yellow fluorescence.

Besnier's sign (coup d'ongle sign or scratch sign or stroke of the nail): When the fine scales are not visible, an important diagnostic clue may be the loosening of barely perceptible scales with a fingernail, which is called the scratch sign. The most commonly affected site is the upper trunk.

Relapse is very common.

First-line treatment:

• Topical azoles twice daily for 2–3 weeks

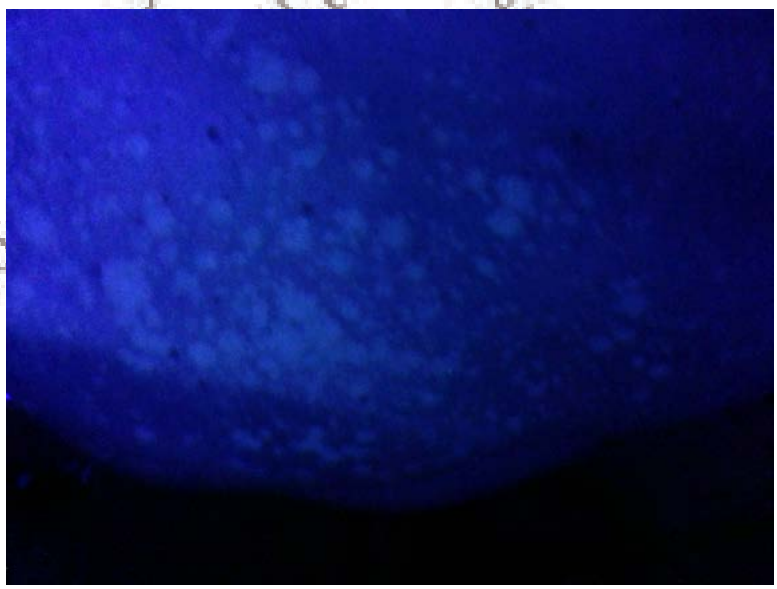
• Terbinafine 1% cream twice daily for 2–3 weeks

• Ketoconazole shampoo twice weekly for 2-3 weeks

• 2.5% selenium shampoo alternative days for 2-3 weeks

Second-line treatment: Oral itraconazole, 200 mg daily for 5 days

The image below shows the pale yellow fluorescence of Tinea versicolor under Wood's lamp.



Solution to Question 4:

The hard black nodules over the scalp hair are suggestive of black piedra. It is a fungal infection of the hair shafts caused by Piedraia hortae.

The fungus forms hard, dark, gritty, and superficial nodules on the hair shafts. As the fungus grows into the hair shaft, the hair may fracture easily. It produces sexual spores in its parasitic

phase.

Treatment:

• Shaving or cutting hair (prevents recurrence also)

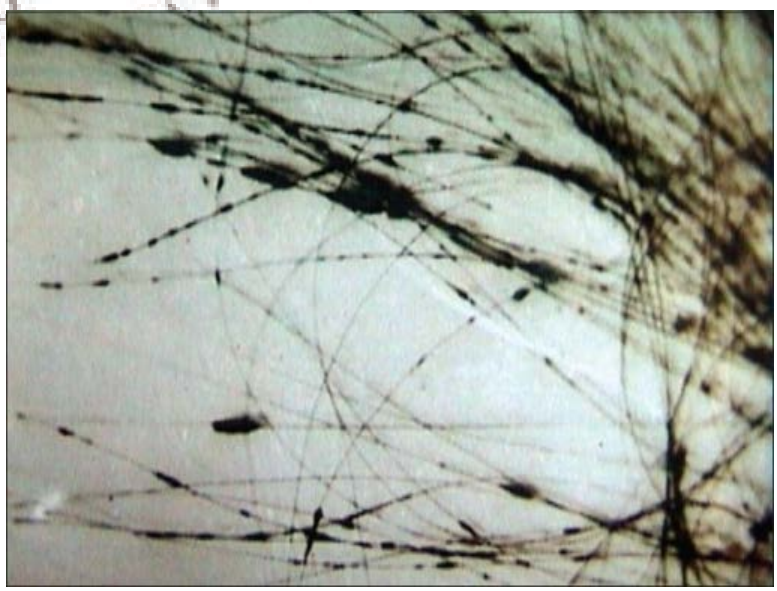
• Benzoic acid ointment is used.

Option B: Trichosporon beigelli causes white piedra or trichosporosis nodosa.

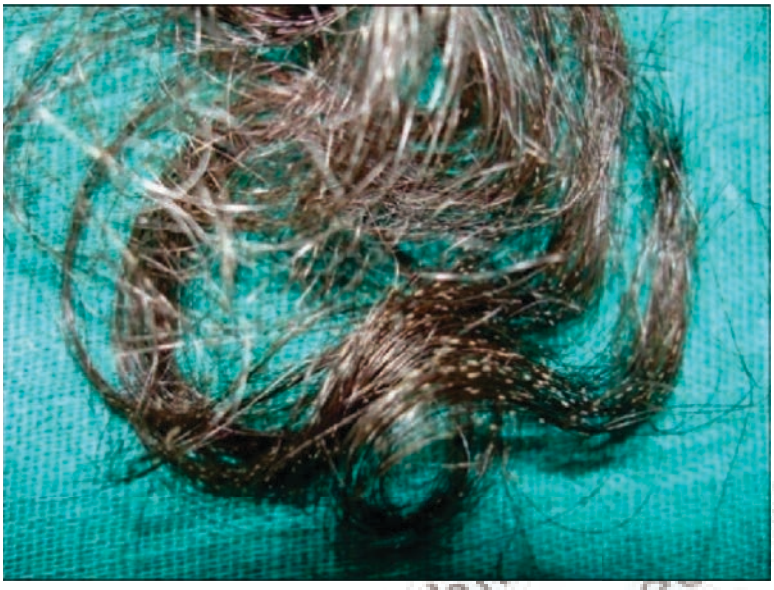
Option C: Corynebacterium tenuis causes trichomycosis axillaris.

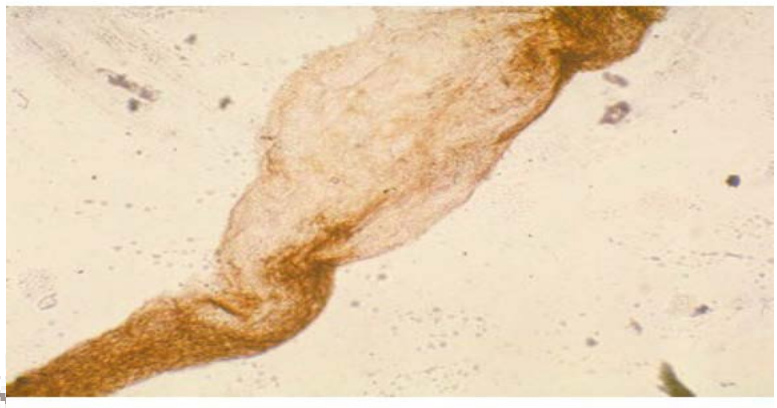
Option D: Trichophyton tonsurans causes mainly tinea capitis.

The images below show black piedra infected hair mounted in 30% KOH and the appearance of hair strands, respectively. The dark nodules are formed of dematiaceous hyphae cemented together to form a hard mass.



The images given below show white piedra. Superficial, soft, white, grey, or brown nodules can be seen.





White piedra

Solution to Question 5:

The above image showing a single, intensely pruritic lesion with sharp margins and central resolution is suggestive of tinea corporis.

Central resolution is a frequent but not exclusive finding. Multiple lesions may be present.

Option B: Pityriasis rubra pilaris is a salmon-red dry scaly plaque with a nutmeg grater appearance.

Option C: Pityriasis versicolor presents as hypo or hyperpigmented macules with fine scaling.

Option D: Piedra has black or white nodules present superficially on the hair shaft.

Solution to Question 6:

Dermatophytes infect and survive only in the dead keratin layers of skin (stratum corneum), hair and nails as they are keratinophillic.

Solution to Question 7:

The image shows a well-circumscribed, annular plaque in the groin region which is characteristic of tinea cruris. Tinea cruris is a dermatophytosis. Trichophyton, Microsporum and Epidermophyton are dermatophytes whereas Aspergillus is not.

Dermatophytes include 3 genera:

• Trichophyton species infect skin, hair, and nails and include T. rubrum, T. mentagrophytes, T. tonsurans, T. schoenleinii, and T. violaceum.

• Microsporum contains M. gypseum, M. canis, and M. nanum. These infect only hair and skin (not nails).

• Floccosum is the only species in the genus Epidermophyton, It infects only skin and nails (not hair).

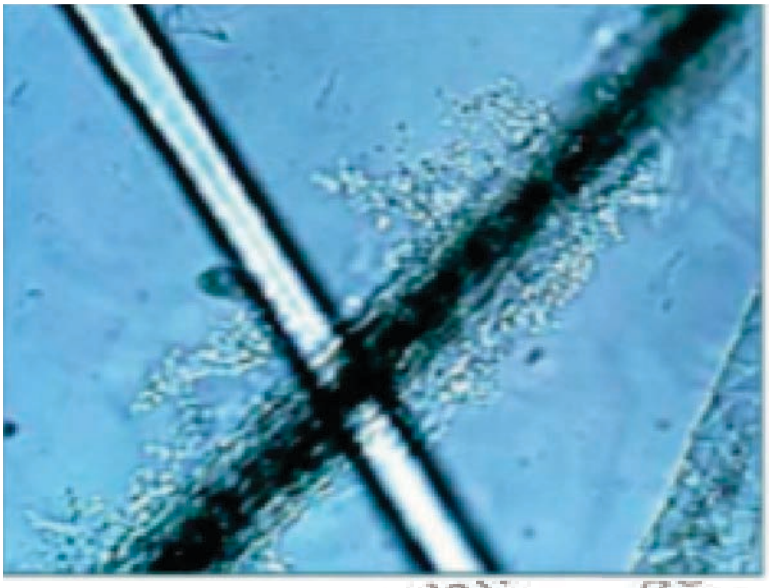
Aspergillus spp. produce large necrotic lesions like ecthyma gangrenosum, and sometimes small papules and cold abscesses.

Solution to Question 8:

The above image shows numerous fungal spores within the hair shaft suggestive of endothrix type of tinea capitis, which is caused by Trichophyton tonsurans.

Tinea capitis is of four types:

Type of Infection	Causative fungus
Endothrix (infection inside s haft)	Trichophyton tonsuransT.violaceumT. schoenleiniiT.yaoundeiT. soudanense
Ectothrix (infection outside s haft)	Microsporum audouiniiM.canisM.equinumM.ferrugineum
Favus	T. schoenleinii
Kerion	T. verrucosumT. mentagrophytes



Solution to Question 9:

The above image shows an inflammatory mass with thick crusting and matting of hair which is suggestive of a kerion.

Kerion is a severe inflammatory type of tinea capitis. The most common causative organisms of kerion are T. verrucosum and T. mentagrophytes. In severe cases, there may be pus along with sinus formation.

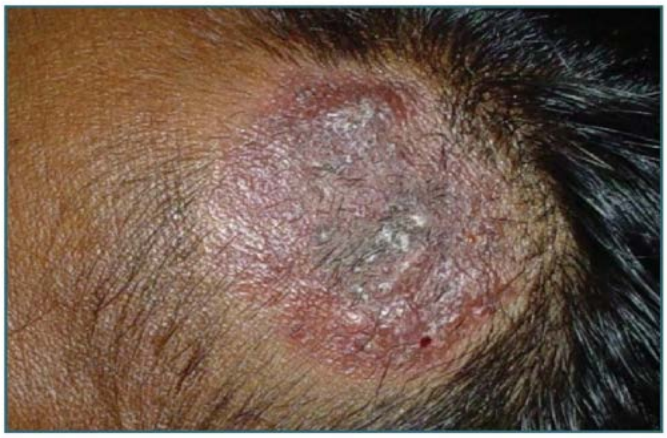
Option A: Favus is characterized by the presence of yellowish, cup■shaped crusts known as scutula that develop around hair follicles.

Option B: Ectothrix is a mild inflammatory type in which dull grey coated broken hairs are seen.

Option D: Endothrix is a non-inflammatory type in which black dots form around swollen hair shafts.

Note: Scarring alopecia is seen in favus and kerion while non-scarring alopecia is seen in ectothrix and endothrix.

Kerion



Solution to Question 10:

The given clinical scenario depicting a young child with patchy hair loss and the image showing black dots is suggestive of endothrix type of tinea capitis.

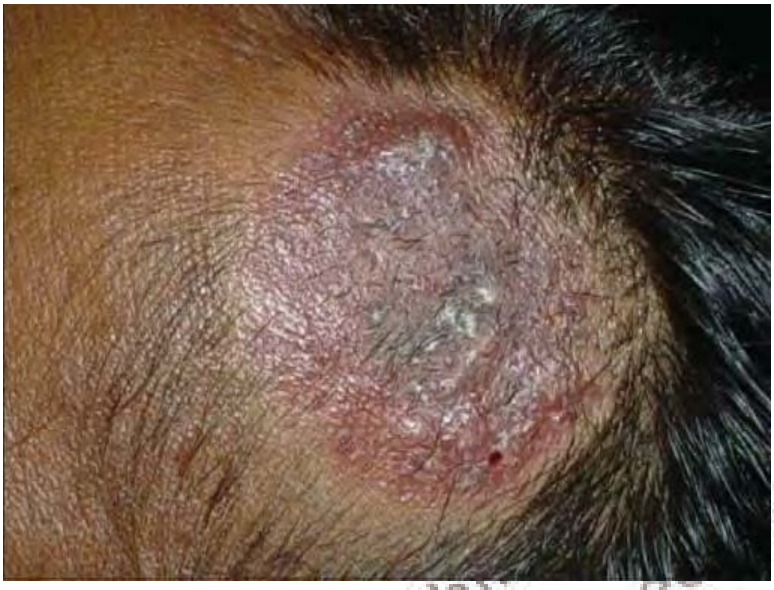
Tinea capitis is a dermatophyte infection primarily occurring in children. Clinical features of tinea capitis are patchy hair loss, scaling, tender lymphadenopathy, and in severe cases, there might be pustules and crusting of the affected area along with sinus formation.

The clinical variants of tinea capitis are:

• Endothrix - a non-inflammatory type in which multiple black dots are present within the areas of alopecia. It is most commonly caused by T. tonsurans and T. violaceum.

• Ectothrix -a mild inflammatory type in which single or multiple scaly patches with hair loss are seen. Microsporum audouinii, M.canis, M.equinnum, and M.ferrugineum cause ectothrix infection.

• Kerion -a severe inflammatory type that presents with an inflammatory mass with thick crusting and matting of hair with pus and sinus formation. It is commonly caused by T. verrucosum and T. mentagrophytes.



• Favus - is characterized by the presence of yellowish, cup■shaped crusts known as scutula that develop around hair follicles. It is caused by T. schoenleinii

Treatment:

• Terbinafine: <10 Kg- 62.5 mg; 10-20 kg - 125 mg; >20 kg- 250 mg, all given daily for 4 weeks.

• Itraconazole: 2-4 mg/kg/day for 4-6 weeks.

Solution to Question 11:

Tinea incognito is an atypical clinical lesion of tinea, usually produced by incorrect treatment of fungal infection with a topical corticosteroid.

Steroids suppress inflammation without eliminating the fungus; so the typically raised margin is diminished, scaling is lost and inflammation reduces. Hence, diagnosis becomes difficult.

Pharmacological treatment of fungal tinea infection depends on the extent of the disease.

Localized disease:

• Topical terbinafine twice daily for 2 weeks

• Topical azole once or twice daily for 2–4 weeks

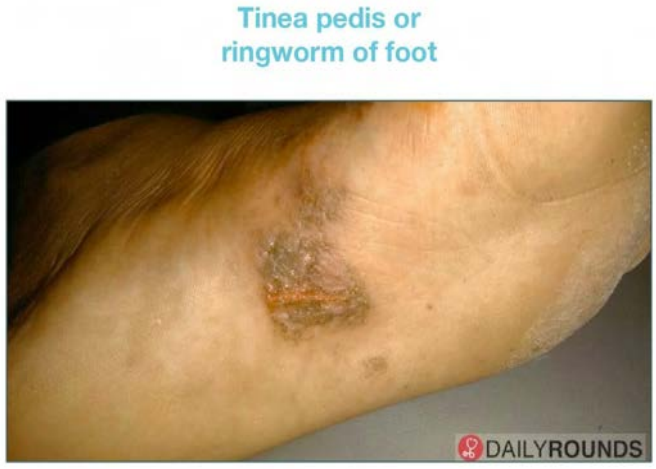
Widespread disease:

• First-line - oral terbinafine 250 mg/day 2–3 weeks or oral itraconazole 100 mg/day 2–4 weeks

• Second-line - oral griseofulvin 1 g/day for 4 weeks

Solution to Question 12:

The above image shows a scaly pruritic lesion of tinea pedis or ringworm of foot is most commonly caused by Trichophyton rubrum infections (70%) followed by Trichophyton interdigitale infections (15%), Epidermophyton floccosum infections (<10%), and mixed infections (5%).



Solution to Question 13:

Dhobi's itch/tinea cruris is an infection of the groin by a species of dermatophyte. It is commonly known as ringworm of the groin or eczema marginatum.

T. rubrum is the main cause; however, T. Interdigitale and E. floccosum also account for some cases.

Solution to Question 14:

The image shows a scaly pruritic lesion affecting the scalp hair, suggestive of tinea capitis. The drug of choice treatment for children in whom the cause of tinea capitis is unclear is griseofulvin. Terbinafine is the alternate first-line drug for adults.

Option A: Oral terbinafine is also used in the treatment of T. tonsurans tinea capitis in children, but usually used in adults.

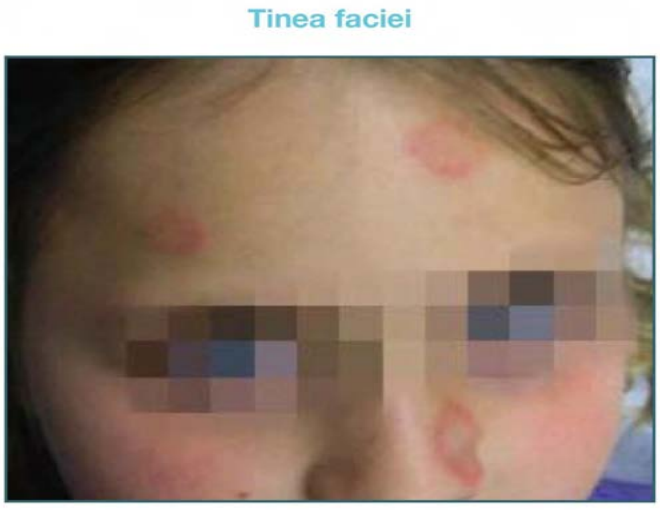
Option C: Fluconazole is more effective in the treatment of M. canis compared to terbinafine.

Option D: Selenium sulphide has only a supportive role in the treatment of tinea capitis.

Solution to Question 15:

The above image is suggestive of tinea faciei, a dermatophyte infection of the glabrous skin of the face (the mustache and beard areas of the adult male are excluded). It is diagnosed by KOH mount.

Trichophyton mentagrophytes and T.rubrum predominate, but T.tonsurans, M. audouinii, and M. canis are also common causes.



Solution to Question 16:

The above scenario is suggestive of tinea corporis and the slide showing smooth-walled club-shaped macroconidia with absent microconidia is indicative of Epidermophyton species.

Epidermophyton species infects skin and nails but not the hair.

Solution to Question 17:

The above scenario describes a dermatophytid (-id) reaction, a systemic reaction to fungal antigens during the infection or therapy.

An id reaction can be seen on the hands and sides of the fingers, but fungi cannot be demonstrated in these lesions.

The reactions may be vesicular, lichenoid, papulosquamous, or pustular. The lesions are extremely pruritic and tender. The onset can be accompanied by fever, anorexia, generalized adenopathy, spleen enlargement, and leukocytosis.

Although the eruptions are usually refractory to topical corticosteroids, they typically clear rapidly after treatment of the fungal infection. Secondary bacterial infections may occur.

Solution to Question 18:

Tinea unguium is a dermatophytic infection of the nail plate. Onychomycosis is a broad term for all fungal nail infections.

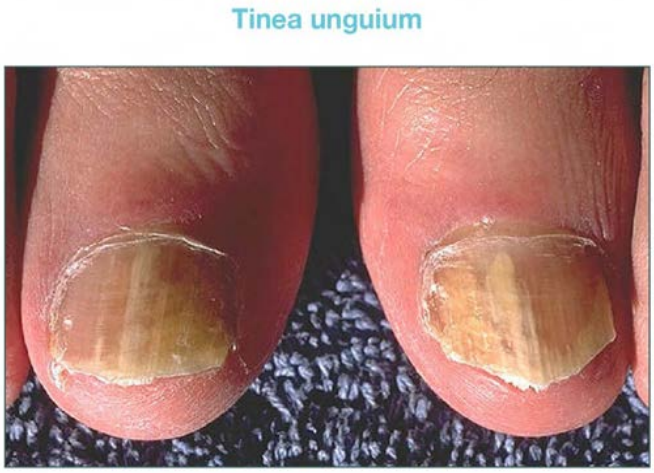
Trichophyton rubrum accounts for most cases.

It presents with yellowish discoloration, which spreads proximally as a streak in the nail. Later, subungual hyperkeratosis becomes prominent and spreads until the entire nail is affected. Gradually, the entire nail becomes brittle and separated from its bed as a result of the piling up of subungual keratin.

Six distinct patterns of tinea unguium have been described.

- Distal and lateral subungual onychomycosis (DLSO) (most common)
- Superficial onychomycosis (SO)
- Proximal subungual onychomycosis
- Endonyx onychomycosis
- Totally dystrophic onychomycosis
- Mixed onychomycosis

Diagnosis is made by KOH mount examination of clippings or curettings that include dystrophic subungual debris.



Solution to Question 19:

The above image shows onychomycosis of toenails. The first-line treatment is oral terbinafine 250mg/day for 12 weeks.

Treatment of onychomycosis:

Second-line drug: Oral griseofulvin dose 1 g/day for 4–8 months (longer for toenails).

Topical treatment with amorolfine or ciclopirox olamine can be used in mild infections affecting the distal nail plate only or non■linear superficial onychomycosis.

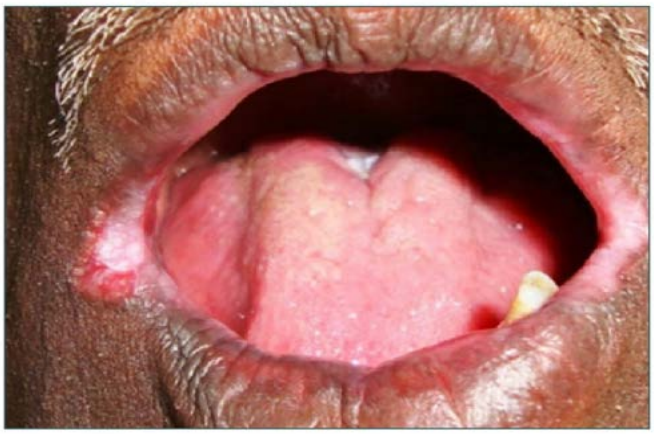
	Oral terbinafine	Oral itraconazole
Finger nails	250mg/day for 6 weeks	400mg/day for 1week, repeated every month for 2-3months
Toe nails	250mg/day for 12 weeks	400mg/day for 1week, repeated every month for 3-4 months

Solution to Question 20:

Soreness and cracking at the angles of the mouth are seen in Perlèche. It is considered as an intertrigo where candida is the most common organism implicated.

It is also called angular stomatitis. It is a type of oral mucosal candidiasis. Nutritional status and mechanical factors (e.g. the depth of the fold), the presence of moisture from persistent salivation or licking the lips also contribute to stomatitis.

Perlèche (Angular stomatitis)



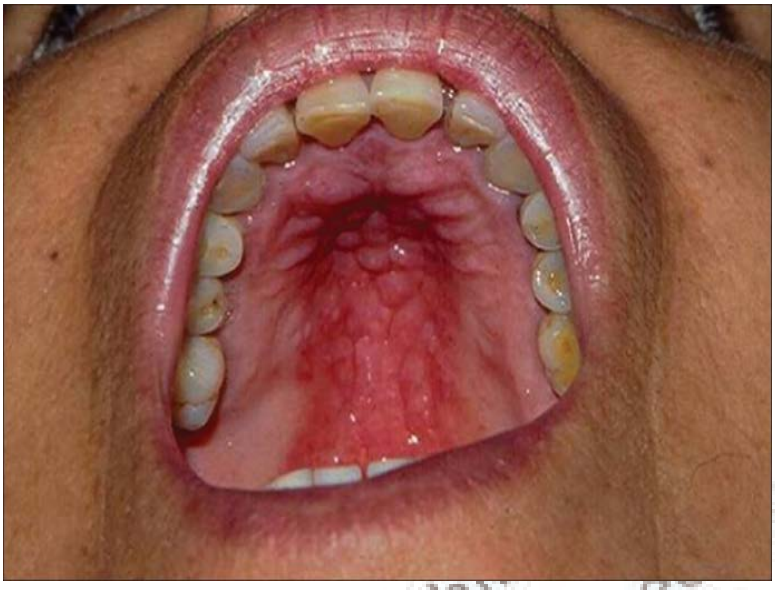
Solution to Question 21:

Chronic atrophic candidiasis presents with a red patch, not white.

Candidiasis of the oral mucosal membranes is of the following types:

Image: Chronic Atrophic Candidiasis

Type of Candidiasis	Description
Acute pseudomembranous candidiasis /Oral thrush /Chronic pseudomembranous candidiasis	Sharply defined patch of creamy, crumbly, curd■like, white pseudomembraneHas an underlying erythematous base
Acute erythematous candidiasis	Denuded, atrophic, erythematous mucous membranesMost common- dorsum ofthe tongue
Chronic erythematous candidiasis /Chronic atrophic candidiasis /Denture stomatitis	Affected areas show a variable bright red or dusky erythemaFairly sharply defined at the margin of the denture
Chronic plaque■like candidiasis /Chronic hyperplastic candidiasis /Candida leukoplakia	Very persistent, firm, irregular, white plaques occur in the mouthCommonly on the cheek or tongue
Chronic nodular candidiasis	Tongue has a cobbled appearance
Angular cheilitis/Angular stomatitis/ Perlèche	Soreness at the angles of the mouth extending outwards in thefolds of the facial skin



Solution to Question 22:

The erythematous, non-scaly moist patches with tiny, superficial, white pustular satellite lesions are suggestive of candidal intertrigo.

Sites of infection:

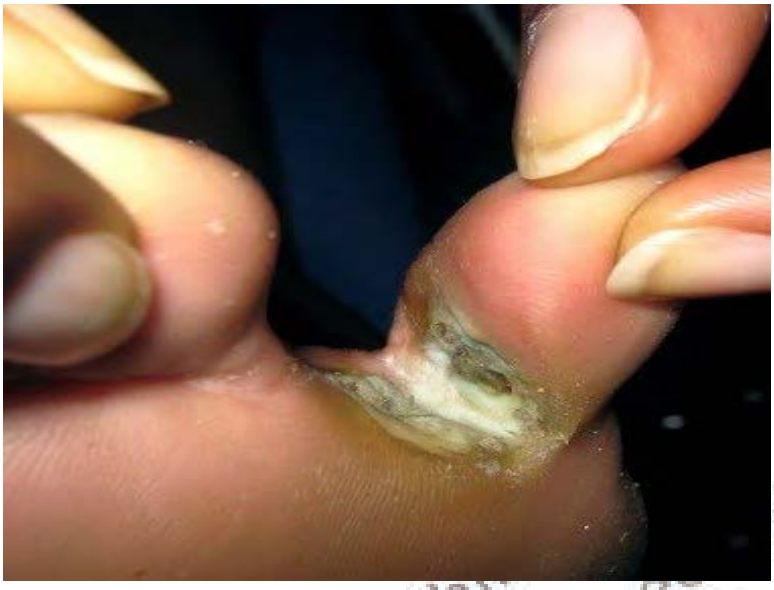
- Between genital folds and groins
- Armpits
- Between the buttocks
- Inframammary fold (large and pendulous breasts)
- Under overhanging abdominal folds
- Umbilicus.
- Web spaces of toes, fingers

Marked maceration with a thick, white, horny layer is usually prominent. Soreness and itching are present.

The disease usually spreads beyond the area of contact, developing lesions with irregular edges and subcorneal pustules rupturing to give tiny erosions which lead to peeling of the stratum corneum.

Psoriasis, tinea corporis, and pityriasis rotunda have scaly lesions.

The image below shows candidial intertrigo.



Solution to Question 23:

The above image shows the volcano sign seen in Oriental sore.

The lesion starts as a small non-tender papule, which enlarges in size and ulcerates in the centre. The border of the crusted ulcer often has an erythematous rim and is called a “volcano sign.”

It is also called cutaneous leishmaniasis or old world leishmaniasis, Kandahar sore, Lahore sore, or Delhi boil.

Causative organisms:

• Old world leishmaniasis: L. donovani, L.major, and L.tropica

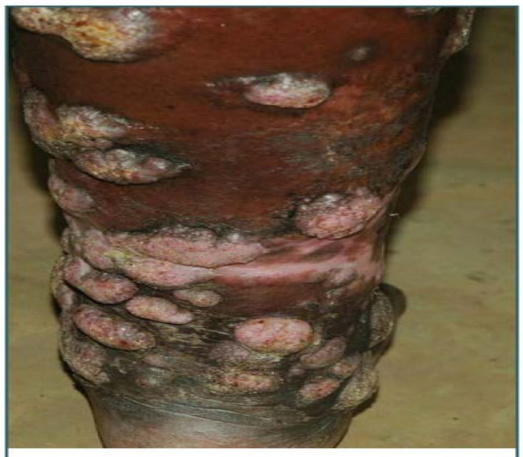
• New world leishmaniasis: L. mexicana complex and L. braziliensis complex

Solution to Question 24:

The above image shows nodular lesions that have broken down to form draining sinuses with purulent discharge which is suggestive of mycetoma.

The nodules are painless and with time form papules and pustules which break down to form draining sinuses, with the discharge of granules. It is caused by various types of fungi (eumycetoma) or filamentous bacteria (actinomycetes).

Chromoblastomycosis



Warty, cauliflower-like growths

Solution to Question 25:

The above image shows Medlar bodies that are suggestive of chromoblastomycosis.

Medlar bodies are golden-brown, thick■walled muriform or sclerotic cells in abscesses. They may also be found within giant cells.

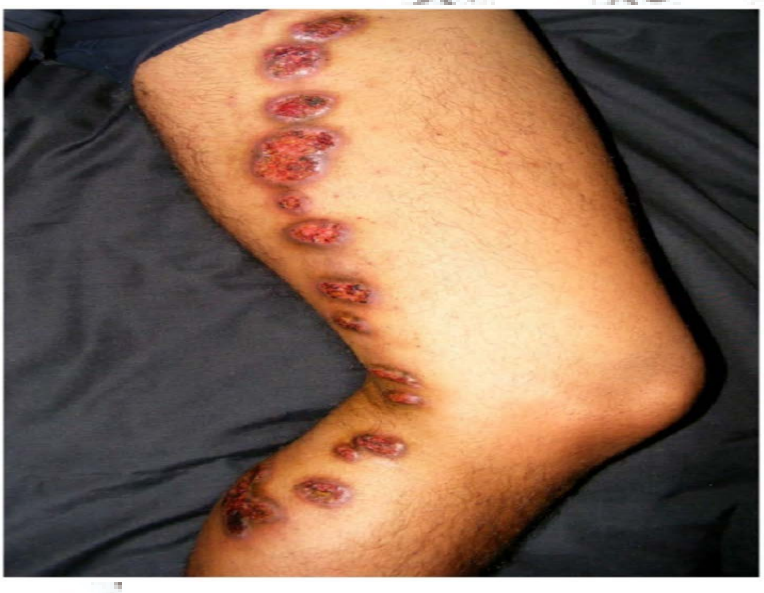
Chromoblastomycosis is a chronic infection of the skin and subcutaneous tissue which is caused by pigmented fungi (Phialophora and Fonsecaea species). The lesions start as warty papules, slowly enlarge to form a hypertrophic plaque progressing to large hyperkeratotic masses over months to years. Satellite lesions are produced by scratching.

Solution to Question 26:

A linear distribution of nodules is seen in sporotrichosis.

Sporotrichosis is an acute or chronic fungal infection caused by Sporothrix schenckii and closely related species.

The given images show the distribution of lesions along lymphatics.



Option A: Lichen planus- Purple polygonal, flat-topped papules are seen.

Option C: Chromoblastomycosis- multiple hypertrophic plaques are seen.

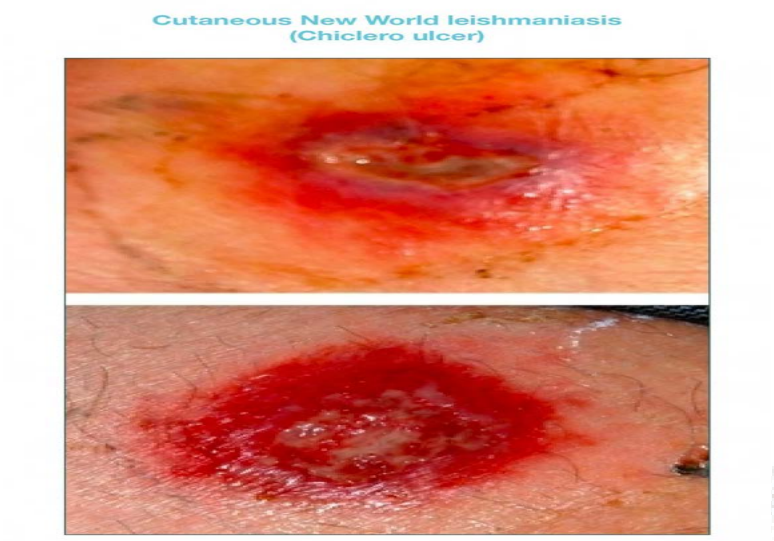
Option D: Tinea circinata- circular, scaly lesions with central clearing are seen.

Solution to Question 27:

The vector for Chiclero ulcer or new world leishmaniasis is the lutzomyia sandfly.

The vector bites humans, typically those working as chicle collectors, causing lesions on the side of the face or behind the ears. Lesions on the pinna of the ear may invade cartilage, take many years to heal, and destroy the pinna.

The images below show the Chiclero ulcer and lutzomyia sandfly.



Option A: Phlebotomus sandfly is the vector for old-world leishmaniasis.

Option C: Reduviid bug is the vector for Chagas disease.

Option D: Trombiculid mite is the vector for scrub typhus.

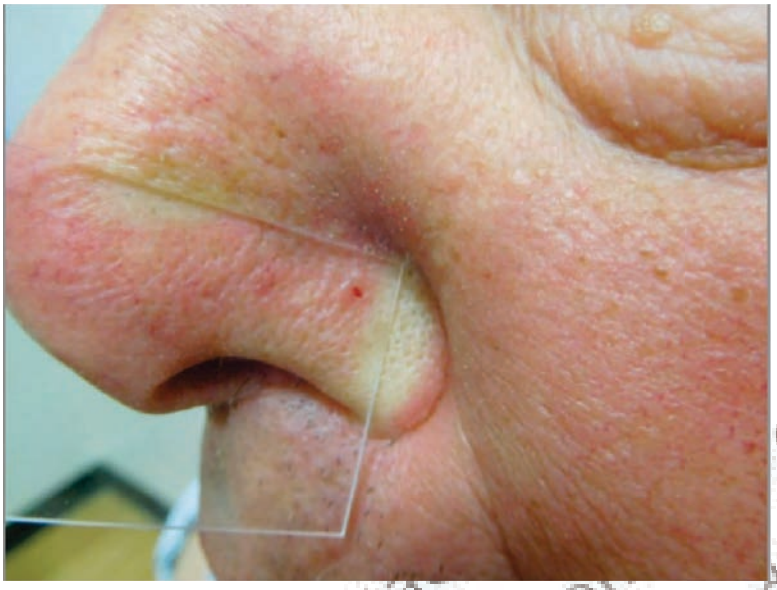
Solution to Question 28:

The above scenario is suggestive of cutaneous leishmaniasis.

The classical lesion in cutaneous leishmaniasis is characterized by erythematous nodule/plaque which then ulcerates and becomes crusted. Diascopy usually reveals 'apple jelly nodules'.

Note: 'Apple jelly nodules' on diascopy are seen in both cutaneous leishmaniasis and lupus vulgaris. The skin lesion in cutaneous leishmaniasis shows central crusting, whereas in lupus vulgaris it shows central scarring.

The image shows apple jelly nodule seen on diascopy.



Solution to Question 29:

The case scenario suggests a diagnosis of post-kala-azar dermal leishmaniasis. The drug of choice for this condition is miltefosine.

Approach to the case:

The patient hails from a kala-azar endemic zone—Bihar. The rash appears 1-2 years after a history of prolonged fever, which suggests visceral leishmaniasis. There are 2 other differentials—leprosy and tinea versicolor.

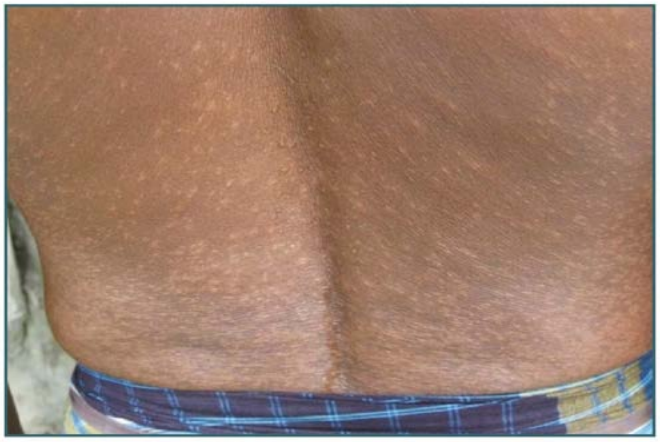
• The presence of hypopigmented macules over the trunk and face, suggests a differential of leprosy, but the nerves and sensations are normal, hence ruling it out.

• There is no scaling visible in the lesions, ruling out tinea versicolor.

In kala-azar, after a variable period of years or months, diffuse nodulation begins to develop in these macules. The rash is progressive over many years and seldom heals spontaneously. As it may persist for up to 20 years, these patients may act as a chronic reservoir of infection.

The image below shows post-kala-azar cutaneous leishmaniasis.

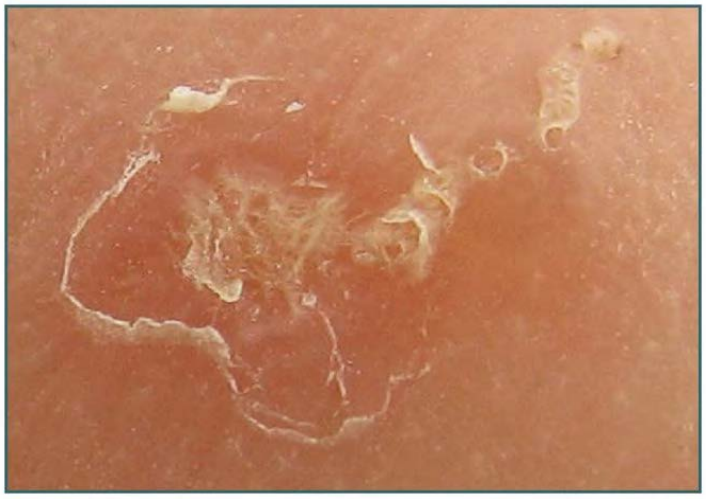
Post-kala-azar Cutaneous Leishmaniasis



Arthropod and Parasitic Infections

Question 1:

A dermatologist observes the following finding in a malnourished patient. What is the most likely diagnosis?



a) Scabies

b) Larva currens

c) Cutaneous larva migrans

d) Pediculosis

Question 2:

Scabietic burrows mainly involve which layer of the skin?

a) Stratum corneum

b) Stratum lucidum

c) Stratum granulosum

d) Stratum spinosum

Question 3:

After how many days of primary infestation with a scabies mite is a person likely to develop pruritus?

a) 7 days

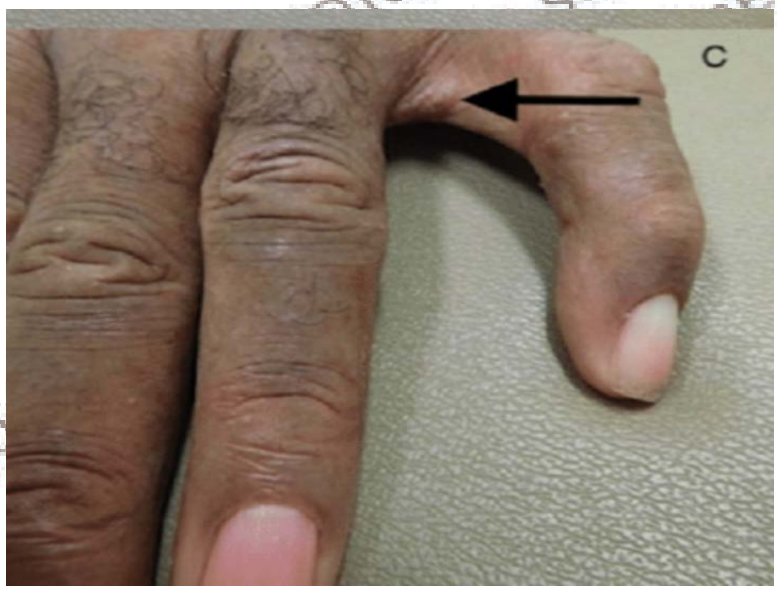
b) 28 days

c) 14 days

d) 3 days

Question 4:

A homeless man brings his 12-day-old neonate to the PHC with a vesicular rash over the palms and soles. The baby has had no history of fever or coryza. You note the following finding on the father's hand. In this infection, what part of the baby's body can be affected, but is unlikely to show lesions in her father?



a) Genitalia

b) Axilla

c) Wrists

d) Face

Question 5:

Identify the incorrect statement regarding scabies.

a) It is a water-washed disease

b) Itching starts 3 to 4 weeks after infection

c) Animal scabies is characterized by burrows

d) Circle of Hebra is formed by connecting body parts commonly involved

Question 6:

A 9-month-old infant presented with multiple itchy, eczematous, exudative, papulovesicular lesions on the face, palms, soles, and trunk. Similar lesions were also seen in his elder brother. What is the most likely diagnosis?

a) Pediculosis

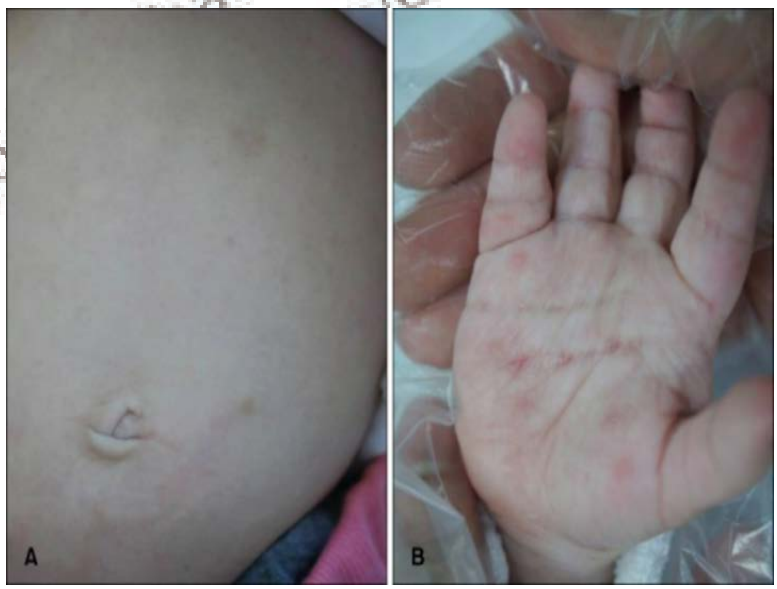
b) Scabies

c) Infantile eczema

d) Impetigo contagiosa

Question 7:

An infant with given findings was diagnosed with scabies. Which of the following statements is true about this disease?



a) Number of lesions correspond to number of mites.

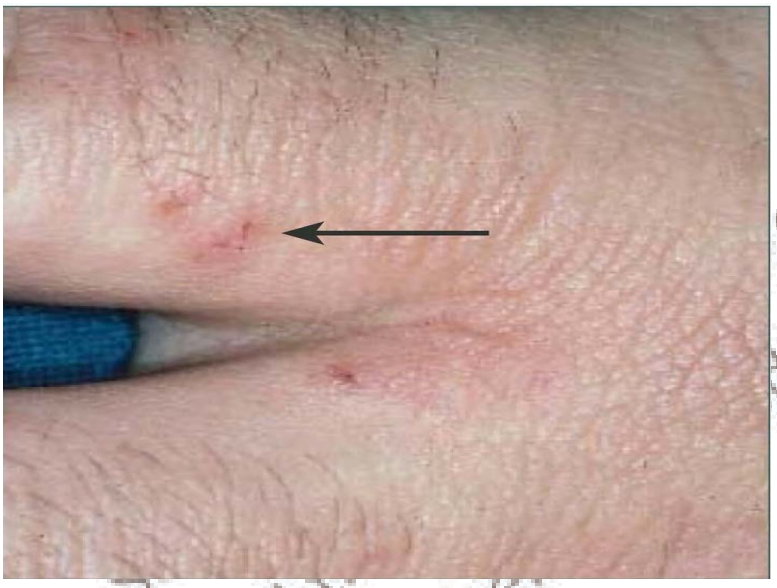
b) Oral Permethrin is used for the treatment of this condition.

c) Face remain unaffected in adults.

d) Itching is worse in the morning.

Question 8:

A pregnant woman complains of intense nocturnal itching for the past few days. She has the following finding on examination. What is the drug of choice in this case?



a) Ivermectin

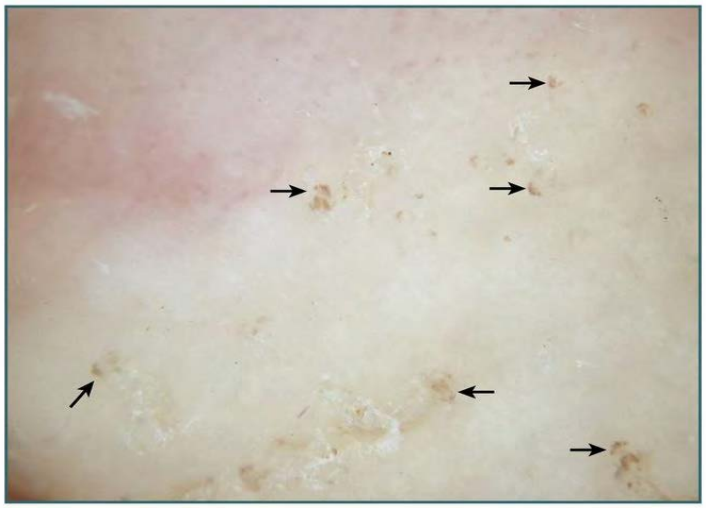
b) Permethrin

c) Gamma benzene hexachloride

d) Crotamiton

Question 9:

A standard handheld dermoscopy at low magnification revealed the following finding in a patient who presented with intense itching. Which of the following medications can be given orally to treat this patient?



a) Gamma benzene hexachloride

b) Lindane

c) Ivermectin

d) Albendazole

Question 10:

A 16-year-old hostel resident comes with complaints of itchy rashes on his body for the past two weeks. Microscopy of a skin scraping from the interdigital web space is shown below. Which of the following statements is true regarding the treatment of this condition?

a) 15% permethrin is the drug of choice

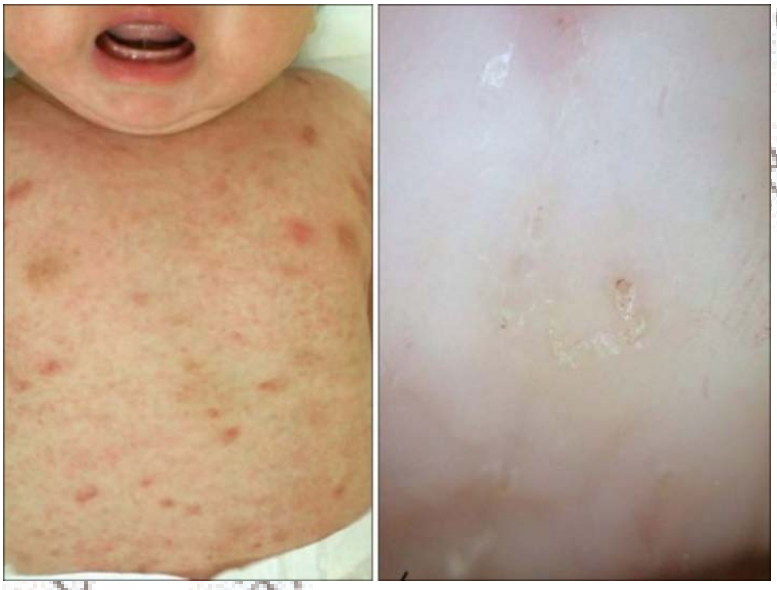
b) Topical sulfur can't be used in infants and breast feeding mothers

c) Oral ivermectin acts on nerve synapses utilizing GABA

d) Topical lindane can be safely used in children and pregnant women

Question 11:

A 2-month old infant with a 1-month history of generalized cutaneous eruption has the following findings on examination. All of the following tests can help you in diagnosing his condition except:



a) Skin scraping and microscopy

b) Adhesive-tape test

c) Skin biopsy

d) Tzanck Smear

Question 12:

Which of the following is incorrect regarding nodular scabies?

a) Presents as violaceous nodules in the groin, penis and scrotum

b) Lesions are not pruritic

c) Represents a hypersensitivity reaction to mite antigens

d) Respond to intralesional steroids

Question 13:

A 6-year-old boy diagnosed with Down's syndrome presents with large warty crusts on the hands and feet. Severe fissuring and scaling of the skin is present over the buttocks. What is the possible diagnosis?

a) Scabies incognito

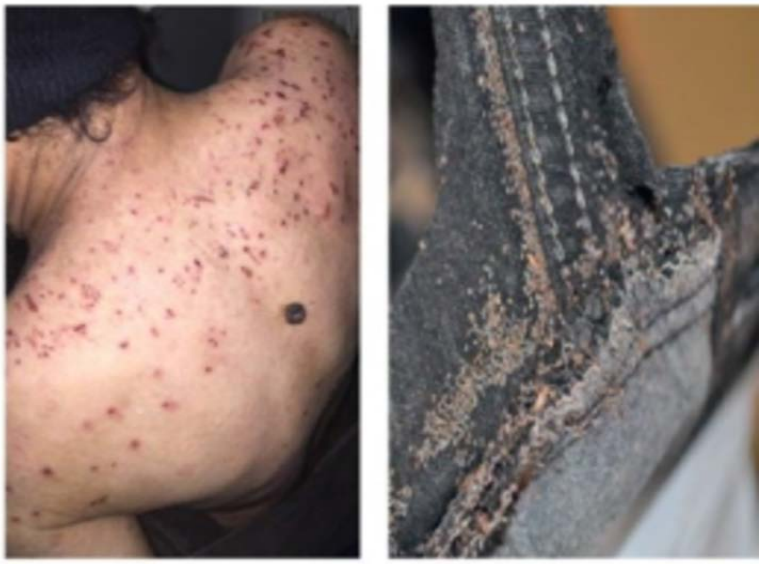
b) Animal scabies

c) Nodular scabies

d) Norwegian scabies

Question 14:

As a part of an outreach program, you see a patient with the following findings. An image of her shirt is also shown. Identify the incorrect statement regarding her condition.



a) She is suffering from vagabond's disease.

b) The causative organism is a tick.

c) The causative organism is a vector for Rickettsia prowazekii.

d) Advice thorough washing of the body and application of malathion for 8-24h.

Question 15:

A man was seen for an asymptomatic spotty eruption, of approximately 2 weeks duration, that are localized predominantly to the anterior chest, abdomen, and neck regions. Physical

examination revealed several scattered light blue-red, oval to round spots. What is the most likely diagnosis?

a) Pediculosis corporis

b) Pediculosis capitis

c) Pediculosis pubis

d) Scabies

Question 16:

Which disease is caused by the following parasite?

a) Pediculosis corporis

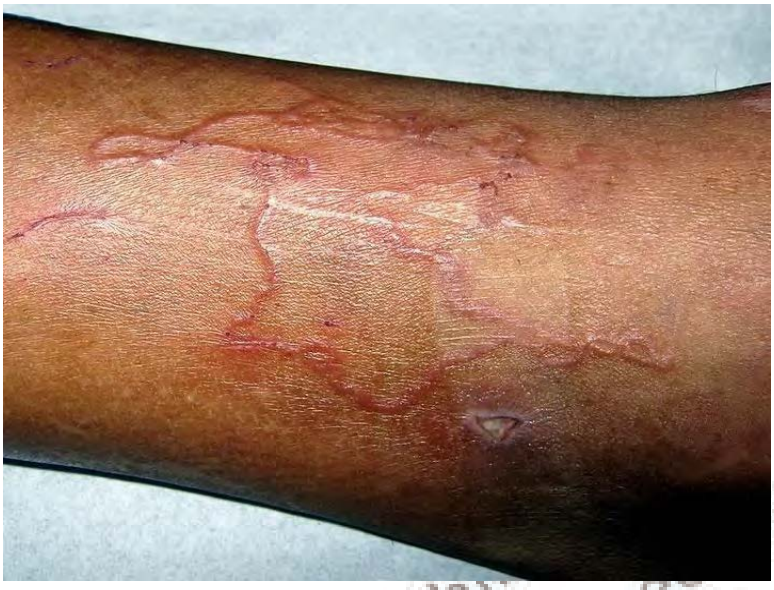
b) Pediculosis capitis

c) Pediculosis pubis

d) Scabies

Question 17:

A patient presented with the following cutaneous finding to the dermatology OPD. Which of the following organisms is least likely to cause this?



a) Ancylostoma braziliense

b) Ancylostoma duodenale

c) Ancylostoma caninum

d) Strongyloides stercoralis

Answer Key

Question No.	Correct Option
1	a
2	a
3	b
4	d
5	c
6	b
7	c
8	b
9	c
10	c
11	d
12	b
13	d
14	b

15	c
16	c
17	b

Detailed Explanations

Solution to Question 1:

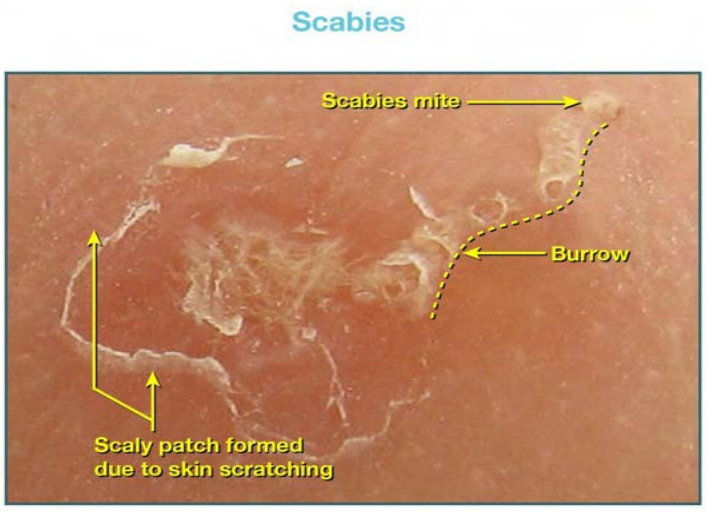
The image shows a magnified view of a burrowing trail of the scabies mite. The scaly patch on the left was caused by the scratching and it marks the mite's entry point into the skin. The mite has burrowed to the top-right, where it can be seen as a dark spot at the end. Burrow is the characteristic lesion of scabies.

Scabies is an ectoparasitic infestation caused by the Sarcoptes scabiei var. hominis.

The characteristic symptoms include intense itching and superficial burrows. In most people, the trails of the burrowing mites appear brownish linear or s-shaped tracks in the skin and occur as a result of excavation of the adult mite in the epidermis. These are found in the webspaces, feet, ventral wrists, elbows, back, breasts, buttocks, and external genitals.

Larva currens and cutaneous larva migrans presents as pruritic erythematous papule at the site of penetration of the hookworms with an erythematous serpiginous larva track.

Pediculosis lesions present as erythematous papules with maculae cerulae.



Solution to Question 2:

Scabietic burrows are mainly seen in the stratum corneum.

Solution to Question 3:

The incubation period of scabies is 3–4 weeks (21-28 days).

However, reinfection of a previously cured individual may provoke immediate symptoms.

Solution to Question 4:

The image shows a characteristic scabietic burrow seen on an adult and the given clinical scenario is suggestive of scabies in the neonate as well. Scabies in neonates can occur on the face, an area unlikely in adults.

Locations of infection:

Neonates	Adults
Face	Finger and feet, webspaces
Scalp	Ventral wrist, elbow
Palms	Back, buttock
Soles	External genitalia

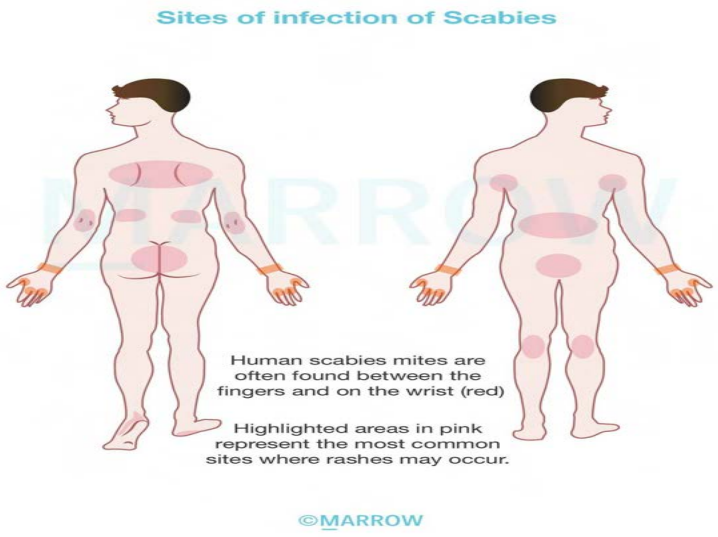
Solution to Question 5:

Burrows are absent in animal scabies. Skin lesions resulting from contact with animal scabies are usually composed of small pruritic weals or papules, which are frequently excoriated, and resemble human scabies, but without burrows.

Water-washed diseases are infections that are caused by poor personal hygiene resulting from inadequate water availability for e.g. scabies.

The characteristic symptoms of a scabies infection include intense itching which usually manifests 3-4 weeks after infestation and superficial burrows (pathognomonic).

Circle of Hebra is an imaginary circle formed by connecting the main sites of involvement in scabies.



Solution to Question 6:

Multiple itchy, eczematous, exudative, papulovesicular lesions on the face, palms, soles, and trunk are characteristic of infantile scabies.

Scabies is transmitted by close contact from human to human or from pet animals to humans. Thus, there are usually several cases in the same household.

Option A: Pediculosis presents with severe itching, visible lice on the scalp, and lice eggs (nits) on the hair shafts.

Option C: Infantile eczema shows an erythematous itchy rash over extensors, elbows, and knees

Option D: Impetigo contagiosa or non-bullous impetigo presents with erythematous vesicles and honey-colored crusts.

Solution to Question 7:

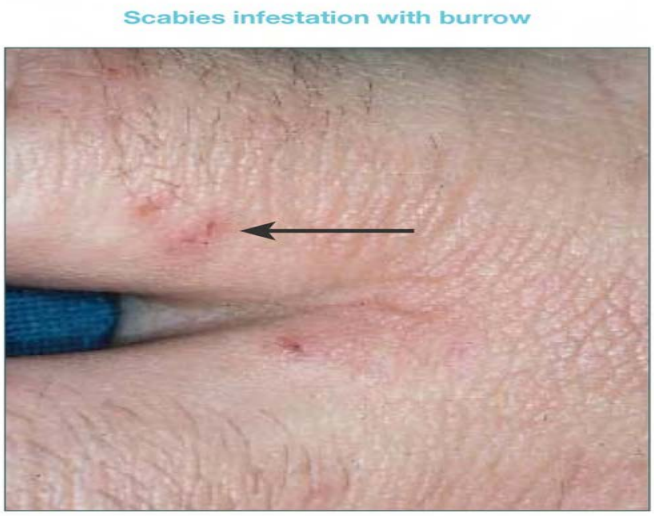
Face is spared in adults with scabies.

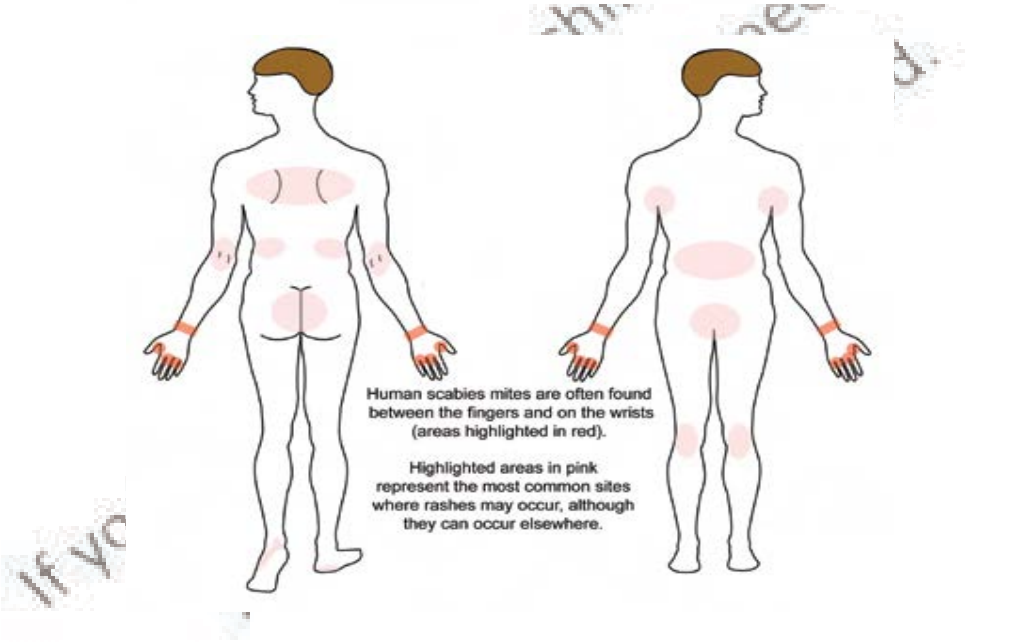
In adults, the mites affect the regions in the circle of Hebra - web spaces, ventral wrists, the ulnar border of the forearm, elbow flexures, axillae, areola, breasts of female, umbilicus, genitals, and inner aspect of the thigh. Face, palms, and soles are affected in infantile scabies.

Option A: The number of lesions does not correspond to the number of mites.

Option B: Topical 5% permethrin is used in the treatment of scabies, not oral.

Option D: Itching that worsens at night and when the patient is warm. Nocturnal pruritis is the most common symptom associated with scabies.





Solution to Question 8:

A single overnight application of 5% permethrin cream from neck to toe in adults and from head to toe in children is the drug of choice for the treatment of scabies in all ages including infants (at least 2 months old) and pregnant women.

Solution to Question 9:

The circumflex accent■like image (as the French letter 'ô') seen in the image represents the head and the two pairs of front legs of the scabies mite. Ivermectin is the only oral medication that can be used in the treatment of scabies.

Oral ivermectin interrupts the γ■aminobutyric acid-induced neurotransmission of many parasites including mites. It is given as a single dose of 200mcg/kg in patients >2 years and >15 kg. A second dose is necessary 7–14 days later due to the lack of ovicidal action of the drug.

Topical formulations:

• 5% permethrin

• Gamma benzene hexachloride

• Lindane

• Crotamiton

All family members, even if asymptomatic need to be treated simultaneously for this condition to prevent reinfection and the clothing needs to be disinfected simultaneously.

Solution to Question 10:

The given clinical scenario and the image of the Sarcoptes scabiei mite are suggestive of scabies. Oral ivermectin acts by blocking chemical transmission across invertebrate nerve synapses that utilize glutamate or γ-aminobutyric acid (GABA), resulting in paralysis and death of the mite

It is not indicated in infants and pregnant women.

Option A: A single overnight application of 5% permethrin cream from neck to toe in adults and from head to toe in children is the drug of choice for the treatment of scabies in all ages including infants (>2 months old) and pregnant women.

Option B: Topical sulfur applications can be safely used in infants <2 months of age, as well as in breastfeeding and pregnant mothers.

Option D: Topical 1% lindane cream is contraindicated in children, pregnant ladies, and seizure disorder as it is known to cause neurotoxicity.

Solution to Question 11:

The image on the left shows generalized papulonodular rash and that on the right shows a characteristic burrow resembling a 'jet■with■contrail' on dermoscopy which is suggestive of scabies. Tzanck smear is used in diagnosing herpes simplex infections and not scabies.

The following techniques can be used to diagnose scabies:

• Skin scraping and microscopy - The material is scraped off with a blunt scalpel and is placed in mineral oil on a microscope slide. The presence of mites, eggs, fragments of eggshells, or scybala (hardened masses of feces) confirms the diagnosis.

• Dermoscopy - Useful for detecting burrows and visualizing their contents.

• 10x magnification - mini triangle sign, maturing eggs that show minute heads of maturing mite within the egg

• 40x magnification - The mite in its burrow resembling a 'jet■with■contrail'

• Adhesive-tape test - After firmly applying the adhesive side of the tape onto an appropriate skin lesion of patients, the tape is pulled off and transferred directly onto a slide for microscopy to visualize the mites.

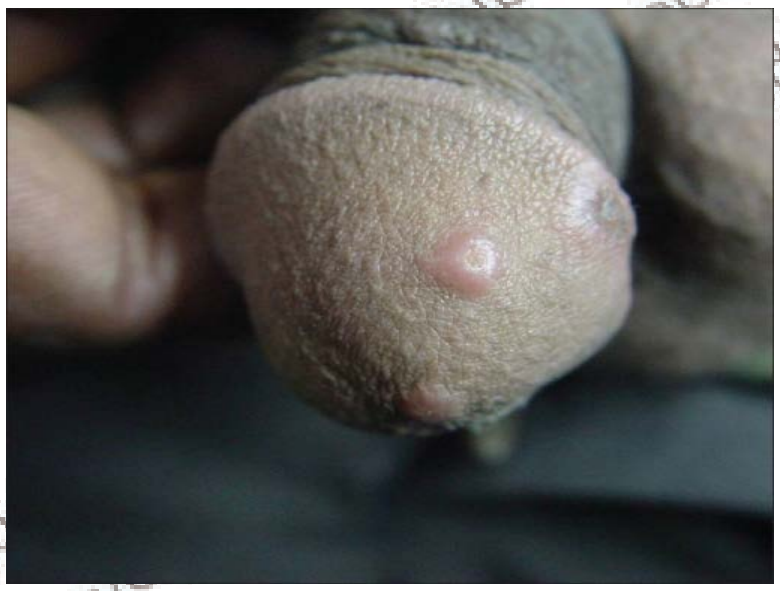
• Skin biopsy

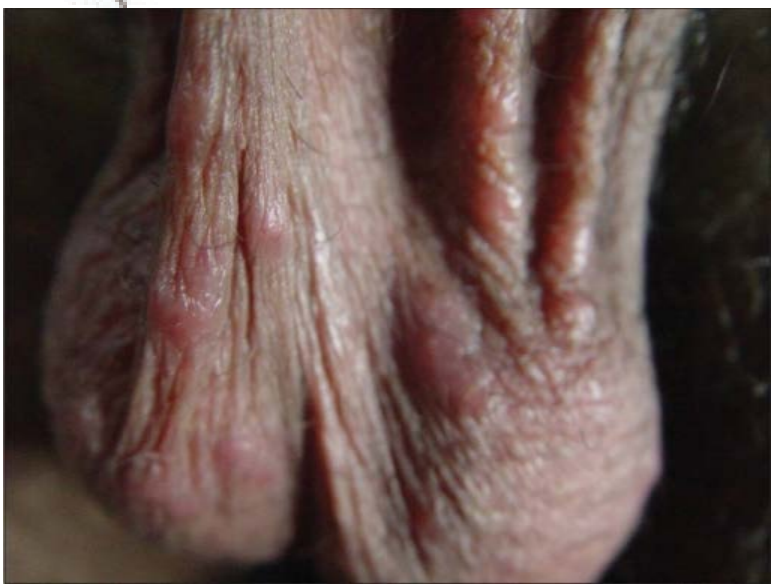
Solution to Question 12:

Nodular scabies is an atypical presentation of scabies. It is highly pruritic.

It presents as a few violaceous, pruritic nodules are often localized on the groin, axillae and male genitalia. They represent a hypersensitivity reaction to mite antigens. These nodules persist for weeks or months after anti scabies treatment.

The image below shows nodular scabies.





Solution to Question 13:

This is the clinical presentation of Norwegian scabies or human-crusted scabies. The reason for this association with mental abnormality(Down's syndrome) could be a lack of appreciation of pruritus.

Crusted scabies (Norwegian or hyperkeratotic scabies) is seen in:

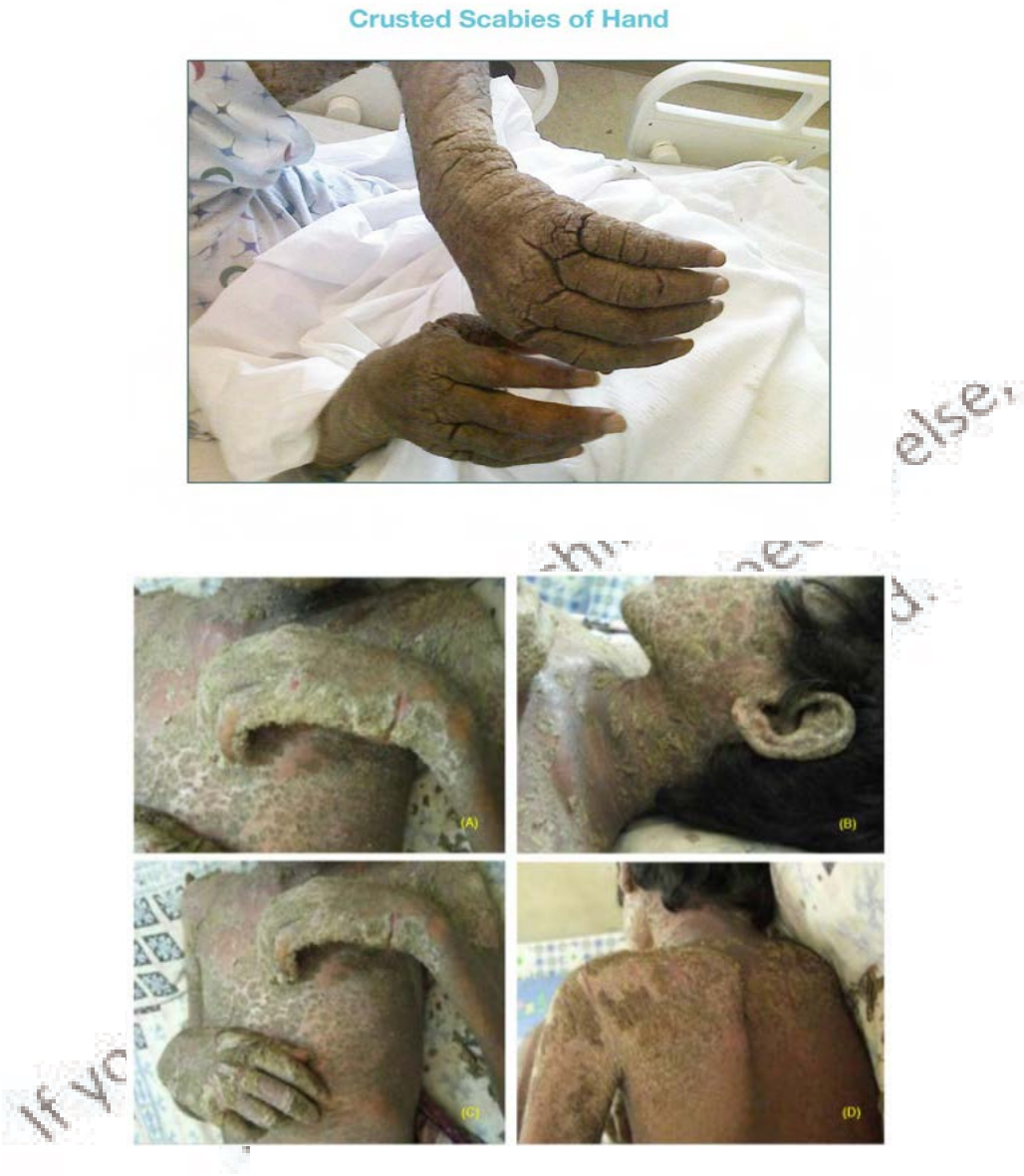
- Immunocompromised
- Debilitated patients
- Neurologic disorders
- Downs syndrome
- Organ transplant recipients
- Hansen's disease
- AIDS

Crusted scabies occurs in people with an inadequate immune response to the mite, allowing them to multiply. It is the most common type of scabies causing institutional breakouts. It is called 'Norwegian' because it was first described in lepers of Norway.

Crusts and scales teem with mites, and the face and scalp are especially involved. Hyperkeratotic fissured plaques over palms, soles, and buttocks. Nails show subungual hyperkeratosis.

Treatment includes oral ivermectin, topical permethrin, and keratolytic agents for the crusting.

The images given below show Norwegian scabies.



Option A: If topical steroids are used on scabies lesions, the clinical picture modifies to mimic other dermatoses and is called scabies incognito.

Option B: Animal scabies lesions are similar to human scabies with itchy papules except for the burrows.

Option D: Nodular scabies presents as violaceous nodules are present over the genitalia.

Solution to Question 14:

The image shows scraping lesions on the upper back and numerous lice in the seams of her clothing which are suggestive of pediculosis corporis ('pediculosis vestimenti' or 'vagabond's disease') caused by body lice (specifically pediculus corporis).

It is a disease of poor, homeless, and wandering people (vagabonds), hence, the name Vagabond's disease. Itching is due to the reaction to salivary antigens of the louse bites.

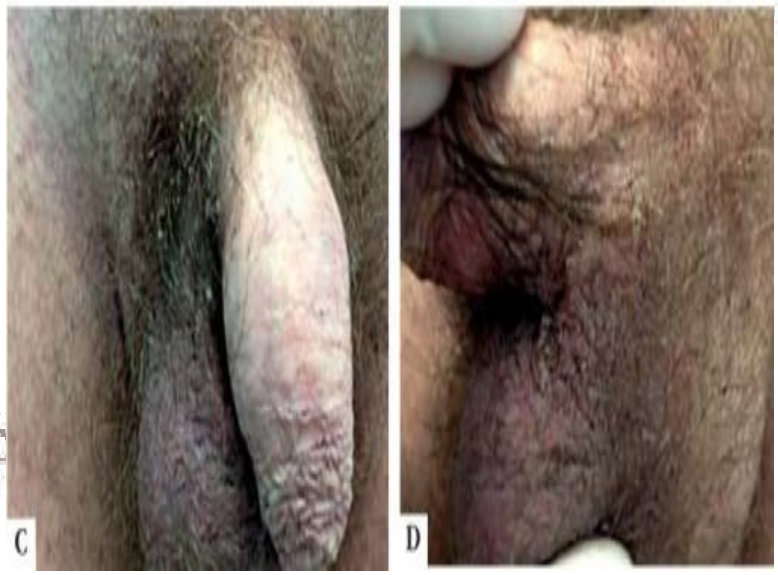
Body lice are vectors of important diseases like relapsing fever (Borrelia recurrentis), trench fever (Bartonella quintana), and epidemic typhus (Rickettsia prowazekii)

Bed linens and clothes should be systematically decontaminated. Although this is usually enough in most cases, thorough washing of the body with soap followed by application of pyrethrins/pyrethroids or malathion for 8–24 h can also be recommended.

Solution to Question 15:

Maculae cerulae are blue-red/grey-colored macules on the skin characteristically seen in pediculosis pubis which is caused due to the infestation by pubic louse (Pthirus pubis/crab louse). They mark the hemosiderin-stained purpuric spots where lice have fed.

The image given below shows pediculosis pubis- countless white spots and lice in pubic hairs.



Solution to Question 16:

The image shows crab louse or Pthirus pubis that causes pediculosis pubis. It has a distinctive squat body, and the second and third pairs of legs carry heavy, pincer■like claws.

This louse commonly infests pubic hair (most common), as well as hairs of the abdomen, chest, legs, arms, and eyelashes. Scalp hair is uninvolved due to its high density. This is often transmitted sexually and by close contact.

Blue colored macules on the trunk and inner aspects of thighs are seen called maculae ceruleae.

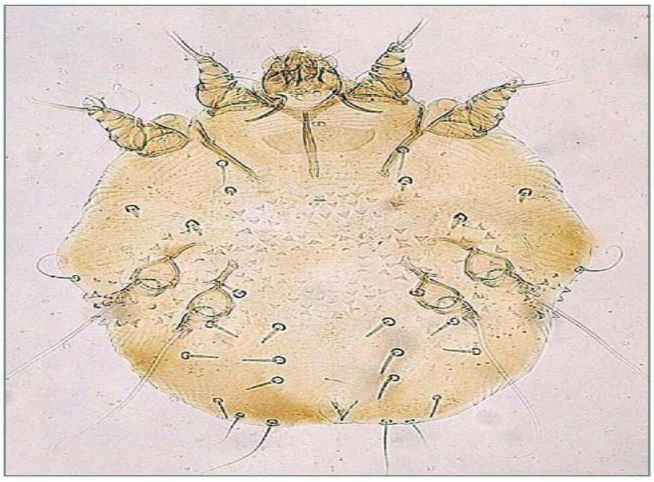
Treatment is with 1% permethrin and oral ivermectin.

(Infestation of the eyelashes with nits is treated with permethrin 5% cream)

The images given below show some common arthropods that cause dermatological conditions.

Head louse
(Pediculus humanus capitis)

Itch mite (Sarcoptes scabiei)



Crab louse (Pthirus pubis)

Solution to Question 17:

The serpiginous/serpent-like skin lesions seen are cutaneous larva migrans or larva currens. Ancylostoma duodenale and Necator americanus are hookworms that cause human infection and are least likely to cause cutaneous larva migrans.

Cutaneous larva migrans is caused by non-human hookworms like Ancylostoma braziliense, Ancylostoma caninum acquired from direct skin contact with soil contaminated by dog or cat feces.

Serpentine or linear single-track lines later mark the course of the larvae as they migrate through the epidermis of the trunk and lower extremities. Symptoms begin to appear within the first two weeks of the patient's return from a tropical or endemic country. The larval track progresses at approximately 1 cm/h with cutaneous lesions only progressing a few millimeters to a few centimeters daily.

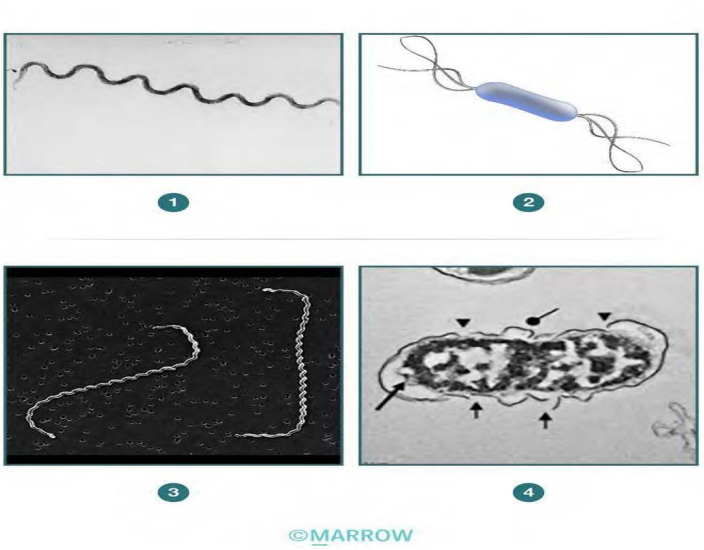
Larva currens aka 'running larva' of Strongyloidiasis stercoralis. It is known for its distinct rapidity, with the larval track progressing at approximately 0.2 cm/min, with cutaneous lesions progressing up to 10 cm/hour.

Ivermectin is the preferred treatment and is given at 0.15–0.2 mg/kg every day per oral for 1 or 2 days.

Syphilis

Question 1:

A commercial sex worker presents with an indurated, painless ulcer over her vulva. Which of the following organisms is the likely causative agent?



a) Image 2

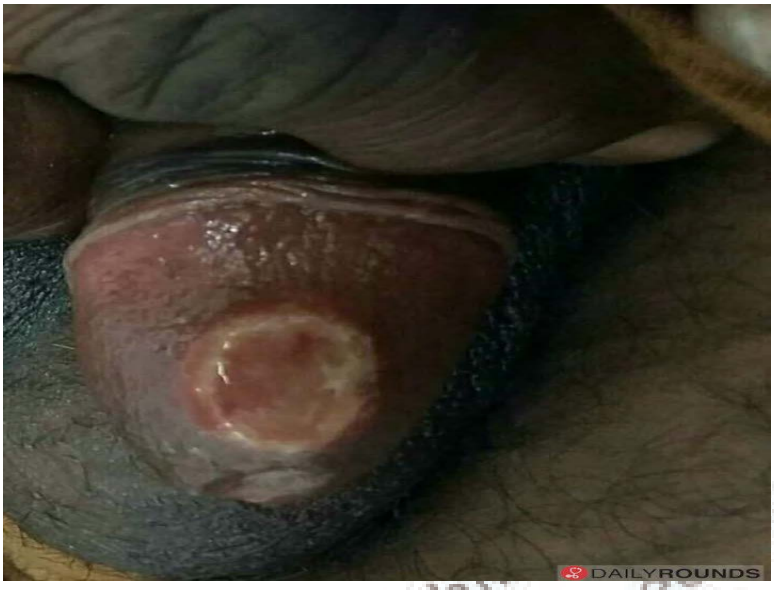
b) Image 1

c) Image 4

d) Image 3

Question 2:

You are examining a 29-year-old man with the following painless indurated lesion. Which of the following is not a feature of this condition, if left untreated?



a) Depigmented areas around neck

b) Scarring moth-eaten alopecia

c) Ulcers with necrotic slimy centre

d) Papules along the hair margin

Question 3:

In which of the following patients would you expect to see a positive Dory flop sign?

a) A young woman with a painless beefy red granulomatous ulcer on her vulva

b) A middle-aged man with an painless indurated lesion on his penis

c) A circumcised teenager with multiple painful vesicles over his penis

d) A lady with a painless indurated ulcer over her labia majora

Question 4:

A 28-year-old sexually active man presents with a rash over his palms and soles. On further probing, he admits that his partner was recently diagnosed with syphilis and he himself had an ulcer on his penis a few months back. Which is not a likely feature of this rash?

a) Non-pruritic

b) Coppery red colour

c) Symmetrical distribution

d) Infectious

Question 5:

Which of the following would you not expect to see in a patient with secondary syphilis?

a) Nummular lesions covered with easily removable scales.

b) Vesiculobullous eruptions over skin

c) Moist, well-demarcated papules and plaques

d) Serpiginous non-ulcerative lesions over oral mucosa

Question 6:

You are observing your senior resident press a patient's skin lesion with a pinhead. The patient flinches in pain. Name the finding.

a) Buschke-Lowenstein sign

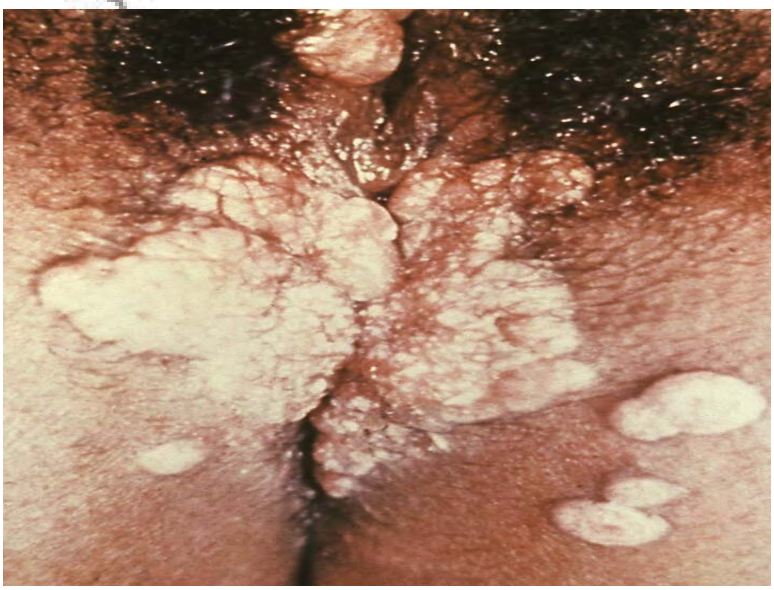
b) Gorlin's sign

c) Love's sign

d) Ollendorff probe sign

Question 7:

A 25-year-old pilot presents with a maculopapular rash and the following lesions. Serology is positive for syphilis. Which stage of syphilis is he in?



a) Primary

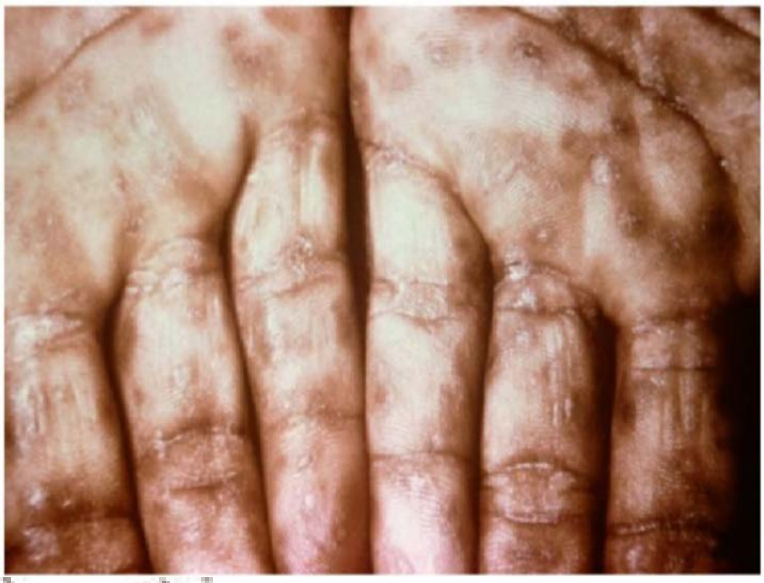
b) Secondary

c) Latent

d) Tertiary

Question 8:

A 49-year-old man presents with flu-like symptoms and a palmoplantar rash as seen below. He has no history of chancre. On examination, he has epitrochlear lymphadenopathy. Which of the following is the likely cause of this presentation?



a) Sexual contact

b) Blood transfusion

c) Endemic disease

d) Skin to skin contact

Question 9:

Which of the following is false about pseudochancre redux?

a) Seen in tertiary syphilis

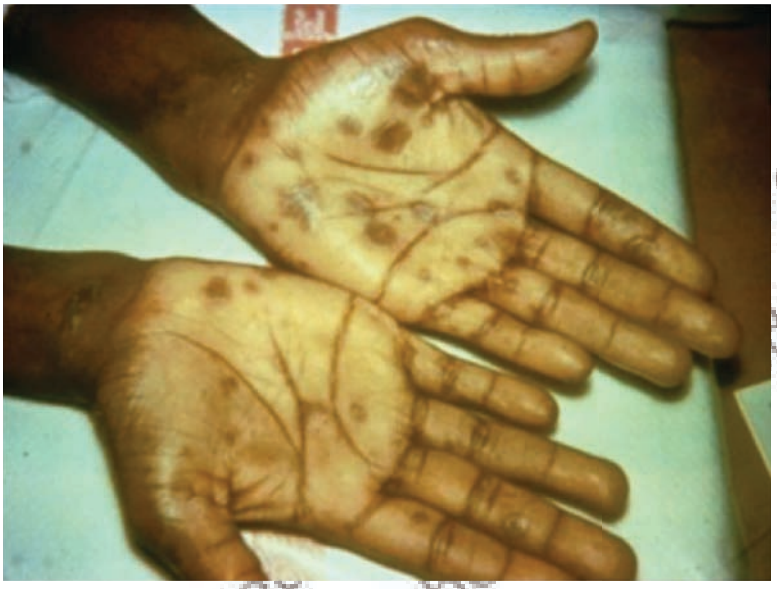
b) Highly infectious

c) No adjacent lymphadenopathy

d) Gumma at the site of previously healed chancre

Question 10:

A 28-year-old VDRL-positive woman in the third trimester of pregnancy presents with the given rash. It is present all over her body. Which of the following is the most common sign seen in babies born to women with this condition?



a) Vesiculobullous lesions

b) Periostitis

c) Rhinitis

d) Condyloma lata

Question 11:

A 21-year-old homeless pregnant woman gives birth to a premature infant with a palmoplantar bullous eruption. The RPR titer of the cord blood is elevated. Which of the following is not a feature of this condition?

a) Parrot nodes

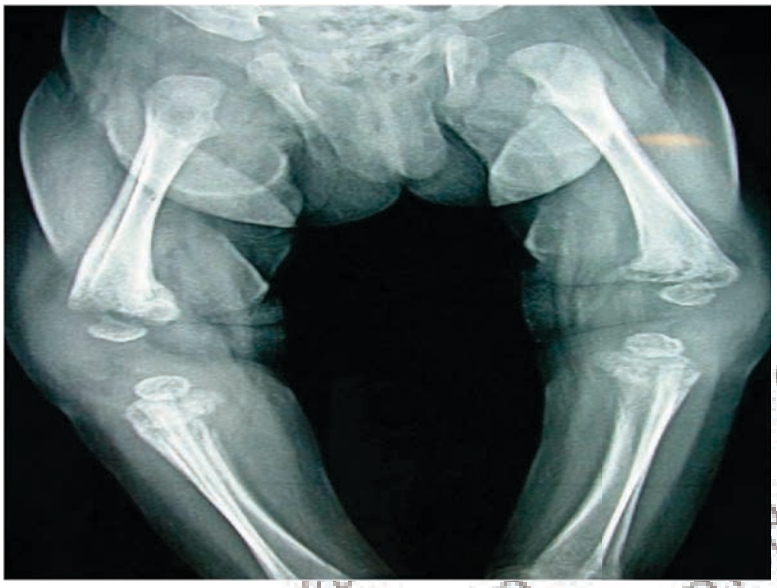
b) Hot cross bun skull

c) Interstitial keratitis

d) Seventh nerve palsy

Question 12:

The X-ray of a 2-year-old boy is given below. What is the name of the abnormality seen in the proximal tibia?



a) Clutton's joints

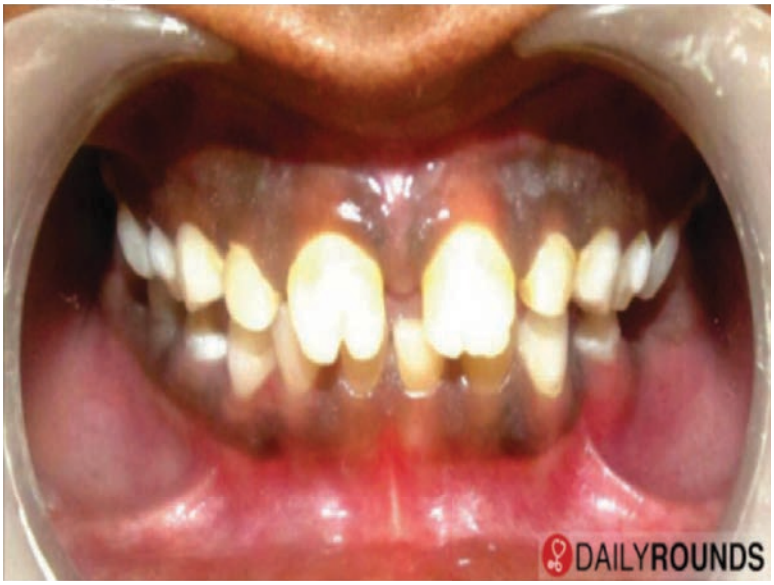
b) Higoumenaki's sign

c) Wimberger's sign

d) Wimberger's ring sign

Question 13:

Which of the following would not be helpful in the initial diagnosis of the condition that results in the following finding?



a) X-ray of long bones

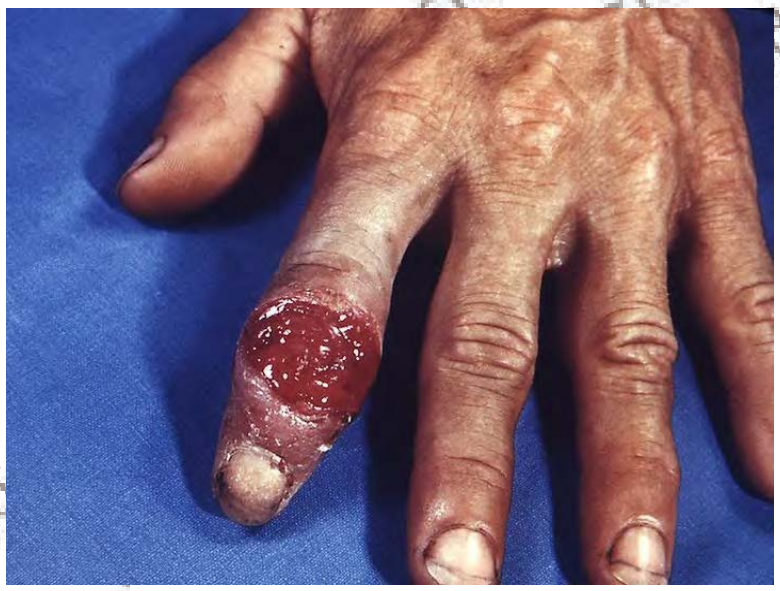
b) Cerebrospinal fluid examination

c) Dark■field microscopy

d) Anti-treponemal IgG

Question 14:

You are evaluating a patient for the following painless and indurated ulcer. It developed 3 weeks ago and did not respond to oral antibiotic treatment. On examination, you note non-tender left axillary lymphadenopathy. A detailed history reveals digital penetration during sexual activity. What is the diagnosis?



a) Chancre

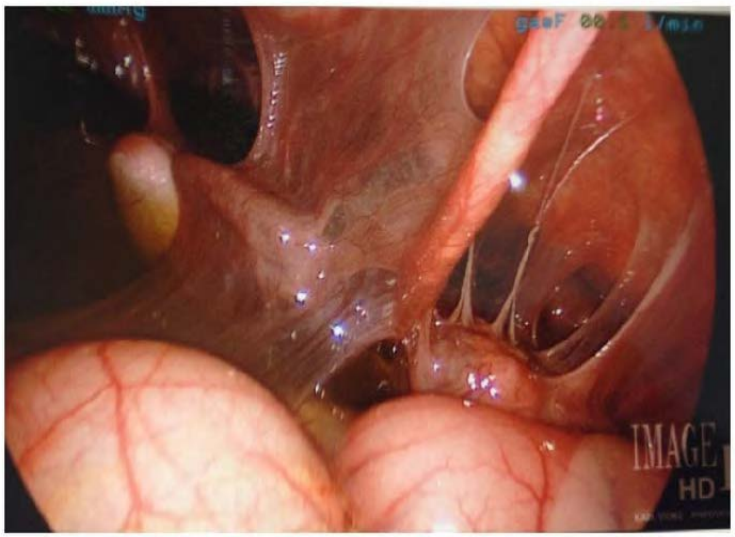
b) Chancroid

c) Lymphogranuloma venerum

d) Donovanosis

Question 15:

A 32-year-old nulliparous woman was referred to a higher center for infertility evaluation. Cervical motion tenderness and right upper quadrant tenderness were elicited on examination. An image from her diagnostic laparoscopy is shown below. Which of the following is not a possible cause of this condition?



a) Syphilis

b) Gonorrhea

c) Chlamydial infection

d) Genital tuberculosis

Question 16:

A 40-year-old lady abruptly develops high-grade fever with myalgia and bone pain, 18 hours after penicillin treatment for early latent syphilis. Which of the following statements is incorrect about her condition?

a) It is triggered by lipoproteins

b) Penicillin can be used in future

c) Fever usually comes down within 8 hours

d) She must be treated with steroids

Answer Key

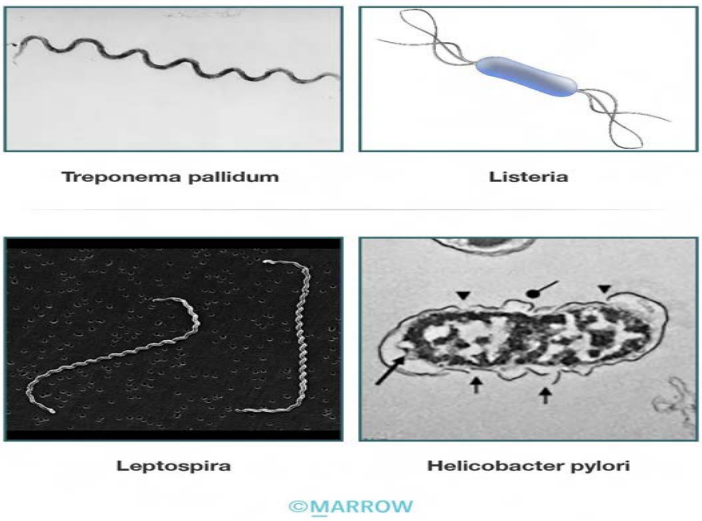
Question No.	Correct Option
1	b
2	b
3	b

4	d
5	b
6	d
7	b
8	b
9	b
10	c
11	d
12	c
13	d
14	a
15	a
16	d

Detailed Explanations

Solution to Question 1:

A painless and indurated ulcer in a sex worker is characteristic of primary syphilis. It is caused by Treponema pallidum.



Treponema is a corkscrew organism. The coils are very close and regular with around 7 to 8 coils per diameter of a red blood corpuscle. It contains a flagellum and its graceful movements are pathognomonic. It rotates along its long axis and appears to screw slowly forwards and backwards.

Option A: Listeria is a rod-shaped bacterium.

Option C: Helicobacter pylori is spiral or rod-shaped, Gram-negative bacterium. It■■ has two to seven unipolar flagella. It is smaller than spirochetes.

Option D: Leptospira is also spiral and highly motile. They can be distinguished from other spirochetes by their unique question mark hook at the end of the bacterium. It is more tightly wound than Treponema with 18 or more coils per cell.

Solution to Question 2:

The given clinical scenario of a painless ulcer with indurated margins is suggestive of primary syphilis. It is Secondary Syphilis that causes non-scarring alopecia that appear as moth-eaten patches if left untreated

The incubation period of syphilis is 9-90 days and varies inversely with the size of the Spirochaete inoculum.

Primary chancre: Painless, indurated, button-like ulcer with painless lymphadenopathy.

Secondary syphilis: Roseolar rash is the earliest sign, but it is hard to see in dark-skinned people. When it fades, it leaves depigmented spots. This is called the necklace of Venus as it commonly occurs around the neck. Generalized papular lesions also occur. Sometimes these papules form a line along the hair margin called Corona Veneris or crown of Venus.

In latent syphilis, there are no features of active disease, but serological tests are positive. It can last up to 20 years.

Tertiary syphilis: Begins with skin nodules or the characteristic gumma which occurs 3-10 years after infection. The name arises from the necrotic center which may turn into a slimy, stringy mass.

Solution to Question 3:

The Dory flop sign is described in an uncircumcised male with an indurated lesion of primary syphilis on the underside of the coronal sulcus. Here, prepucial retraction causes the foreskin to flip suddenly. Hence it would only be seen in the middle-aged man with the indurated lesion on his penis.

The Dory flop sign can help distinguish chancres from other nonindurated causes of genital ulcer disease, such as Herpes simplex virus infection and chancroid.

It is named after the movement of a dory, a small wooden fishing boat, which flips suddenly when overturned.

Option A: This young woman has granuloma inguinale, which is a non-indurated lesion.

Option C: This circumcised teenager has herpes genitalis.

Option D: Though this lady has an indurated lesion (chancre), the dory flop sign can be demonstrated only in uncircumcised males.

Solution to Question 4:

In this patient, a new-onset rash in the setting of syphilis in his partner and a history of a penile ulcer are suggestive of secondary syphilis. A non-infectious maculopapular rash is usually the earliest manifestation.

It usually develops around 8 weeks after initial infection due to generalized treponemal dissemination. Rashes in secondary syphilis have three common features:

• Non-pruritic

• Coppery red color

• Symmetrically distributed

Cutaneous lesions of secondary syphilis are not infectious as they do not have enough treponemes. Exceptions are condyloma lata and mucous patches, which are highly infectious.

Solution to Question 5:

Vesiculobullous lesions are not seen in secondary syphilis. They are a feature of early congenital syphilis.

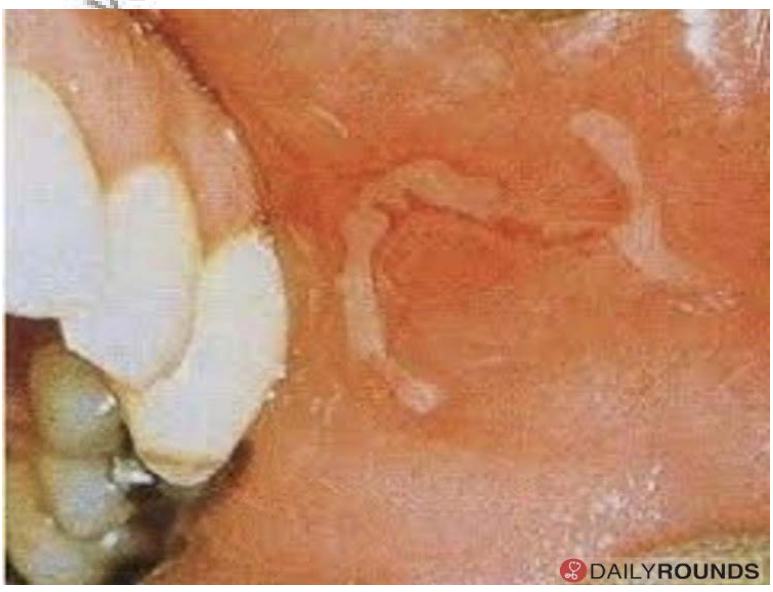
The features of secondary syphilis include the following:

• Macular / roseolar rash is the earliest rash. It fades leaving hypopigmentation around the neck called leucoderma syphiliticum or necklace of Venus.

• Papular rash involves the palms and soles.

• In later stages, nummular lesions with scales are seen which resemble psoriasis. Due to the serous discharge of the lesions, the scales are easy to remove.

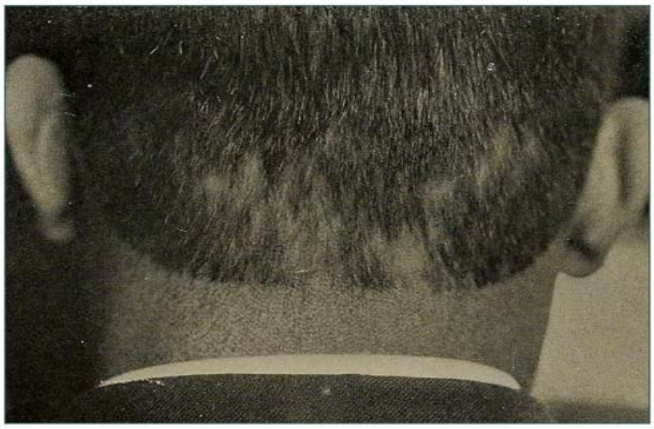
• Papules on oral mucosa form grey oval patches and coalesce to form the so-called snail■track ulcers as seen below, although ulceration is rare.



• Condyloma lata refers to moist, well-demarcated papules and plaques which are seen on the genitalia. They are highly infectious.

• Syphilitic alopecia or moth■eaten alopecia as seen below is a form of non-scarring patchy hair loss.

Moth eaten alopecia



• Generalized lymphadenopathy is also seen. Other systemic features of secondary syphilis include panuveitis, periostitis and joint effusions, glomerulonephritis, hepatitis, gastritis, and myocarditis.

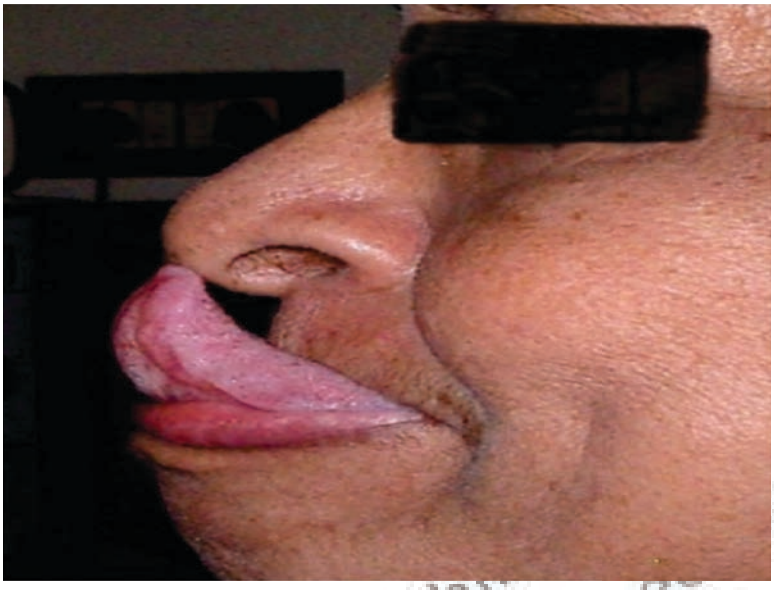
The lesions of secondary syphilis resolve spontaneously in a variable time period and are followed by the stage of latent syphilis.

Solution to Question 6:

Ollendorff probe sign or Buschke-Ollendorff sign refers to the deep dermal tenderness elicited by pressing the papular lesions of secondary syphilis with a pinhead.

Option A: Buschke-Lowenstein tumor is another name for giant condyloma acuminatum or verrucous carcinoma. It is a malignant growth tumor associated with HPV infection. It is not a clinical sign.

Option B: Gorlin's sign is the ability to touch the tip of the nose with the tip of the tongue as seen below. It is seen in patients with Ehler-Danlos syndrome.



Option C: Love's sign refers to the exact localization of tenderness using a pinhead in a glomus tumor.

Solution to Question 7:

The image above along with positive serology for syphilis suggests a diagnosis of anogenital warts or condylomata. It is seen in the stage of secondary syphilis.

Syphilis is caused by Treponema pallidum. It is usually acquired through sexual contact and co-exists with other sexually transmitted diseases except for congenital syphilis.

Primary syphilis commonly presents as a papule on external genitalia that rapidly ulcerates to form a primary chancre.

Secondary syphilis is the stage when generalized manifestations of syphilis appear on the skin and mucous membranes. Serological tests in immunocompetent patients are always positive.

Tertiary syphilis commonly presents as superficial or nodular punched out ulcers or gummas(granulomas appearing as cutaneous plaques or nodules with central ulceration)

Late syphilis is the stage when there are no clinical stigmata of active disease but serological testing for the disease is positive

Clinical features:

• Primary genital sores appear 3 weeks after exposure

• Enlarged inguinal lymph nodes are palpable 5 weeks after exposure

• Macular rash appears 8 weeks after exposure

• Condylomata appears 6 months after exposure

Serological testing is done using a standard non-treponemal antibody test (VDRL, RPR) and a specific treponemal antibody test(TPHA, FTA-ABS).

Microscopically, Treponema pallidum is identified with a characteristic wave-like appearance on darkfield microscopy.

Parenteral penicillin G is the drug of choice for all stages of syphilis.

If the patient has a history of drug allergies, it is advisable to keep the patient under observation for 15 to 20 mins after injection. An emergency kit for the management of anaphylaxis should always be available.

Treatment of recent sexual contacts is recommended.

Solution to Question 8:

The given clinical scenario is suggestive of secondary syphilis. The absence of chancre is suggestive of a rare form of syphilis called syphilis d'emblee, where syphilis is transmitted through blood transfusion.

In this condition, there are no primary lesions and the disease directly presents in the secondary stage. It is treated as per usual guidelines with benzathine penicillin G 2.4 mega units IM single dose or 2 doses on days 1 and 8.

Option A: Sexual contact would present initially with a chancre at the primary site of contact.

Option C and D: Endemic treponemal infections such as yaws can be transmitted by direct skin-to-skin contact. It causes skin and bone deformities. Painless, indurated ulcers are seen, which are common over the legs and ankles.

Solution to Question 9:

Pseudochancre redux is seen in tertiary syphilis and is not infectious.

It must not be confused with chancre redux.

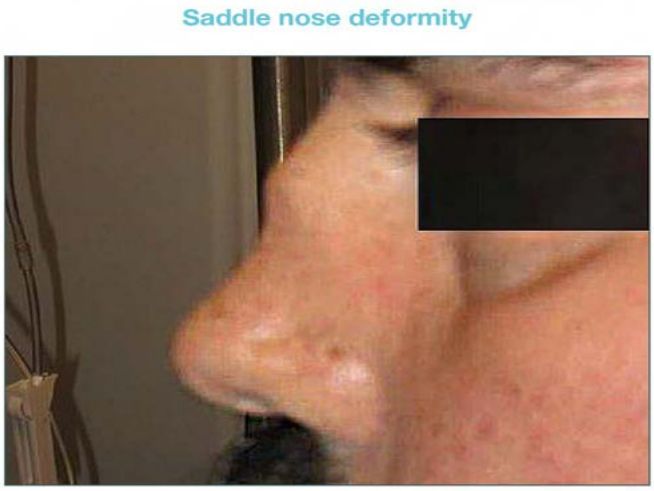
Pseudochancre redux	Chancre redux
Tertiary syphilis	Primary syphilis
Gummatous lesion at the site of a previously healed chanc re	Recurring chancre at the sam e site in the first 2 years. Also calledrelapsing syphilis
No lymphadenopathy	Painless lymphadenopathy
Not infectious	Highly infectious

Solution to Question 10:

A positive VDRL test with the above rash indicates secondary syphilis in this woman. Syphilitic rhinitis, generally described as ‘snuffles’, is often the earliest and most frequent sign of early

congenital syphilis.

It manifests as a profuse, serous, nasal discharge that contains a high concentration of Treponema pallidum. In later stages, saddle nose may occur due to bone and cartilage destruction in the nose.



Congenital syphilis occurs due to transplacental spread from an infected mother or through intrapartum spread through maternal genital lesions. The risk is highest during primary and secondary stages of the disease. If left untreated, it can lead to fetal death or congenital syphilis in a live birth.

Congenital syphilis can present early or late. The early disease presents < 2 years and late disease presents > 3 years.

Solution to Question 11:

Elevated RPR titer of the cord blood is indicative of congenital syphilis in the infant. Seventh nerve palsy is not a feature of congenital syphilis. It is associated with 8th nerve deafness, along with tinnitus and vertigo. It is a part of Hutchinson's triad which includes the following:

• Interstitial keratitis

• Eighth nerve deafness

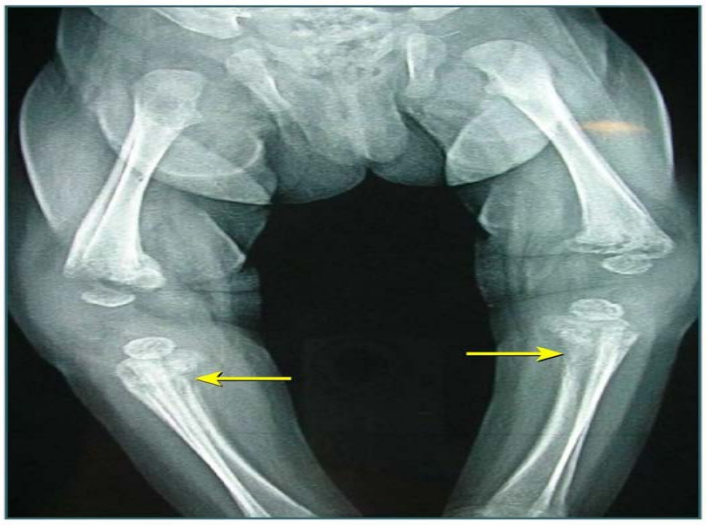
• Hutchinson's teeth

One of the features of congenital syphilis is periostitis of the skull which results in parrot's nodes or hot-cross bun appearance.

Most newborns with congenital syphilis are asymptomatic at birth. However, a vesiculobullous rash called syphilitic pemphigus may be present at delivery. After 2 weeks, a maculopapular rash is more common. Clinical signs usually appear between weeks 3 to 8 of life, usually within 3 months.

Solution to Question 12:

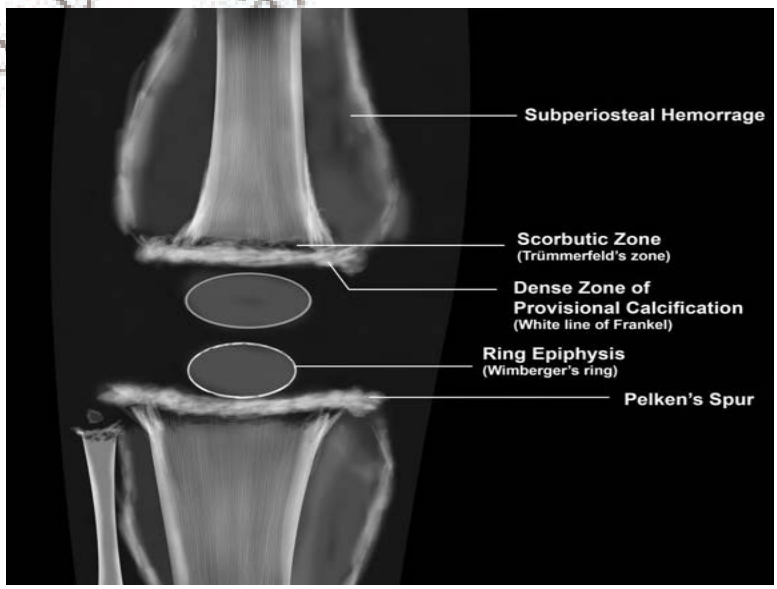
The X-ray shows Wimberger's sign, which is the localized bilateral metaphyseal destruction of the medial proximal tibia. It is seen in early congenital syphilis.



Option A: Clutton's joints refer to painless symmetrical swelling of the knees. It is seen in late congenital syphilis.

Option B: Higoumenaki's sign is the unilateral enlargement of the sternal end of the clavicle, seen in late congenital syphilis.

Option D: Wimberger ring sign refers to a circular calcification surrounding the osteoporotic epiphyseal center of ossification in scurvy, which may result from bleeding.



Solution to Question 13:

Anti-treponemal IgG is not useful for the initial diagnosis of congenital syphilis. The given image shows Hutchinson's teeth, which is a deformity of the upper, central incisor teeth with a notched or pegged appearance. It is a presentation of late congenital syphilis.

The following investigations must be done in children born to seropositive mothers with no documented treatment at least 4 weeks before delivery.

• Examination for stigmata of congenital syphilis

• X■ray of long bones for evidence of periostitis

• CSF examination (VDRL test) to rule out neurosyphilis

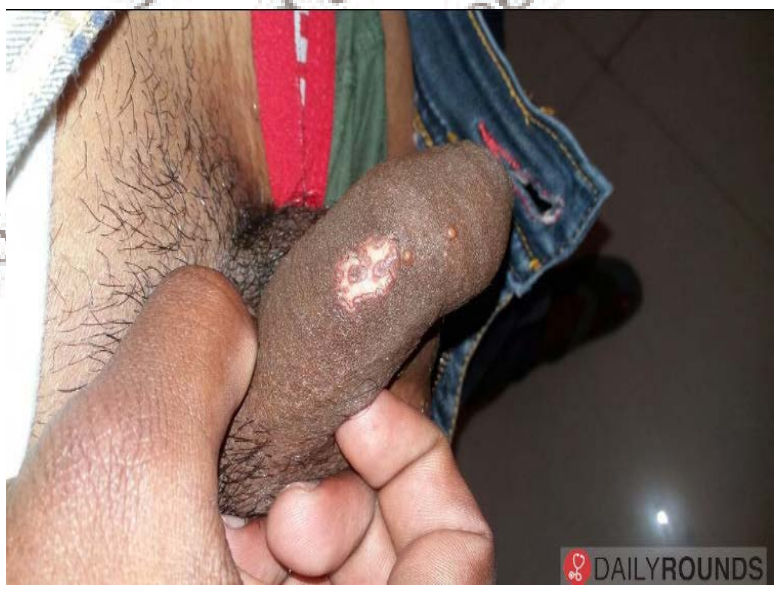
• Dark■field microscopy and/or PCR from exudates of suspicious lesions or fluids.

• Serology - Total serum treponemal antibody titer that is > 4 times the mother's, or if specific IgM treponemal antibody tests are positive.

Solution to Question 14:

This clinical scenario of an indurated, painless ulcer is suggestive of an extragenital syphilitic chancre. They can occur over fingers, hands, and the oral cavity.

The incubation period of syphilis is 9-90 days. The primary chancre is a painless, indurated, button-like ulcer, as seen below, with painless lymphadenopathy.



Option B: Chancroid or soft chancre presents with single or multiple painful ulcers.

Option C: Lymphogranuloma venereum presents with transient painful or painless ulcers later followed by painful lymphadenopathy.

Option D: Donovanosis presents with a beefy red, non-indurated painless ulcer that bleeds easily.

Solution to Question 15:

This clinical scenario of infertility and the finding of perihepatic adhesions on laparoscopy is characteristic of Fitz-Hugh-Curtis syndrome. It is not associated with syphilis.

It refers to perihepatitis that occurs as a complication of PID, due to:

• Gonorrhea

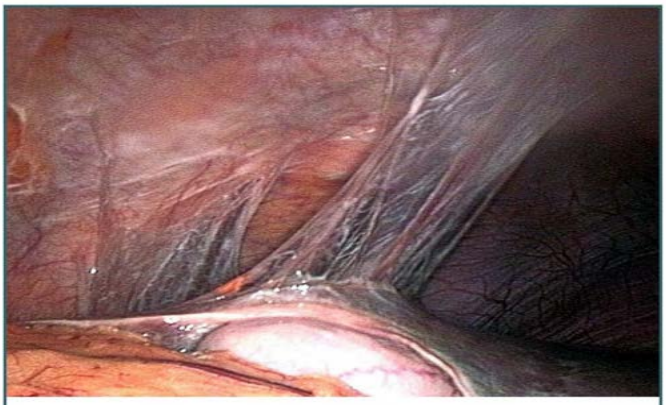
• Chlamydia

• Mixed infections

• Genital tuberculosis.

It results in fever, right upper quadrant pain, and tenderness mimicking acute cholecystitis. Fibrinous violin string adhesions can be seen on laparoscopy. It is also associated with extensive tubal scarring and adhesions.

Fitz Hugh Curtis syndrome



Fibrinous violin string perihepatic adhesions

Solution to Question 16:

A febrile reaction occurring within 24 hours of penicillin therapy for syphilis is suggestive of Jarisch-Herxheimer's reaction. Corticosteroids are only indicated in pregnant women and patients with neurosyphilis in whom the reaction can be more serious and life■threatening sequelae.

Jarisch–Herxheimer reaction is self-limiting and is due to lipoprotein release from the dying treponemes, which trigger cytokine release.

The patient presents with flu-like symptoms and exacerbation of skin lesions. Fever rarely lasts more than 8 hours. Symptoms may be controlled by antipyretics. It is not a contraindication for penicillin use in the future.

Penicillin allergy is a contraindication for further use. JH reactions must be differentiated from penicillin allergy. Allergic reactions can be early or late as follows:

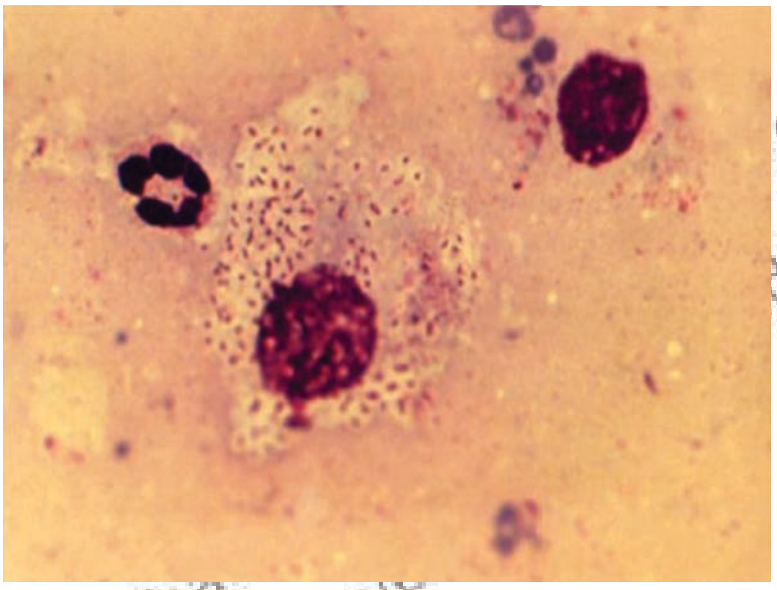
• Early type- anaphylaxis within 1 hour of the first dose.

• Late type- rash after several doses of penicillin

Non Syphilitic Sexually Transmitted Diseases

Question 1:

The microscopic examination of a sample obtained from a genital ulcer is shown below. What is the likely diagnosis?



a) Granuloma inguinale

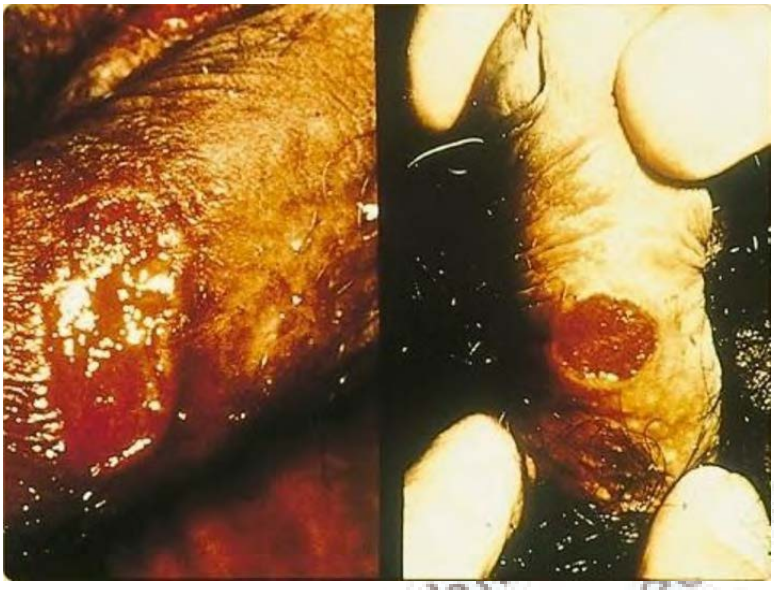
b) Gonorrhoea

c) Chancroid

d) Lymphogranuloma venerum

Question 2:

A 30-year-old man presents with the following painless and foul-smelling ulcer. On examination, there is no lymphadenopathy. What is the causative organism?



a) Treponema pallidum

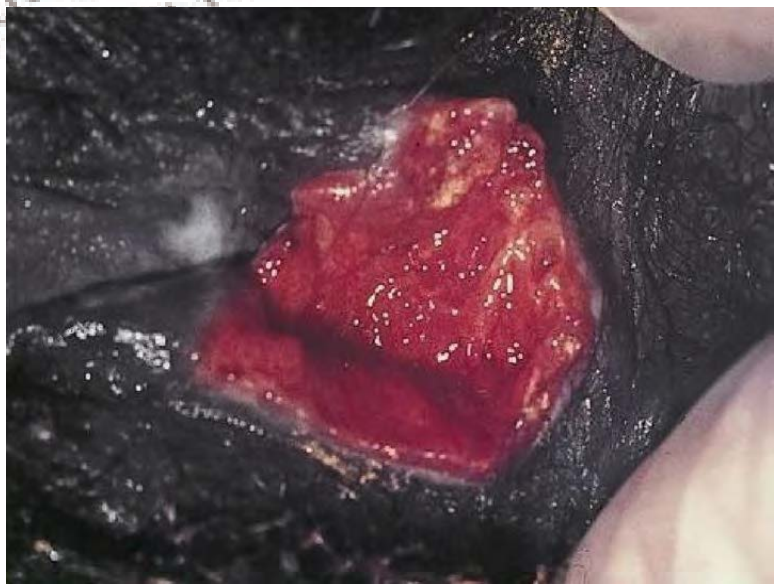
b) Hemophilus ducreyi

c) Herpes simplex virus - 2

d) Klebsiella granulomatis

Question 3:

A middle-aged man presents with a genital ulcer, as shown below. Microscopy of a sample from the lesion shows Donovan bodies. Which of the following is false about this disease?



a) Primary ulcer heals without scarring

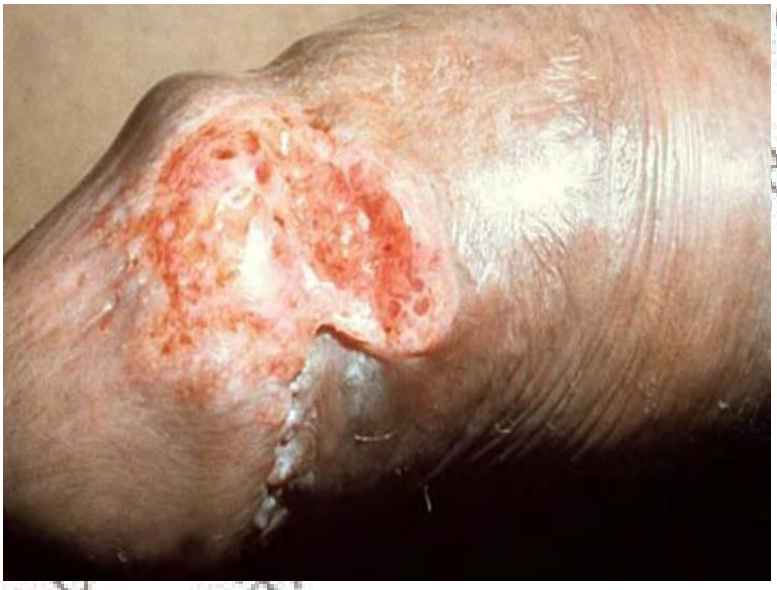
b) It has an incubation period of 8 to 80 days

c) It has the potential for malignant transformation

d) Caused by Calymmatobacterium granulomatis

Question 4:

A 35-year old man with a history of high-risk sexual behavior presents with the following painless penile ulcer. It bleeds on touch and there are no enlarged lymph nodes. What initial treatment will you prescribe for him?



a) Azithromycin 1g daily for 3 days

b) Azithromycin 500 mg daily for 3 weeks

c) Doxycycline 100 mg BD for 5 days

d) Doxycycline 100 mg BD for 2 weeks

Question 5:

Which of the following presents with pseudobubo?

a) Lymphogranuloma venerum

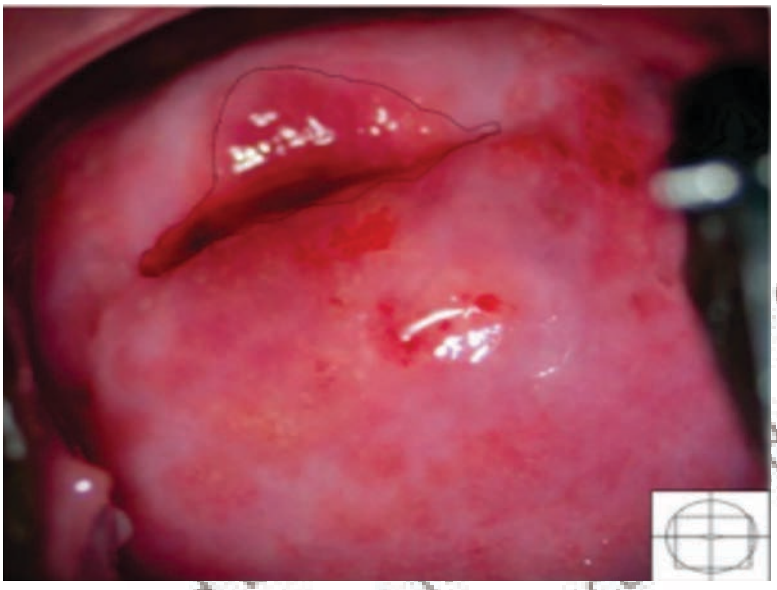
b) Syphilis

c) Donovanosis

d) Chancroid

Question 6:

A patient with vaginal discharge has the following finding on examination. What is the diagnosis?



a) Gonococcal cervicitis

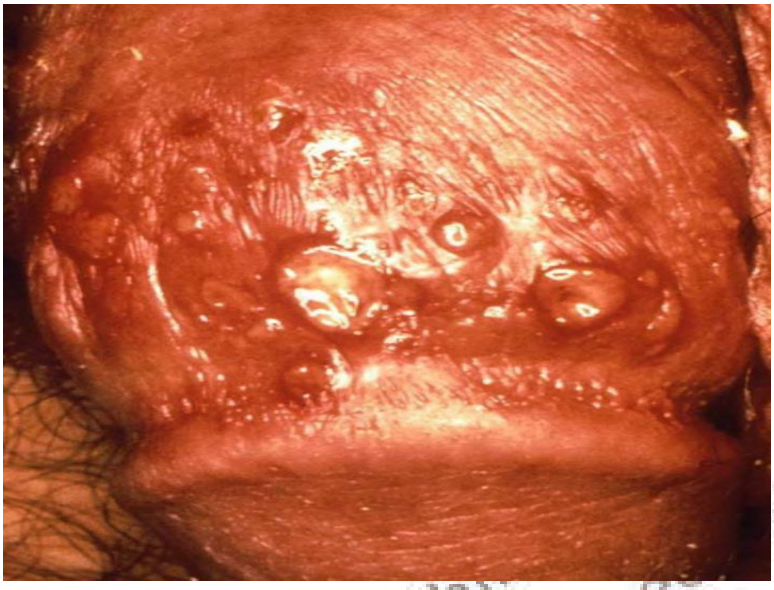
b) Trichomoniasis

c) Chlamydial cervicitis

d) Granuloma inguinale

Question 7:

As a PHC medical officer, you see a 25-year-old man, who has come with painful lesions as shown below. On further probing, he tells you that he had vesicles on his penis 2 days back and that he is allergic to penicillin. On examination, he has bilateral tender lymphadenopathy. Which kit will you use to treat him?



a) Green kit

b) Red kit

c) Blue kit

d) White kit

Question 8:

While being counseled for a sexually transmitted infection, a man is informed that his asymptomatic partner does not need to be treated. Which of the following kits will he be treated with?

a) Grey kit

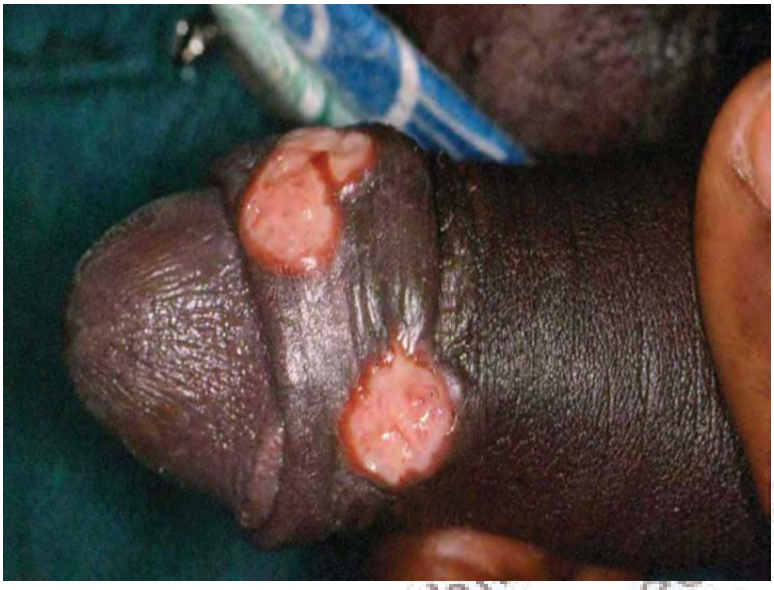
b) Blue kit

c) Red kit

d) Black kit

Question 9:

A 28-year-old male presents with painful deep ulcers on his penis as shown below. He also has painful unilateral lymphadenopathy. What is the diagnosis?



a) Chancroid

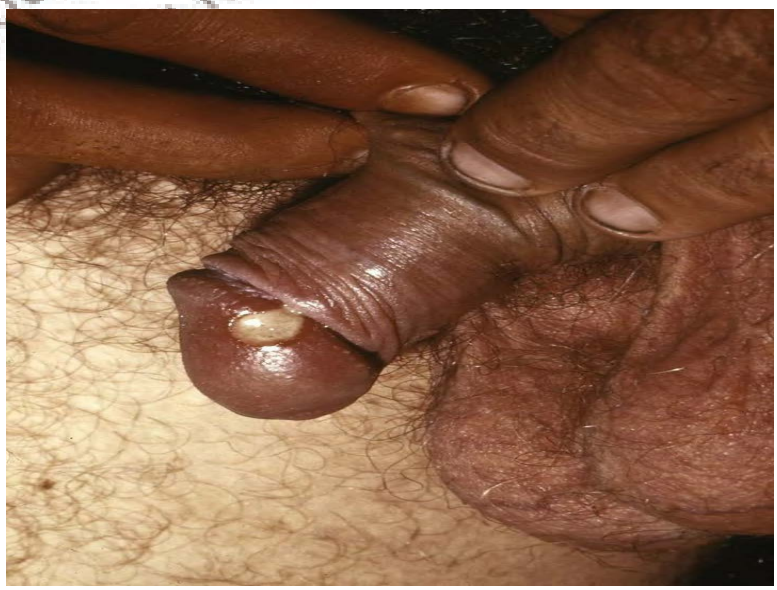
b) Herpes genitalis

c) Lymphogranuloma venerum

d) Granuloma inguinale

Question 10:

A young man presents with the following painful, soft ulcer, 4 days after unprotected sexual intercourse. Which of the following will you choose as initial treatment for this patient?



a) Ceftriaxone 500 mg IM stat

b) Ciprofloxacin 500 mg BD for 4 days

c) Erythromycin 500 mg QID for 7 days

d) Azithromycin 1g oral stat

Question 11:

A 40-year-old man develops thick yellowish discharge from his urethra 2 weeks after an unprotected sexual encounter. Which of the following is the recommended diagnostic test?

a) Culture and sensitivity

b) Nucleic acid amplification test

c) Enzyme Linked Immunosorbent Assay

d) Microscopy showing inclusion bodies

Question 12:

A 29-year-old primigravida is diagnosed with chlamydial cervicitis. What is the drug of choice?

a) Doxycycline

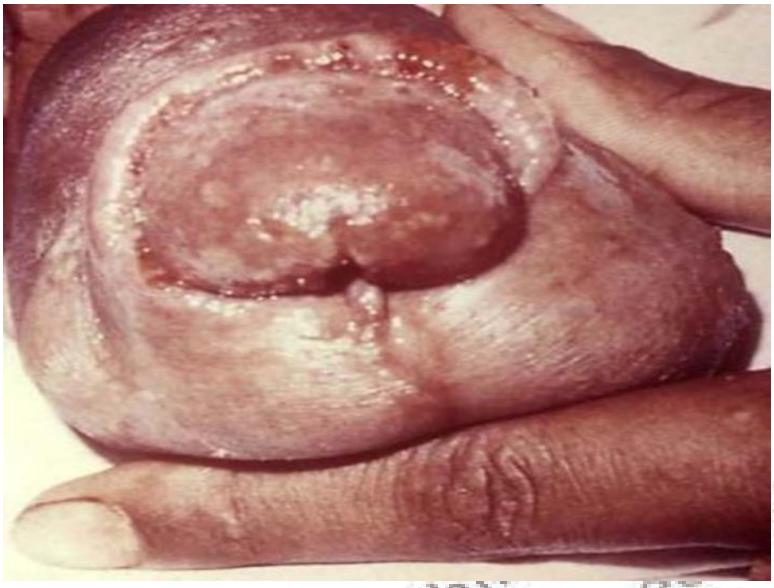
b) Ceftriaxone

c) Azithromycin

d) Amoxicillin

Question 13:

A 20-year-old man presents with burning pain on passing urine. He reluctantly admits that he had unprotected sexual intercourse 3 days ago. The following examination findings are seen. Which of the following is the likely causative organism?



a) Chlamydia trachomatis

b) Mycoplasma genitalium

c) Trichomonas vaginalis

d) Neisseria gonorrhoeae

Question 14:

A 30-year-old IV drug abuser with high-grade fever and chills is found to have a new-onset murmur. Blood culture is positive for Neisseria gonorrhoeae. Which of the following statements is false about this condition?

a) It occurs as a result of direct spread by ascending infections

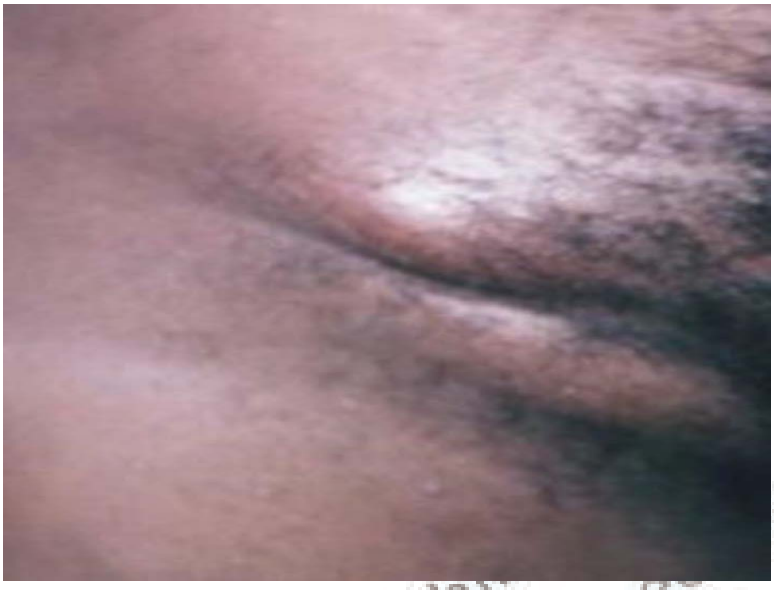
b) Classic presentation is with a dermatitis–arthritis syndrome

c) Skin lesions are small, tender and maculopapular

d) Systemic lupus erythematosus and HIV infection are risk factors

Question 15:

A 27-year-old commercial sex worker comes to the OPD with the following finding. What is the causative organism?



a) Chlamydia trachomatis L1-L3

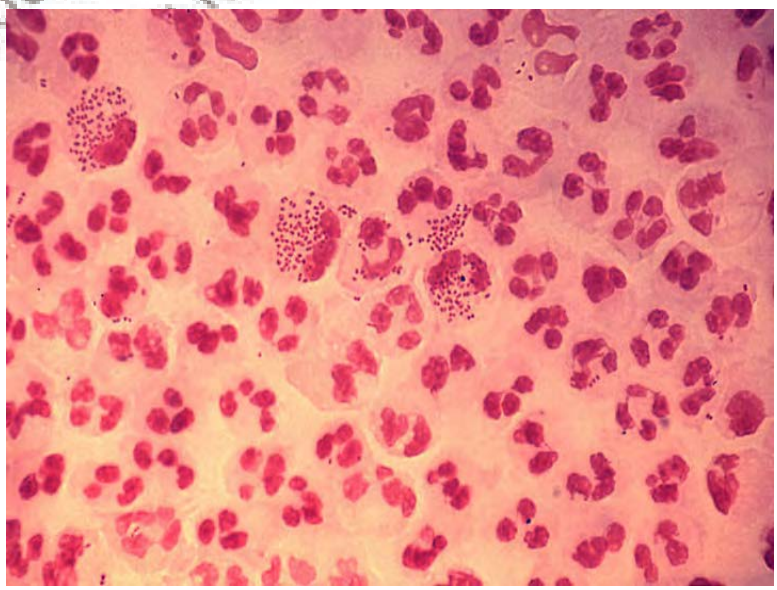
b) Haemophilus ducreyi

c) Chlamydia trachomatis D-K

d) Klebsiella granulomatis

Question 16:

A 30-year-old thin-built man presents with urethritis. Gram-staining of the purulent discharge is seen in the following image. What is the treatment of choice for this infection?



a) Ceftriaxone 250 mg IM + Azithromycin 1g PO stat

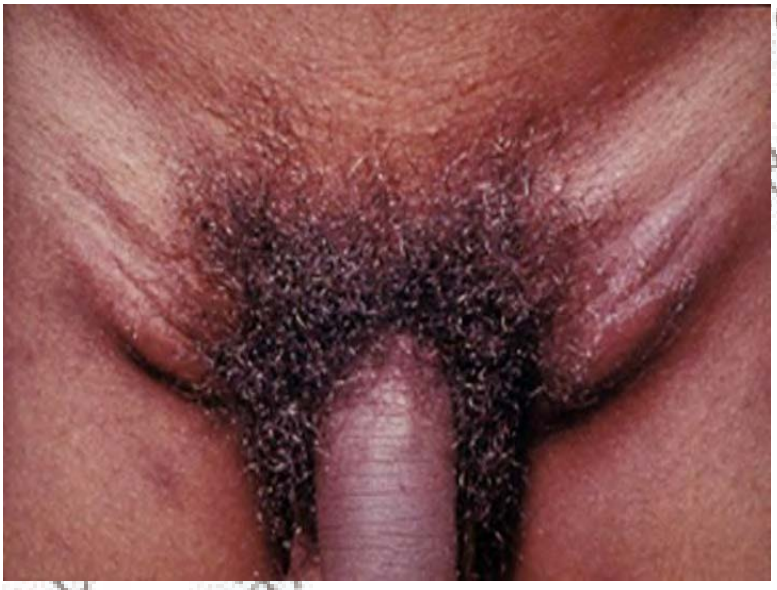
b) Ceftriaxone 500 mg IM in a single dose

c) Ceftriaxone 500 mg IM + Doxycycline 100 mg BD for 7 days

d) Azithromycin 1g PO stat + Doxycycline 100 mg BD for 7 days

Question 17:

A man is referred to the STI clinic with the following painful finding. He gives a history of a small painless ulcer on his penis 5 weeks ago, which resolved on its own. What is the likely diagnosis?



a) Chancroid

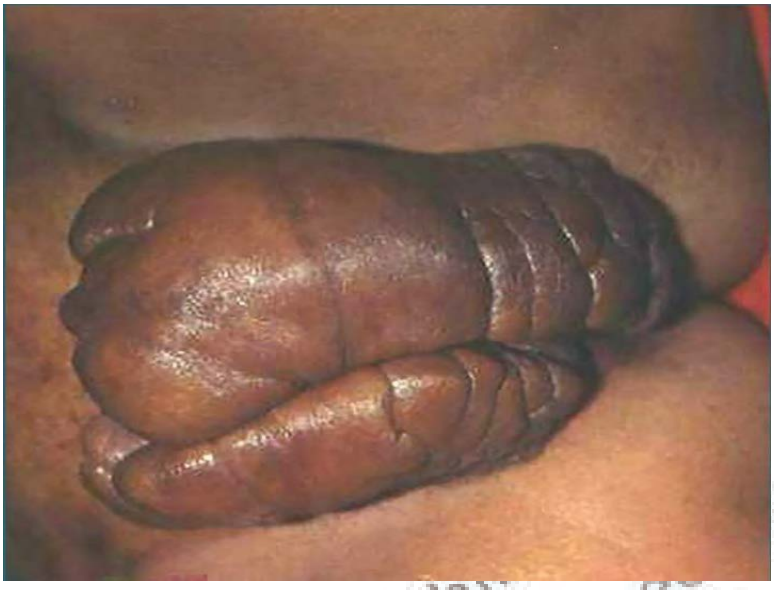
b) Syphilis

c) Lymphogranuloma venerum

d) Granuloma inguinale

Question 18:

A woman brings her 50-year-old mother to a PHC with disfiguration of her genitalia as shown below. She says that it has been present for many years but her mother had refused to seek treatment. The PHC medical officer decides to refer the lady to a venereologist. What is the diagnosis?



a) Lymphogranuloma venerum

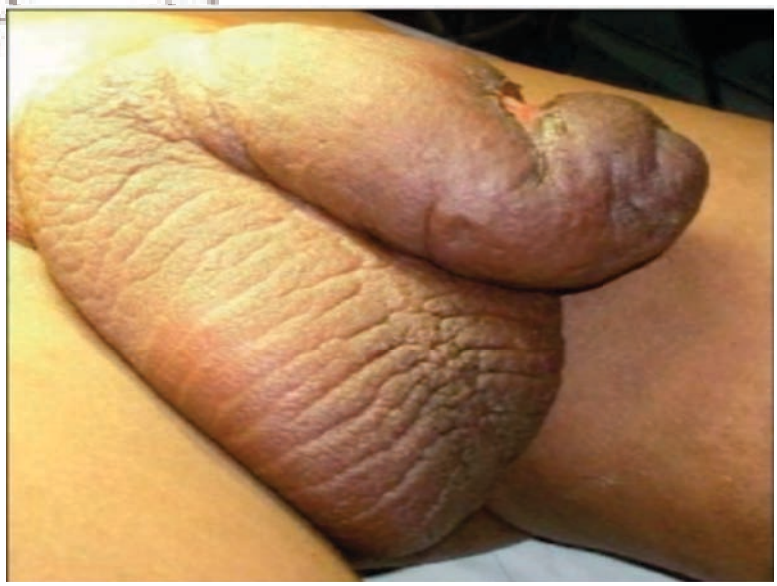
b) Chancroid

c) Granuloma inguinale

d) Syphilis

Question 19:

A 50-year-old man was referred to a urologist for the following finding. Which of the following would not have caused this?



a) Donovanosis

b) Lymphogranuloma venereum

c) Gonococcal urethritis

d) Penile tuberculosis

Question 20:

Which of the following is not a feature of the Amsel criteria?

a) Homogenous thin greyish discharge

b) Vaginal pH less than 4.5

c) Amine odour after adding 10% KOH

d) Epithelial cells studded with coccobacilli

Answer Key

Question No.	Correct Option
1	a
2	d
3	a
4	b
5	c
6	b
7	b
8	c
9	a
10	d
11	b
12	c
13	d
14	a
15	a
16	c
17	c
18	a
19	a

20	b

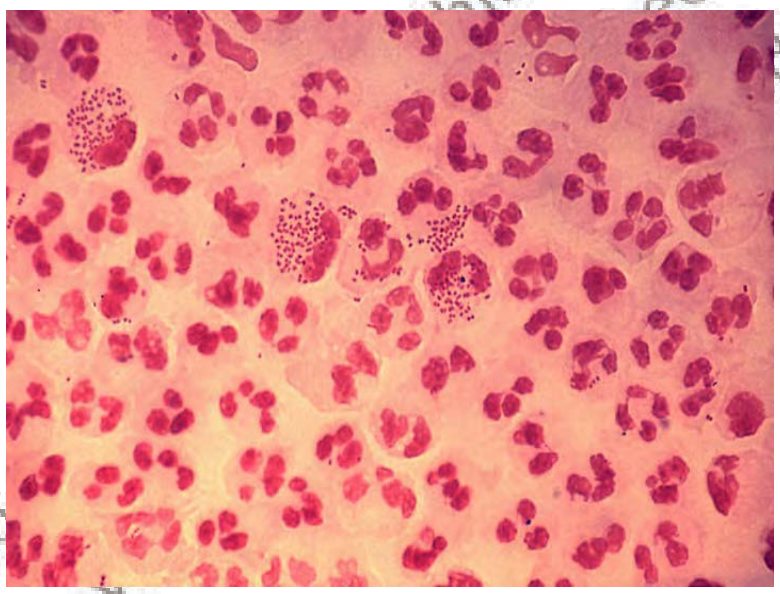
Detailed Explanations

Solution to Question 1:

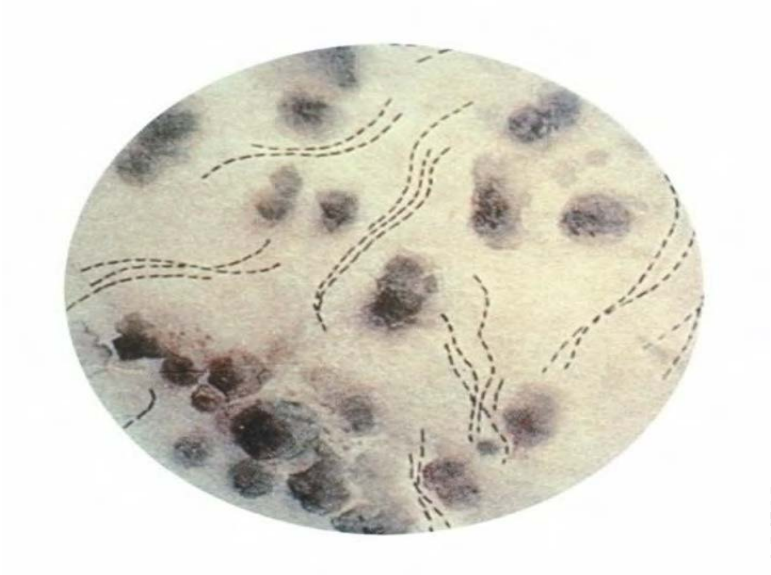
The given image shows Donovan bodies, which points to a diagnosis of granuloma inguinale.

Donovan bodies refer to the Gram-negative rod-shaped or oval organisms that show bipolar staining or safety■pin appearance, present intracellularly in the cytoplasm of large mononuclear cells.

Option B: Neisseria gonorrhoeae appears on microscopy as Gram■negative intracellular diplococci within phagocytes as seen below.



Option C: Microscopy of chancroid lesions shows H. ducreyi in a sheet-like or school of fish railroad pattern as seen below.



Option D: In LGV, an increased number of polymorphonuclear leukocytes are noted on microscopy.

Solution to Question 2:

The clinical picture of a painless, beefy red, foul-smelling ulcer with no lymphadenopathy points to a diagnosis of granuloma inguinale. It is caused by Calymmatobacterium granulomatis also known as Klebsiella granulomatis.

The incubation period varies from 8-80 days, the average being 50 days.

Four types of lesions have been described in this condition:

• Ulcerogranulomatous - most common type with painless beefy red ulcers. They are also highly vascular and bleed on touch.

• Hypertrophic - usually with a raised irregular edge

• Necrotic - offensive smelling ulcer that causes tissue destruction

• Sclerotic or cicatricial - with fibrous or scar tissue

Primary lesions can occur on genital and extragenital sites. Untreated genital ulcers are followed by genital disfigurement and have the potential for malignant change.

Solution to Question 3:

Donovan bodies are characteristic of donovanosis or granuloma inguinale. The primary ulcer, if left untreated, heals spontaneously with scarring or persists and spreads.

Granuloma inguinale is a sexually transmitted infection caused by Calymmatobacterium granulomatis / Klebsiella granulomatis. The incubation period varies from 8-80 days, the average

being 50 days.

Four types of lesions have been described in this condition:

• Ulcerogranulomatous - most common type with painless beefy red ulcers. They are also highly vascular and bleed on touch.

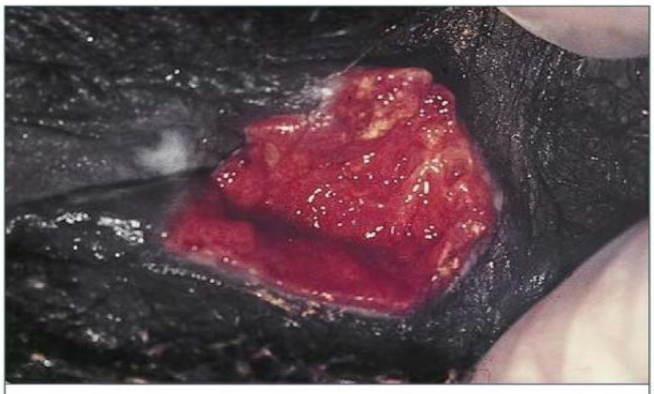
• Hypertrophic - usually with a raised irregular edge

• Necrotic - offensive smelling ulcer that causes tissue destruction

• Sclerotic or cicatricial - with fibrous or scar tissue

Primary lesions can occur on genital and extragenital sites. Untreated genital ulcers are followed by genital disfigurement and have the potential for malignant change.

Granuloma inguinale



Beefy red granuloma

Solution to Question 4:

This man with a painless, vascular ulcer and no lymphadenopathy has granuloma inguinale. The first-line treatment is azithromycin 1 g orally once weekly or 500 mg daily for 3 weeks.

In this condition, prolonged antibiotic therapy is required. Antibiotics must be given for 3-6 weeks and until the ulcer has completely healed. The second-line drugs are as follows:

• Doxycycline 100 mg orally BD

• Erythromycin base 500 mg orally QID

• Trimethoprim-sulfamethoxazole 160 mg/800 mg orally BD

Solution to Question 5:

Pseudobubo is a feature of donovanosis.

It refers to granulomatous lesions that may extend into subcutaneous tissue and mimic lymphadenopathy. The presence of these lesions both above and below the inguinal ligament results in a pseudo-groove sign, similar to the groove sign of Greenblatt seen in lymphogranuloma venereum.

Solution to Question 6:

The given image shows colpitis macularis or strawberry cervix, which is a characteristic finding of trichomoniasis. It results from microscopic, punctate hemorrhages of the cervix.

It is caused by Trichomonas vaginalis and is one of the most common causes of vaginal discharge. It is transmitted by sexual intercourse, with an incubation period of 4–21 days.

In females, it characteristically causes a copious, frothy, yellow-green discharge with pH > 4.5, along with vaginal soreness and urinary frequency. Males can be asymptomatic or develop non-specific urethritis.

Diagnosis in females is usually easily confirmed by the presence of motile organisms on a wet film. Culture in Feinberg–Whittington medium is the most reliable method but is not routinely done.

Standard treatment is metronidazole 2g PO single dose. Regardless of treatment given, patients should avoid sexual contact for 7 days since the last antibiotic dose.

Solution to Question 7:

The clinical picture of multiple, grouped painful ulcers with tender lymphadenopathy in this patient points to a diagnosis of herpes genitalis infection by HSV-2. It is treated with a red kit.

The red kit or kit 5 is meant for genital ulcer disease - herpetic. It contains acyclovir 400 mg tablets to be taken TDS for 7 days.

Chancroid is a close differential diagnosis, which presents with multiple, soft painful ulcers and unilateral tender lymphadenopathy. However, vesicles are not seen in chancroid and the ulcers are deeper with ragged undermined edges.

History of drug allergy to penicillin is relevant only when the patient presents with the primary chancre of syphilis. In such a case, they would need to be treated with a blue kit instead of a white kit.

Solution to Question 8:

The red kit is used for the treatment of herpetic genital ulcer disease, in which treatment of asymptomatic partners is not required.

Option A: Grey kit used in men for urethral discharge and scrotal swelling requires all recent partners to be treated. But, when used for cervical discharge in women, only symptomatic male

partners need to be treated.

Option B: Blue kit is used for non-herpetic genital ulcer disease when the patient is allergic to penicillin. All partners in the last 3 months must be treated.

Option D: Black kit is used for inguinal buboes. All partners in the last 3 weeks must be treated.

Solution to Question 9:

This patient with painful, deep ulcers with tender lymphadenopathy has chancroid. It is caused by Haemophilus ducreyi.

The incubation period is 3-10 days. The primary lesion begins as a painful papule that undergoes central necrosis to form painful, non-indurated ulcers with undermined edges. Kissing ulcers due to autoinoculation may also be present.

It is associated with painful lymphadenopathy, which later progresses to form suppurating buboes and sinuses.

Option B: HSV-2 infection presents with multiple vesicles, which develop into shallow ulcers, along with painful lymphadenopathy.

Option C: LGV presents with a painless or painful ulcer later followed by painful lymphadenopathy. The incubation period is 3-30 days.

Option D: Granuloma inguinale or donovanosis presents with a painless papule that forms a beefy red ulcer with no lymphadenopathy. The incubation period is 8-80 days (average 50 days).

Solution to Question 10:

This clinical scenario is suggestive of chancroid. First-line treatment is azithromycin 1g orally as a single dose or ceftriaxone 250 mg IM as a single dose.

The second-line options for chancroid are as follows:

-

Ciprofloxacin 500 mg orally twice a day for 3 days (OR)

-

Erythromycin base 500 mg orally four times a day for 7 days

Solution to Question 11:

Chlamydial urethritis is the likely diagnosis in this patient as it has an incubation period of 1-3 weeks. Nucleic acid amplification test (NAAT) is the only diagnostic test recommended for detecting Chlamydia.

The samples used are:

• Men - first void urine

• Women - vaginal or endocervical swabs

NAAT can only detect Chlamydia species, but cannot differentiate between LGV and non-LGV types. Genotyping of Chlamydia■positive samples is needed to specifically diagnose LGV infection.

Serology, cell culture, and microscopy have no role in routine screening or diagnosis.

Solution to Question 12:

A single dose of azithromycin 1g is the drug of choice in pregnant women with uncomplicated chlamydial infection.

The drug of choice for chlamydia infection in adults and adolescents is doxycycline 100 mg orally BD for 7 days. It is contraindicated in pregnancy.

Alternative regimens are:

• Azithromycin 1g orally, single dose

• Levofloxacin 500mg OD for 7 days

Azithromycin is preferred due to its greater effectiveness and lower cost.

Option A: Doxycycline is contraindicated in pregnancy as it causes depression of bone growth and enamel hypoplasia in the fetus.

Option B: Ceftriaxone is used for the treatment of gonococcal infections.

Option D: Amoxicillin is used as an alternative regimen as it is less effective.

Solution to Question 13:

The symptoms of this patient occurring 3 days after unprotected sex point to urethritis caused by Neisseria gonorrhoeae, as its incubation period is 1-5 days.

The most common presentation of gonococcal infection in men is acute urethritis with dysuria and profuse purulent discharge. Pharyngeal and rectal infections can also occur depending on the type of sexual contact.

The primary site of infection in women is the cervix but the urethra, rectum, and pharynx may be involved. Symptoms include excessive vaginal discharge, dysuria, deep dyspareunia, postcoital and intermenstrual bleeding.

The most common cause of non-gonococcal urethritis (NGU) is Chlamydia, which has an incubation period of 1-3 weeks. It usually presents with dysuria alone, but mucopurulent discharge can occur. Other causes of NGU are Mycoplasma genitalium and Trichomonas vaginalis.

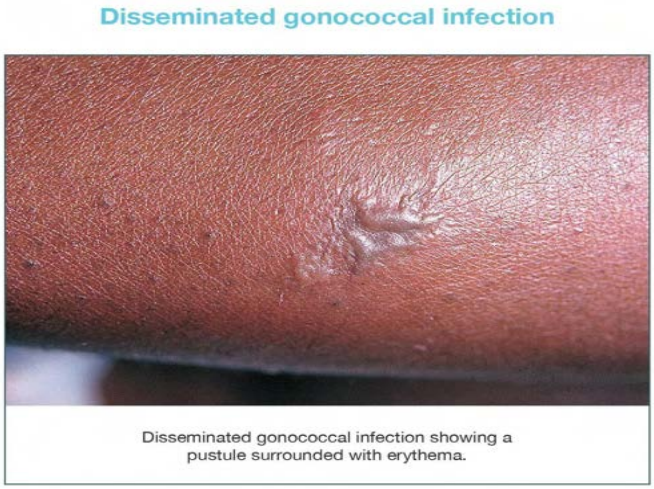
Solution to Question 14:

This clinical scenario of a patient with a positive blood culture is suggestive of disseminated gonococcal infection, which is due to hematogenous spread.

It is seen in 0.5–3% of patients. Risk factors include:

- Female sex
- Men who have sex with men
- Pregnancy
- Menstruation
- Systemic lupus erythematosus
- Complement deficiency
- Intravenous drug use
- HIV infection

The classic presentation is dermatitis–arthritis syndrome with mild fever. The skin lesions are small, tender, and initially maculopapular. Later a central vesicle or pustule appears and is followed by hemorrhage and necrosis. These lesions are commonly seen near affected joints.



Disseminated gonococcal infection showing a pustule surrounded with erythema.

Joint or tendon pain is the most common accompanying feature. Tenosynovitis often affects the hands and fingers. 1/3rd of the patients may proceed to suppurative arthritis, most commonly of the knee.

Other manifestations like endocarditis, pericarditis, osteomyelitis, and meningitis are extremely rare.

Solution to Question 15:

This image shows the pathognomonic groove sign of Greenblatt, which is suggestive of lymphogranuloma venereum. It is caused by Chlamydia trachomatis serovars L1-L3.

Groove sign is seen in ■ of the cases. It refers to the depression between the enlarged femoral and inguinal lymph nodes on either side of the inguinal ligament.

Option B: H. ducreyi causes chancroid.

Option C: C. trachomatis D-K causes non-gonococcal urethritis.

Option D: K. granulomatis causes granuloma inguinale.

Solution to Question 16:

This clinical scenario along with the microscopic findings of Gram■negative intracellular diplococci indicates infection with Neisseria gonorrhoeae. As it has not been confirmed by NAAT testing, this patient must also be treated for concurrent chlamydial infection.

Single-agent therapy with ceftriaxone is preferred for the treatment of gonococcal infections. According to CDC guidelines (2021), treatment of uncomplicated gonococcal infections is as follows:

• Weight <150 kg – Ceftriaxone 500 mg intramuscular (IM) in a single dose

• Weight ≥150 kg – Ceftriaxone 1 g IM in a single dose

The doses of ceftriaxone are higher than the previous guidelines as the gonococcal minimum inhibitory concentrations (MICs) are rising worldwide. The British BASHH guidelines also recommend a high dose of 1g.

Concurrent chlamydial infection must also be treated unless it has been excluded by molecular testing. First-line drug administered is:

• Oral doxycycline 100 mg BD for 7 days

Partner treatment is also required.

Solution to Question 17:

The image shows bilateral painful masses of lymph nodes called buboes, that occurred in this patient following a painless genital ulcer. This is typically seen in lymphogranuloma venereum.

The incubation period of this condition is 3-30 days. It occurs in three stages.

Primary stage: Begins with painless papules or ulcers at the site of inoculation, which may go unnoticed. The classical ulcer is single, shallow, non-indurated, and may be painful or painless. The common site is the coronal sulcus in men and the posterior vaginal wall in women. It heals without scarring.

Secondary stage: Develops 2-6 weeks later and presents as tender femoral and/ or inguinal lymphadenopathy. The nodes may coalesce to form buboes or abscesses, which later rupture to form fistulae and sinus tracts.

Tertiary stage: Occurs several years later and is characterized by lymphatic obstruction and disfiguring conditions such as elephantiasis and esthiomene.

Option A: Chancroid presents with multiple painful ulcers with painful lymphadenopathy. The incubation period 3-10 days.

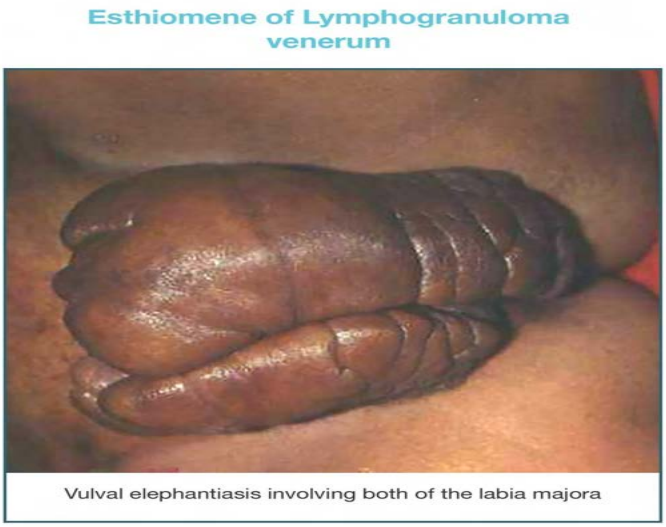
Option B: Syphilis presents with painless indurated ulcers with painless lymphadenopathy. The incubation period is 9-90 days.

Option D: Granuloma inguinale presents as a painless beefy red ulcer with no lymphadenopathy. The incubation period is 8-80 days (average 50 days).

Solution to Question 18:

The given image shows esthiomene, a feature of lymphogranuloma venereum.

In the tertiary stage of LGV, there is lymphatic obstruction due to chronic inflammation and fibrosis. This results in genital lymphoedema and inflammation which causes ulceration and chronic granulomatous fibrosis, resulting in esthiomene in women and elephantiasis in men.



Vulval elephantiasis involving both of the labia majora

Solution to Question 19:

The deformity shown in the above image depicts a penis that is twisted along its long axis, which is called saxophone penis. It is a late complication of lymphogranuloma venereum, penile tuberculosis, and primary lymphedema. It does not occur in donovanosis.

It occurs as a complication of long-standing inflammation, which causes fibrosis of lymphatics and connective tissue. The dorsal surface of the penis has a poor blood supply compared to the ventral surface and undergoes more fibrosis. This leads to a dorsal bend of the penis.

Gonococcal urethritis can lead to periurethral abscesses, which result in urethral strictures. In males, this may cause a saxophone penis deformity.

Solution to Question 20:

Acidic pH is not a feature of the Amsel criteria, which are used for the diagnosis of bacterial vaginosis.

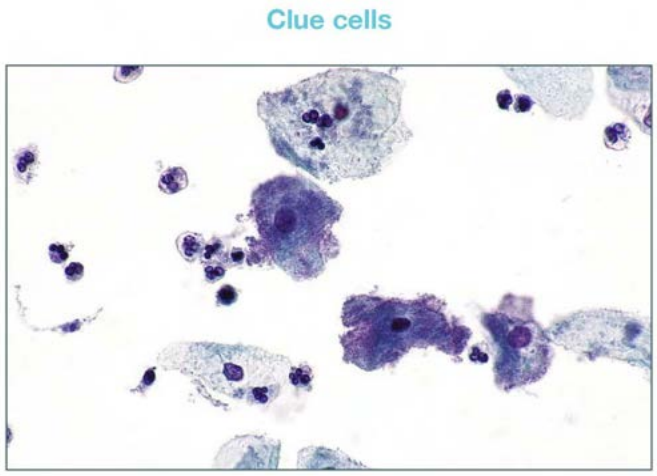
3 out of 4 of the following criteria are needed for a positive diagnosis:

• Homogeneous, thin, grayish-white discharge that smoothly coats the vaginal walls.

• Vaginal pH > 4.5.

• Positive whiff-amine test - Fishy odor when a drop of 10% KOH is added to vaginal discharge.

• Clue cells on saline wet mount: Vaginal epithelial cells studded with adherent coccobacilli at the edge of the cell.



Bacterial vaginosis is caused by a reduction in lactobacilli, and an increase in anaerobic organisms such as Gardnerella vaginalis, Mycoplasma hominis and Prevotella species.

Nugent scoring system is highly sensitive and is considered the gold standard for bacterial vaginosis. It is calculated using Gram-stained smear findings and observing the number of lactobacilli and morphology of anaerobes. High scores of 7–10 indicate bacterial vaginosis.

Genodermatoses & Nutritional Disorders

Question 1:

Which of the following is a genodermal disease that can cause skin malignancies due to defective DNA repair?

a) Neurofibromatosis

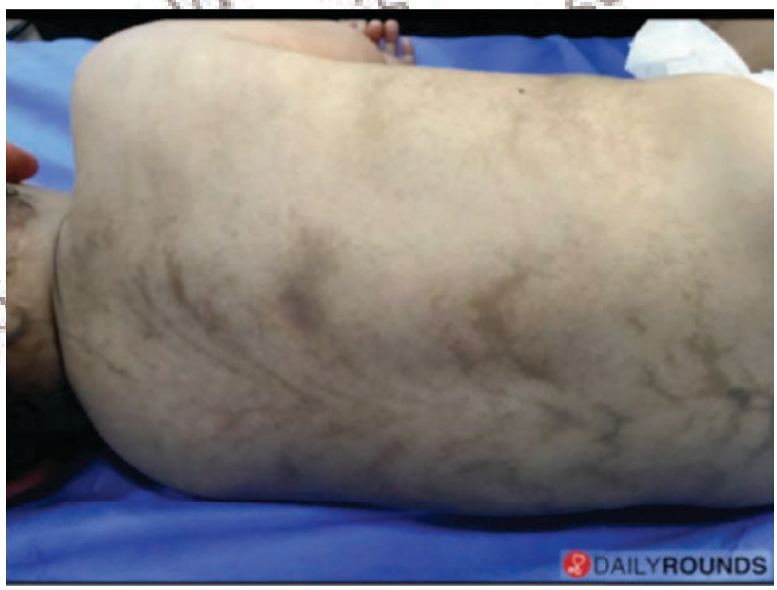
b) Actinic keratosis

c) Xeroderma pigmentosa

d) Tuberous sclerosis

Question 2:

Which of the following statements is incorrect regarding the given condition?



a) Fundus fluorescein angiography shows avascular peripheral retina

b) X-linked recessive inheritance

c) Miscarriage of affected male conceptuses

d) Cone-shaped teeth

Question 3:

An anxious mother from rural India brings her 2-year-old boy with complaints of uncontrolled jerking of the left side of his body. She says that he has had the 'devil's stain' over the right side of his face since birth. She claims that the stain has been becoming larger and darker depicting the 'devil's strength increasing over time'. What is the most likely diagnosis?

a) Neurofibromatosis

b) Vein of Galen malformation

c) Hemangioma

d) Sturge-Weber syndrome

Question 4:

Which of the following cutaneous disorders is not associated with a nucleotide excision repair defect?

a) Xeroderma pigmentosum

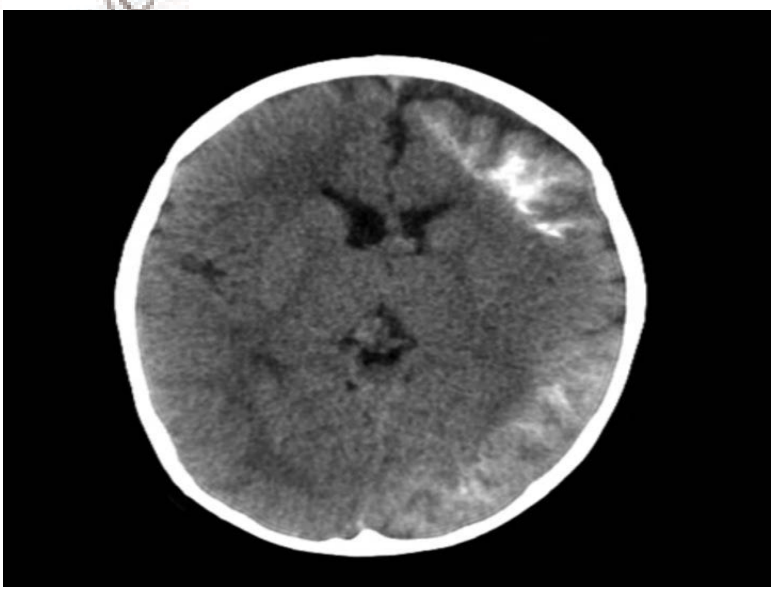
b) Cockayne syndrome

c) Trichothiodystrophy

d) Muir–Torre syndrome

Question 5:

The given CT finding is associated with which of the following genodermal disorders?



a) Von- Hippel- Lindau syndrome

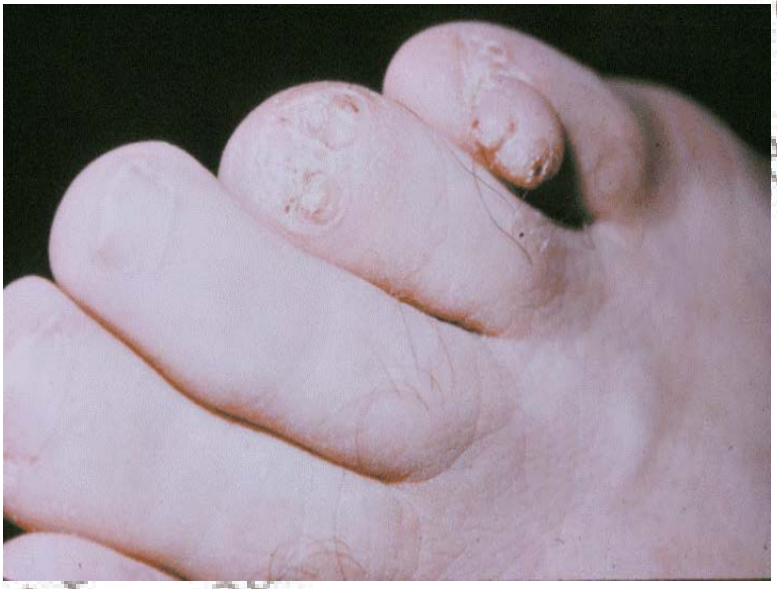
b) Sturge Weber syndrome

c) Tuberous sclerosis

d) Ataxia telangiectasia

Question 6:

A 17-year-old boy presented with the following skin finding. On inquiry, he also tells you that his father has similar complaints. What is the likely diagnosis?



a) Tuberous sclerosis

b) Neurofibramatosis

c) Cowden syndrome

d) Gardner syndrome

Question 7:

Button-hole sign can be seen in which of the following disorders?

a) Discoid lupus erythematosus

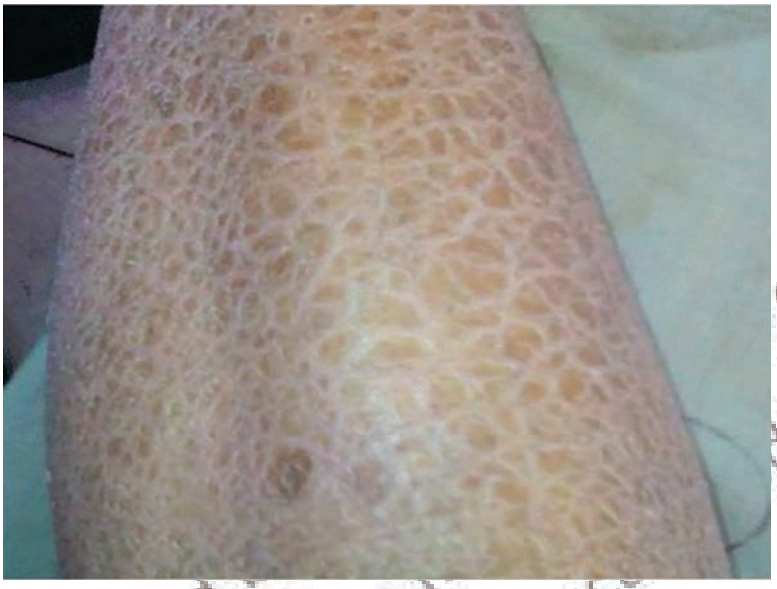
b) Von Recklinghausen's disease

c) Tuberous sclerosis

d) Xeroderma pigmentosum

Question 8:

A male patient comes with complaints of dry skin over his legs appearing as shown below. On examination, hyperlinear palms are noted. What is the likely diagnosis?



a) Psoriasis

b) X-linked recessive ichthyosis

c) Nummular eczema

d) Ichthyosis vulgaris

Question 9:

A male child with cryptorchidism presents with large dirty brown scales on body flexures. Workup revealed steroid sulfatase deficiency. What is the probable diagnosis?

a) Ichthyosis vulgaris

b) Lamellar ichthyosis

c) X-linked recessive ichthyosis

d) Non - bullous ichthyosiform erythroderma

Question 10:

A child was born with membranes around the body and had ectropion and eclabium. He is brought to the OPD with lesions covering his face, trunk, and extremities. Which of the following is an unlikely diagnosis?

a) Ichthyosis vulgaris

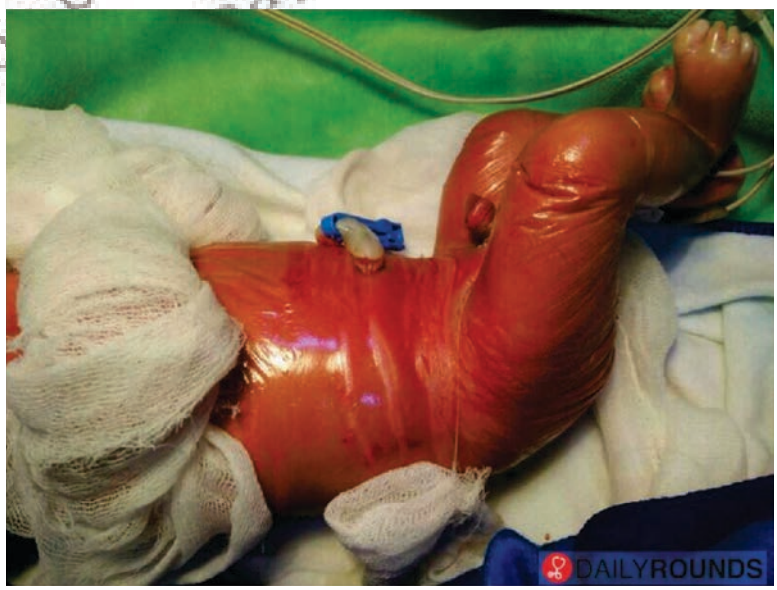
b) Lamellar ichthyosis

c) Bathing suit ichthyosis

d) Harlequin ichthyosis

Question 11:

Identify the incorrect statement regarding this condition.



a) X-linked recessive inheritance

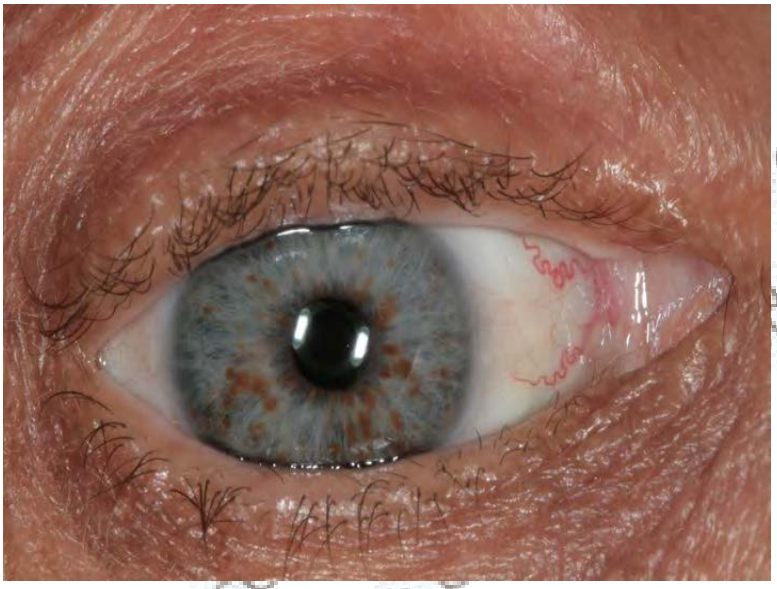
b) May progress to lamellar icthyosis

c) May progress to bathing suit icthyosis

d) Peels off within 4 weeks of life

Question 12:

The ocular condition shown below is associated with:



a) Xeroderma pigmentosa

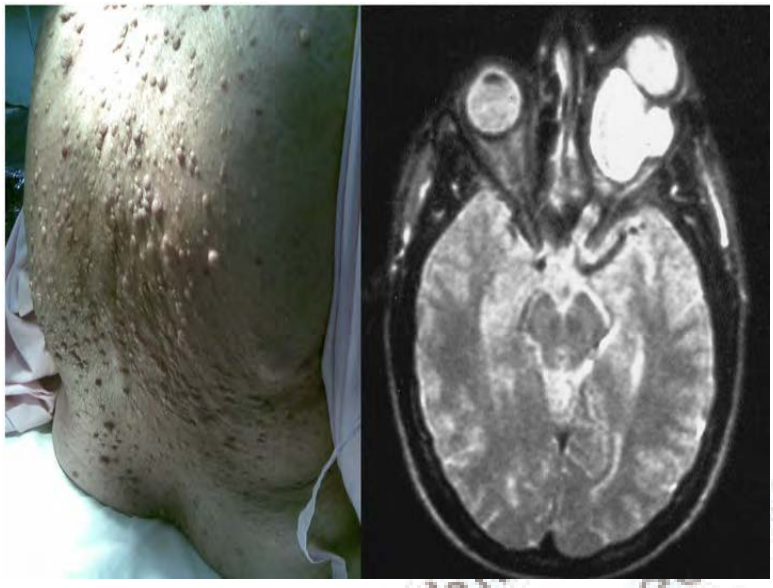
b) Incontinentia pigmenti

c) Neurofibromatosis

d) Louis-Bar syndrome

Question 13:

Identify the incorrect statement regarding the condition shown below.



a) Six or more cafe-au-lait macules form the part of diagnostic criteria

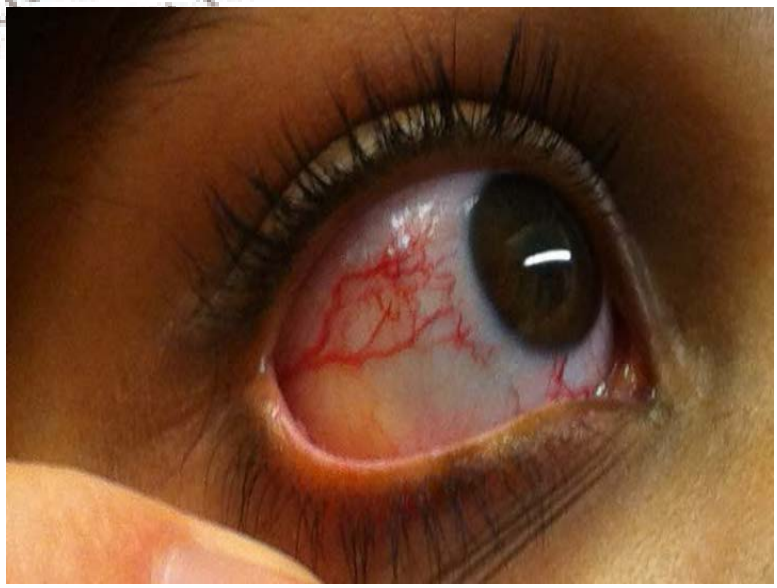
b) Confetti skin lesions can be seen in this condition

c) Axillary freckling is pathognomonic

d) Tibial pseudoarthrosis can be seen

Question 14:

The image shows certain changes in the conjunctiva commonly found in a DNA repair defect syndrome. What is the first clinical manifestation of this disease?



a) Café■au■lait spot

b) Premature hair greying

c) Insulin resistance

d) Progressive cerebellar degeneration

Question 15:

All of the following conditions resolve spontaneously in an infant except:

a) Pustular melanosis

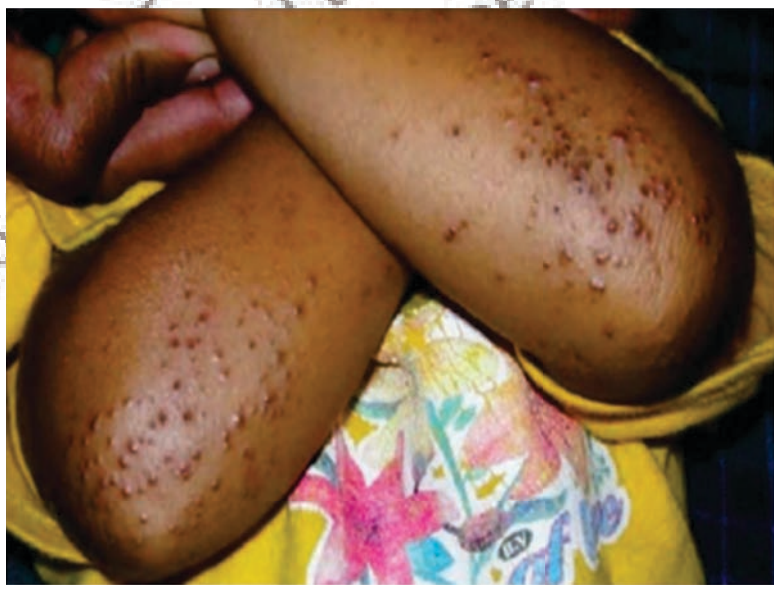
b) Epstein pearls

c) Cutis marmorata

d) Port wine stain

Question 16:

Deficiency of which of the following nutrients will not cause the finding shown in the image given below?



a) Essential fatty acids

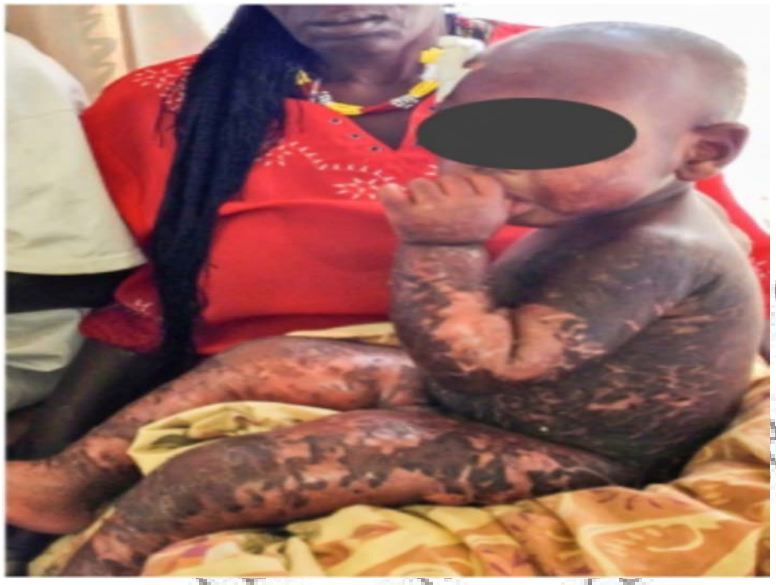
b) Vitamin A

c) Vitamin C

d) Vitamin D

Question 17:

A child is brought to pediatric OPD with the given skin condition. What is the likely diagnosis?



a) Marasmus

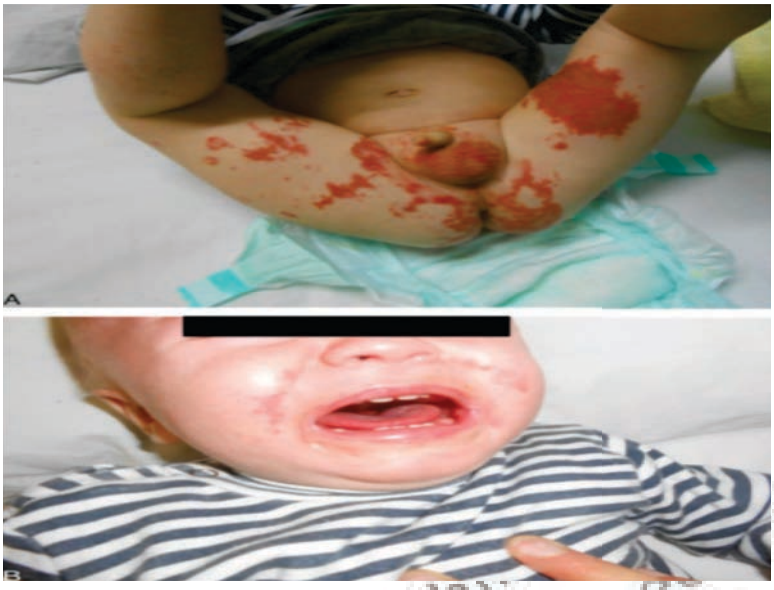
b) Pellagra

c) Vitamin A deficiency

d) Kwashiorkor

Question 18:

A 4-year-old boy has been brought to you by his parents with the following skin lesions. Which of the following is not true regarding this condition?



a) Autosomal recessive inheritance

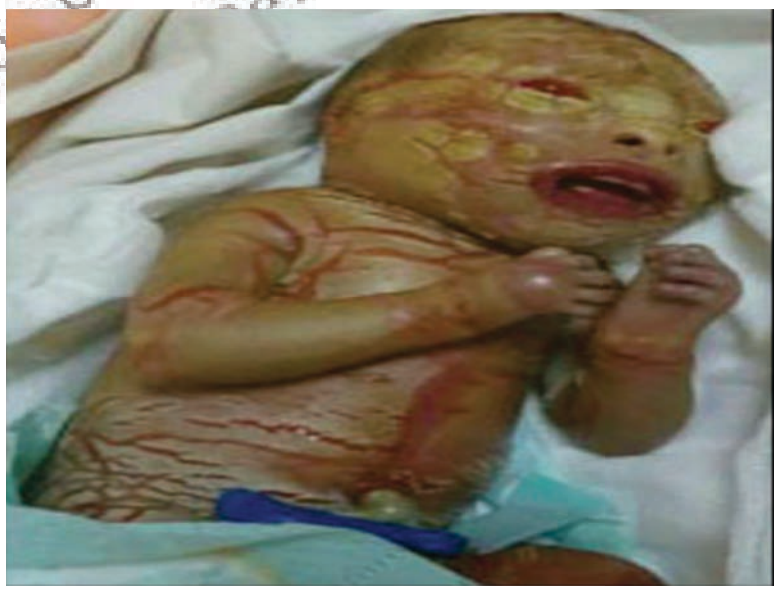
b) Due to zinc deficiency and reverses with zinc supplement

c) Triad of dermatitis, dementia and diarrhoea

d) Mutation of SLC39A4 gene

Question 19:

Identify the skin condition shown in this photograph of a newborn.



a) Icthyosis vulgaris

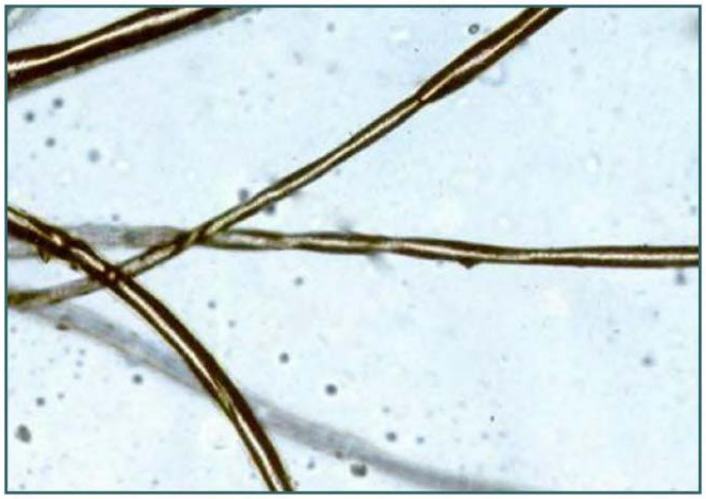
b) Bathing suit icthyosis

c) Harlequin ichthyosis

d) Lamellar ichthyosis

Question 20:

A 4-month-old boy presents with hypotonia, seizures, and failure to thrive. The mother reports that his hair started to appear short, lusterless, and thin when he was 2-months-old. A trichogram of his scalp hair is as shown. What is the diagnosis?



a) Kwashiorkor

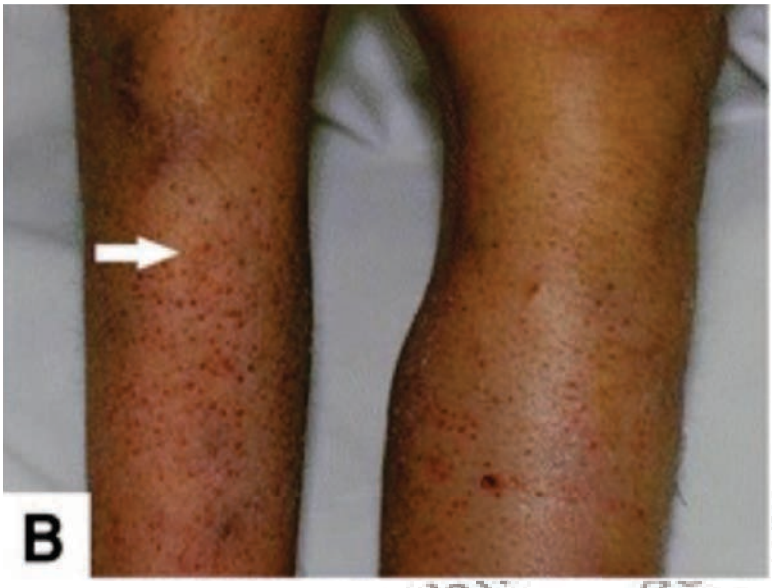
b) Keshan's disease

c) Menke's disease

d) Zinc deficiency

Question 21:

While examining a malnourished patient admitted in the ward, you note the following finding. What is the most likely deficiency?



a) Vitamin A

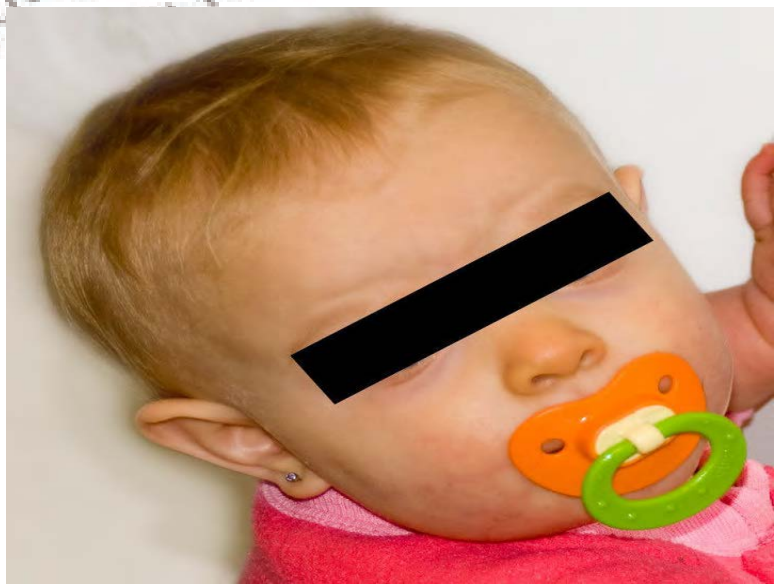
b) Vitamin B12

c) Vitamin C

d) Vitamin D

Question 22:

A mother brings her infant to you with the given finding. Which of the following is not a feature of this hypervitaminosis?



a) Mucous membranes are involved

b) Pseudotumor cerebri maybe seen

c) Pathological bone fractures

d) Pigmentation of the face, palms, and soles

Answer Key

Question No.	Correct Option
1	c
2	b
3	d
4	d
5	b
6	a
7	b
8	d
9	c
10	a
11	a
12	c
13	b
14	d
15	d
16	d
17	d
18	c
19	c
20	c
21	c
22	a

Detailed Explanations

Solution to Question 1:

Xeroderma pigmentosa is an autosomal recessive genodermal disease that occurs due to defective DNA repair as a result of defective nucleotide excision and repair pathway.

It is characterized by severe photosensitivity, UV-induced skin and mucous membrane cancers, and neurodegeneration.

Solution to Question 2:

The characteristic finding of hyperpigmentation along Blaschko's lines is suggestive of incontinentia pigmenti, an X linked dominant disorder. Blaschko's lines are the lines of normal embryological development of skin.

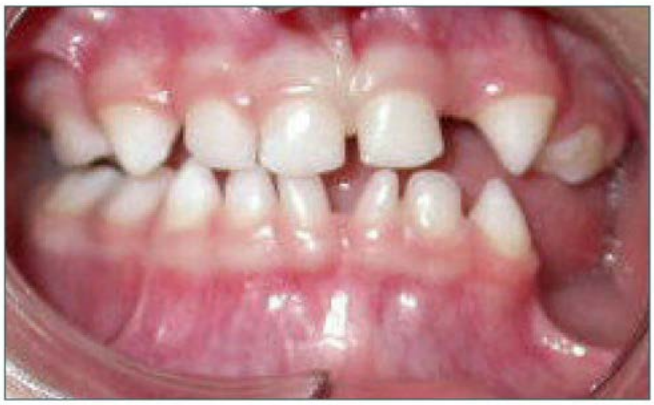
It occurs due to loss-of-function mutation in IKBKG gene which encodes the nuclear factor kappa B essential modulator (NEMO), which is essential for protection against tumor necrosis factors.

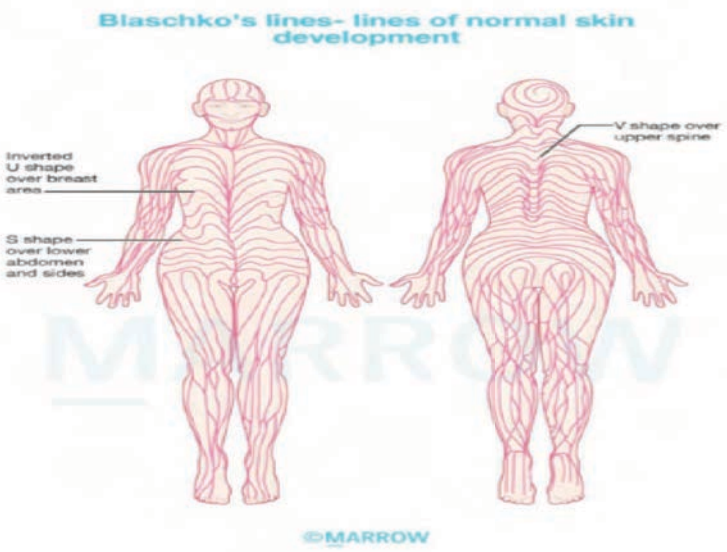
It usually affects females, as it is believed to be lethal in males in utero leading to miscarriage of the affected male conceptuses.

It is characterized by erythematous vesicular rash following Blaschko's lines, malformed cone-shaped teeth, onychodystrophy, and alopecia.

The image given below shows cone-shaped teeth.

Cone-shaped teeth in Incontinentia pigmenti

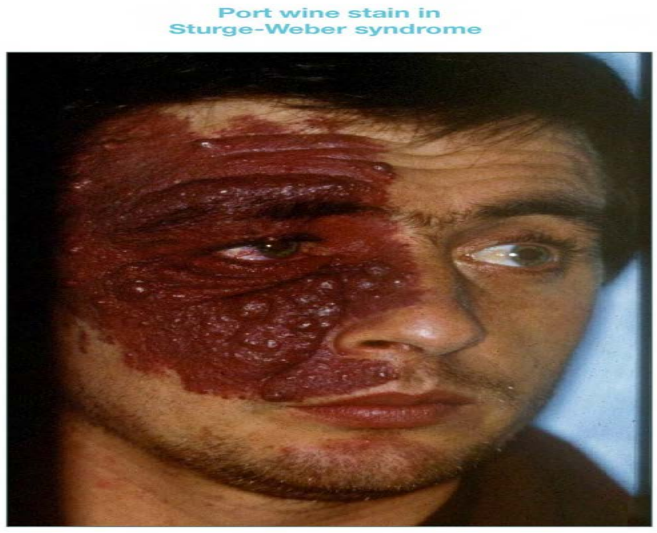




Solution to Question 3:

The clinical scenario describes unilateral seizure activity with a port-wine stain, suggestive of Sturge–Weber syndrome (SWS), a severe neurocutaneous disorder.

The port-wine stain is a vascular plaque (capillary malformation) over the lateral aspect of the forehead mainly involving the territory of ophthalmic(V1) and maxillary (V2) division of the trigeminal nerve. It presents with ipsilateral leptomeningeal angiomas and contralateral seizures or hemiparesis.



Solution to Question 4:

Muir–Torre syndrome is a rare autosomal dominant disorder of DNA mismatch repair.

It occurs due to mutation in one of the DNA mismatch repair genes (MSH■2, MLH■1, MSH■6). It is characterized by sebaceous gland neoplasms, keratoacanthomas associated with gastrointestinal and genitourinary malignancies.

Solution to Question 5:

The CT brain shows tram-track cortical calcifications, a characteristic feature of Sturge-Weber syndrome.

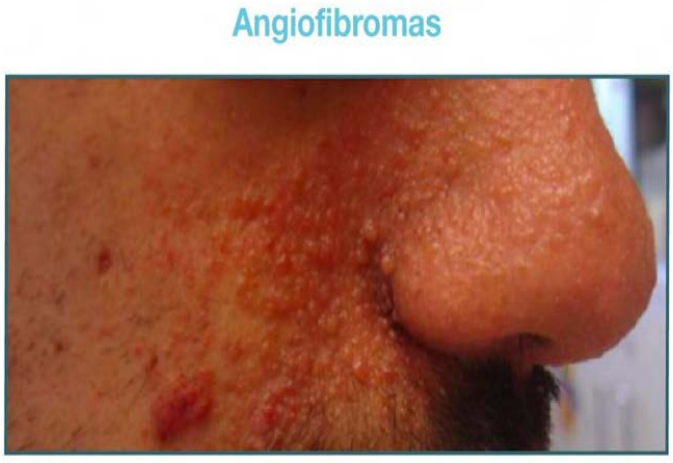
It occurs due to leptomeningeal hemangioma, resulting in a vascular steal affecting the subjacent cortex and white matter producing localized ischemia and calcification.

Solution to Question 6:

The image shows a periungual fibroma or Koenen tumor, which is characteristic of tuberous sclerosis (TS). They appear at or after puberty as smooth, firm, flesh-colored excrescences emerging from the nail folds.

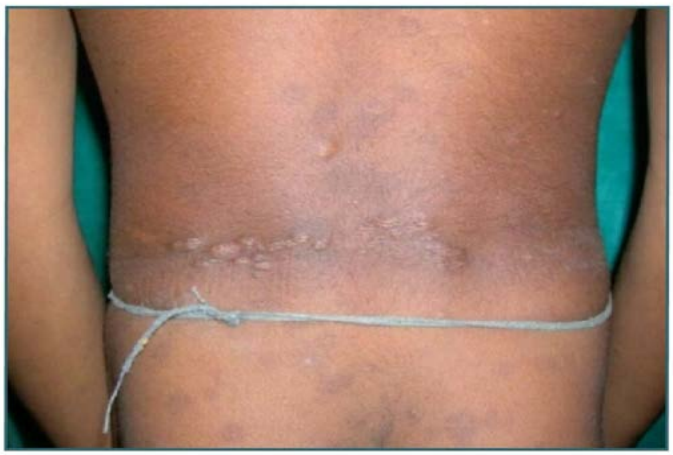
Other cutaneous features of tuberous sclerosis:

• Angiofibromas - Firm, discrete, red-brown, telangiectatic papules, 1 to 10 mm in diameter that become more extensive at puberty and then remain unchanged. They extend from the nasolabial furrows to the cheeks and chin and are occasionally found in the ears.

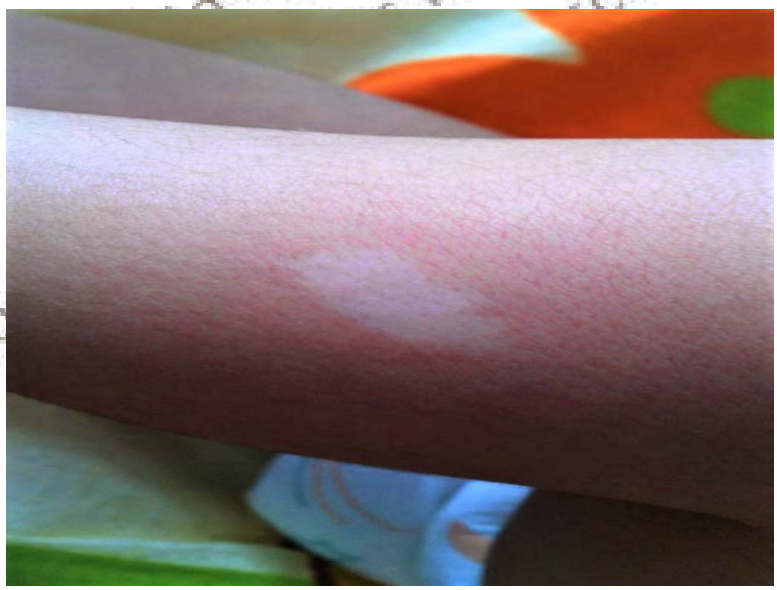


• Shagreen patch - An irregularly thickened, slightly elevated, soft, skin-colored plaque, usually in the lumbosacral region.

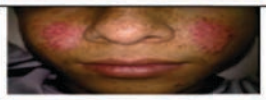
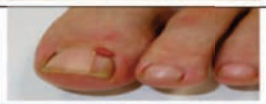
Shagreen patch



• Ash-leaf macule - White ovoid or ash■leaf■shaped macules, 1–3 cm in length, most easily detectable by examination under Wood's light, are frequently present on the trunk or limbs. They are a valuable physical sign as they may be found at birth or in early infancy, some years before other signs of the disease develop.



• Other cutaneous manifestations- include firm fibromatous plaques, especially on the forehead and scalp, soft pedunculated fibromas around the neck and axillae, and poliosis.

Hypopigmented macules (ash leaf spots)	
Facial angiofibromas (Pringle nodules or adenoma sebaceum)	
Fibrous plaques of the forehead	
Confetti lesions: variant of leukoderma spots	
Shagreen patches: leathery plaques of sub-epidermal fibrosis	
Periungual fibroma (Koenen tumours)	

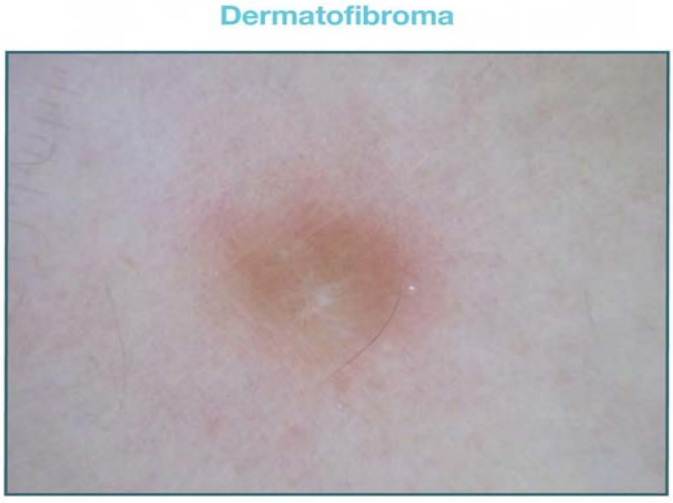
Solution to Question 7:

Buttonhole sign is seen in type 1 neurofibromatosis (Von Recklinghausen's disease).

Neurofibromas can be invaginated into the subcutis with the tip of the index finger back and they reappear after the pressure is released. This is the buttonhole sign.

This sign is also positive in anetoderma and dermatofibroma.

The image below shows a dermatofibroma.



Solution to Question 8:

The image shows fish-like scales with dry skin, characteristically seen in ichthyosis vulgaris (icthyos-fish).

Ichthyosis vulgaris is an autosomal dominant disorder, that occurs due to reduced or absence of filaggrin protein and granular layer. It occurs when the skin does not shed the dead skin cells. This leads to dry, dead skin cells that accumulate in small patches on the surface, especially on the arms and legs. It's also called the 'fish scale disease'.

Features	Ichthyosis Vulgaris	XLR-Ichthyosis
Defect	Filaggrin protein	Steroid sulphatase enzyme
Scales	Fine scales	Dark plate-like adherent scales
Spared areas	Flexors and face	Palms and soles
Associations	Keratosis pilarisHyperlinear palms	Corneal opacitiesCryptorchidism

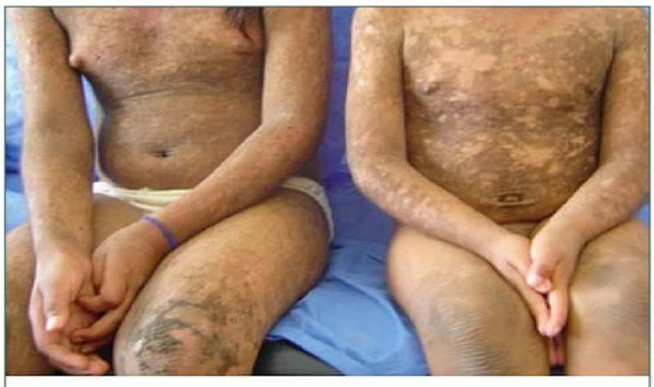
Solution to Question 9:

X-linked recessive ichthyosis is a disease affecting only males and presenting with large, generalized dirty brown-black scales encroaching flexures along with cryptorchidism.

It is due to a mutation in the STS gene encoding steroid sulfatase.

At the age of 2–6 months, usually large thick dark brown to yellow■brown hyperkeratosis develop covering the trunk, the extremities and the neck. Skin biopsy shows hyperkeratosis with hypergranulosis. Palms, soles, and larger flexures are spared. Deep stromal corneal opacity is a frequent finding.

X-linked recessive Ichthyosis



Dirty brown hyperkeratoses over trunk

Solution to Question 10:

The clinical picture shows a neonate encased in a shiny, parchment-like membrane (collodion baby) suggestive of a disorder belonging to the autosomal recessive congenital ichthyosis spectrum.

Ichthyosis vulgaris is not a part of this disease spectrum. It does not present at birth and is therefore an unlikely diagnosis.

Ichthyosis vulgaris is an autosomal dominant condition caused due to a mutation in the filaggrin gene (FLG). It develops in the first few months of life. Patients exhibit accentuated palmar and plantar creases and have dry scaly skin. The scales appear light grey and cover the extensor surfaces of the limbs and the trunk. It usually spares the groin and larger flexures. Immunohistochemistry reveals an absent or markedly reduced filaggrin signal.

Autosomal recessive congenital ichthyosis spectrum includes the following:

• Harlequin ichthyosis (HI)

• Bathing suit ichthyosis (BSI)

• Lamellar ichthyosis (LI)

• Congenital ichthyosiform erythroderma (CIE)

• Self- improving congenital ichthyosis (SICI)

• Transient manifestations, such as collodion baby.

Solution to Question 11:

A neonate encased in a shiny parchment■like membrane is called a collodion baby. It is the presentation for all autosomal recessive congenital ichthyoses (except for Harlequin ichthyosis).

The membrane usually peels off within the first 4 weeks of life. Initially, the clinical presentation can be quite severe and often includes ectropion and everted lips of different degrees. This later clears.

Collodion babies look alike at birth, but later take different clinical courses such as:

• Lamellar ichthyosis - shedding of the collodion membrane is followed by development of large dark grey/brownish scales affecting the trunk and scalp, but sparing the face and extremities

• Bathing suit ichthyosis - develop a lamellar type of ichthyosis that spares the face and the extremities and follows a bathing suits distribution

• Congenital ichthyosiform erythroderma

• Self■healing collodion baby

• Acral self■healing collodion baby

Note: That several syndromic types of congenital ichthyosis such as trichothiodystrophy or Gaucher syndrome type 2 also typically present as collodion baby.

Solution to Question 12:

The image shows Lisch's nodules, the most common ocular manifestation of neurofibromatosis type 1.

These are melanocytic hamartomas, which are usually brown or yellow in color. They are found as round elevations on the surface of the iris, often visible to the naked eye. However, optimal evaluation is done by slit-lamp examination.

They do not produce visual impairment.

Solution to Question 13:

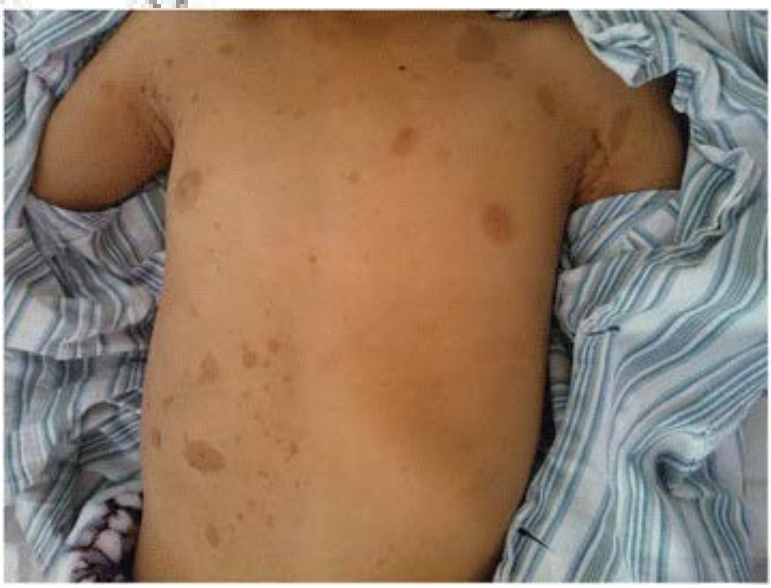
The images show widespread neurofibromas and optic nerve glioma which are diagnostic of neurofibromatosis-I (NF-I). Confetti skin lesions are not seen in NF, but in tuberous sclerosis.

It is an autosomal dominant disorder.

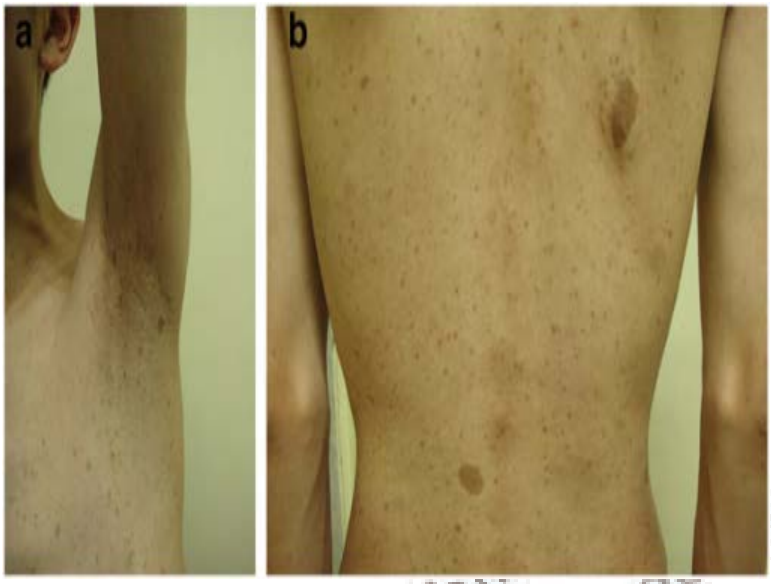
For diagnosis of NF-I, two or more of the following should be present:

- 6 or more café-au-lait spots
- 2 or more neurofibromas or one plexiform neuroma
- Freckling in the axillary or inguinal region
- 2 or more Lisch nodules
- Dysplasia of the sphenoidal or tibial bones
- First degree relative with NF1
- Optic gliomas

The image below shows multiple café-au-lait spots distributed over the body.



The image below shows neurofibromatosis: axillary freckling and café-au-lait spots.



Solution to Question 14:

The given image shows multiple telangiectasias of conjunctival vessels. This along with DNA repair defect point towards ataxia-telangiectasia (AT) or Louis–Bar syndrome. Progressive cerebellar degeneration is the first clinical manifestation in ataxia-telangiectasia, presenting at about 1 year of age.

AT is a rare autosomal-recessive disorder. There is chromosomal instability due to inactivating mutations in the ATM gene. The ATM protein kinase plays a key role in the control of double-strand break DNA repair.

It is a multisystem disorder characterized by ataxia and mucocutaneous telangiectasia. Cutaneous features include:

• Telangiectasias - initially conjunctival, most prominent on face

• Premature hair greying

• Café■au■lait spots

• Pigmentary changes - poikiloderma.

Other cardinal features of AT are:

• Immunodeficiency - increased susceptibility to infections

• Hypogonadism

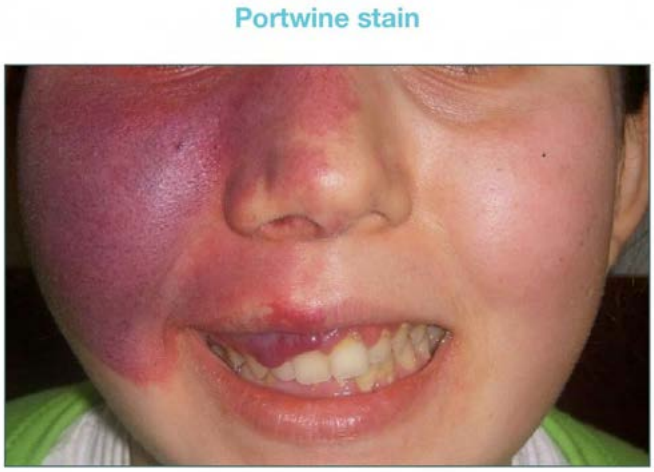
• Sensitivity to ionizing radiation

• Insulin resistance

• Predisposition to cancer

Solution to Question 15:

Port-wine stain represents progressive ectasia of superficial vascular plexus mostly involving the face. It does not resolve spontaneously and is usually treated by a 585 nm pulsed dye laser.



Solution to Question 16:

The image shows phrynoderma. It is not associated with vitamin D deficiency.

Phrynoderma (toad skin) is common in children in the 5-15 year age group. Earlier thought to be purely due to vitamin A deficiency, phrynoderma has now been associated with other nutritional deficiencies, including those of B complex, riboflavin, vitamin C, vitamin E, and essential fatty acids and malnutrition.

It is a non-specific finding that can be associated with various conditions:

• Liver cirrhosis

• Malabsorption syndromes

• Anorexia nervosa

• Alcohol abuse

• Nutritional deficiency following bariatric surgery

It manifests as groups of papules, each one around 3-4 mm in diameter, with a central keratotic plug. The papules have a follicular distribution and give the skin a rough texture. The elbows and knees are the most commonly affected areas, but the buttocks and extensor surfaces of the limbs may also be affected.

All patients with phrynoderma should have their vitamin A levels measured.

Treatment involves the correction of poor diet and administration of multivitamin preparations.

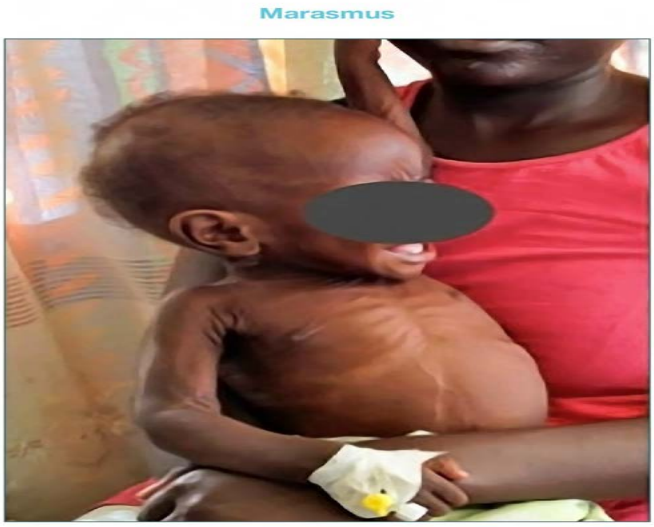
Solution to Question 17:

The given image shows peripheral edema and a ‘flaky paint’ dermatitis seen characteristically in kwashiorkor.

This dermatosis has been likened to ‘cracked skin’, ‘peeling paint’, ‘enamel paint’, ‘flaky paint’ or ‘crazy paving’ due to the typical scales and irregular fissuring noted on examination. Over time, more defined plaques may arise that may be more concentrated in areas of friction such as the intertriginous areas.

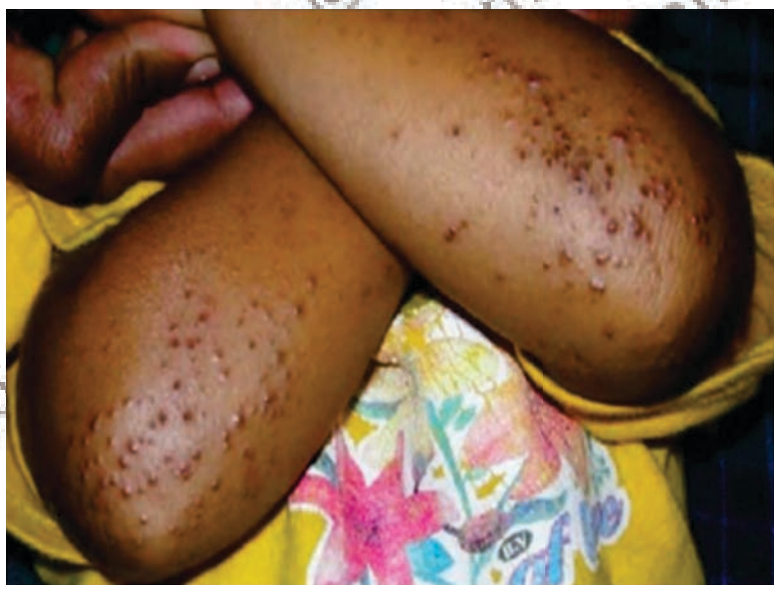
Peripheral edema is a consistent feature due to the associated hypoproteinaemia. Abdominal distention is a feature observed in children and has been attributed to hepatomegaly from increased fatty deposition due to a lack of available apolipoproteins.

Option A: Loss of subcutaneous tissue, growth stunting, dyspigmentation, and desquamative changes is seen in marasmus.



Option B: Casal's paint necklace is a lesion seen around the neck, which is a characteristic feature seen in pellagra, which is caused due to the deficiency of niacin or nicotinic acid.

Option C: Phrynoderma or toad skin is seen in vitamin A deficiency. It is seen in deficiency of vitamin B complex, C, E, and essential fatty acids as well.



Solution to Question 18:

The image shows acrodermatitis enteropathica. It is classically associated with:

• Diarrhea

• Alopecia

• Periorificial and acral cutaneous eruptions.

Zinc deficiency can be inherited (acrodermatitis enteropathica) or acquired.

Acrodermatitis enteropathica is an autosomal recessive disorder caused by a mutation in the intestinal zinc transporter gene, SLC39A4, which leads to deficiency of zinc.

Children commonly present with symmetrical, eczematous plaques that become vesicular, bullous, pustular or erosive with characteristic crusting at the edges. The perioral eruption usually spares the upper lip, giving it a 'U■shaped' or 'horseshoe■shaped' appearance.

Zinc supplementation rapidly improves the condition within 24 to 48 hours. If untreated, it maybe fatal.

Mnemonic: DEAL for acrodermatitis enteropathica:

• Diarrhoea

• Eczematous dermatitis

• Alopecia

• Lethargy

Solution to Question 19:

The neonate is most likely suffering from Harlequin ichthyosis, as evidenced by the presence of armor-like skin.

It is the most devastating type of autosomal recessive congenital icthyosis. It is due to mutations of the ABCA12 gene. The gene plays a role in lamellar body formation in the stratum granulosum and desquamation of the stratum corneum.

It presents in the neonatal period with armor■like skin (truncal plates with fissuring). It can impair body movement and breathing. Bilateral ectropion and eclabium are present. Respiratory problems are the major cause of death due to alveolar collapse in neonates. They are also prone to skin and lung infections.

Defective lamellar bodies in the stratum granulosum seen in electron microscopy are pathognomic of Harlequin ichthyosis. In early life, constant supportive care is required. Treatment includes moisturizing cream, antibiotics, etretinate, or retinoids.

Other options -

Option A) Ichthyosis vulgaris - The most common type of ichthyosis, involving mutations in filaggrin protein. Filaggrin is an epidermal protein that helps retain moisture in the stratum corneum. Ichthyosis is not present at birth but develops during the first months of life. The scaling usually involves the extensor surfaces of the extremities with flexural sparing. They are strongly correlated with atopic dermatitis and other forms of atopy such as allergic rhinitis, asthma, etc.

Option B) Bathing suit ichthyosis is a type of congenital ichthyosis caused by mutations in the TGM1 gene. It presents as a collodion baby at birth where the neonate is encased in a shiny parchment■like membrane. Shedding of the collodion membrane is followed by the development of large dark grey/brownish scales affecting the trunk and the scalp, but sparing the face and extremities resembling a bathing suit. The disease tends to become worse in the summer months and improves in winter.

Option D) Lamellar ichthyosis is also a congenital ichthyosis, involving mutations in the TGM1 gene. It is characterized by large plate■like dark■brown hyperkeratoses covering the entire body with mild palmoplantar involvement. The extreme spectrum of lamellar ichthyosis is congenital ichthyosiform erythroderma (CIE) which is similar to erythroderma seen in psoriasis.

Solution to Question 20:

The given image shows pili torti seen in Menke's syndrome or trichopoliodystrophy or steely hair disease.

Pili torti refers to hair showing 180-degree twists under the microscope. Scalp and eyebrow hair appear short, sparse, lustreless, tangled, and depigmented. Hair changes can be the first sign of disease at 1–2 months of age.

It is an X■linked recessive disorder. At 2–3 months of age, children with Menke's disease present with:

• Loss of developmental milestones

• Hypotonia

• Seizures

• Failure to thrive

• Cherubic appearance - depressed nasal bridge, pudgy cheeks, ‘cupids bow’ upper lip, and doughy skin.

Option A: In kwashiorkor, hair develops a lustreless, red■brown color that may show alternation with more normal color; this so■called ‘flag sign’ corresponds to alternating periods of significant undernutrition and improved nutrition.

Option B: Selenium deficiency presents as brittle hair and may be associated with exfoliative dermatitis on the scalp.

Option D: In zinc deficiency, hair is dry and brittle, and large areas of alopecia may arise.

Solution to Question 21:

The given image shows corkscrew-like hair and the perifollicular purpura, characteristic of vitamin C deficiency or scurvy.

Scurvy develops 1–3 months after a vitamin C deficient diet. The cutaneous manifestations of scurvy include:

• Phrynoderma

• Corkscrew hairs - fractured and coiled hairs due to impaired keratin cross■links by disulfide bonds

• Perifollicular hemorrhage and purpura

• Lower limb edema

• Splinter hemorrhages

Solution to Question 22:

This image shows carotenoderma (of the nose), associated with hypervitaminosis A. Mucous membranes are uninvolved in this condition.

Carotenoderma is a condition associated with hypervitaminosis A. It is characterized by prominent yellow■orange pigmentation of the face, palms, and soles of the feet. It can mimic jaundice and medication■induced pigmentation, but unlike jaundice, carotenoderma spares the mucous membranes.

Connective Tissue Disorders

Question 1:

Which of the following is the most common site involved in discoid lupus erythematosus?

a) Fingers

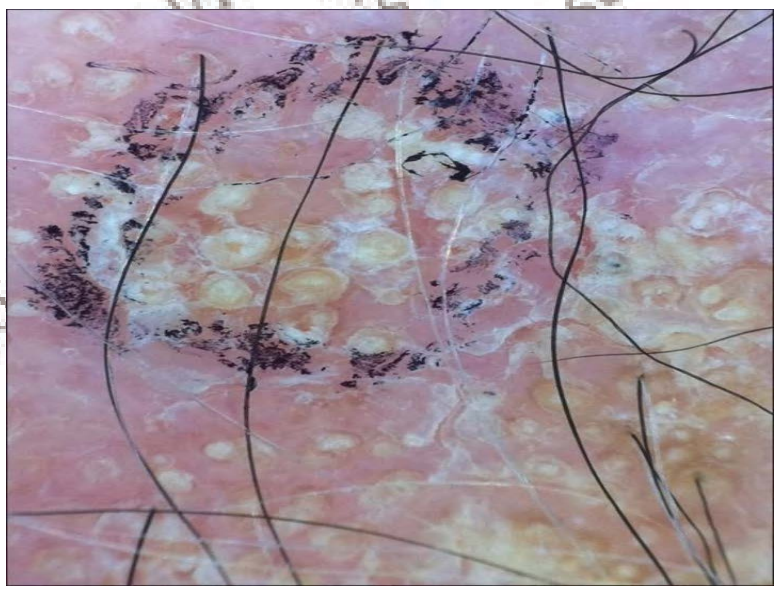
b) Scalp and face

c) Trunk

d) Side of neck

Question 2:

A dermoscopy examination in a patient who presented with alopecia revealed the following finding. Identify the condition.



a) Alopecia aerata

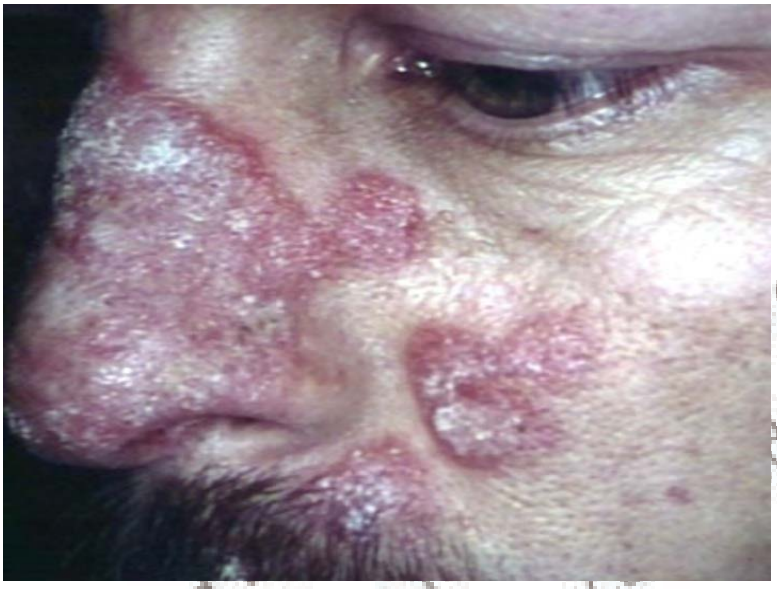
b) Discoid lupus erythematosus

c) Dermatomyositis

d) Lupus vulgaris

Question 3:

A 40-year-old man presented to the dermatologist with alopecia and the following disfiguring lesions. His history was suggestive of Raynaud's phenomenon. On examination, wide follicular pits were noted in the concha. ANA titres were normal. Identify the false statement regarding his condition.



a) Topical steroids is the first line treatment for localised lesions

b) Histology shows lymphocytic interface dermatitis with basal layer degeneration

c) Antimalarials can be used for treatment

d) Non-scarring alopecia is typically seen in this condition

Question 4:

Which of the following is the most common cutaneous presentation of subacute cutaneous lupus erythematosus?

a) Scarring papulosquamous eruption

b) Non-scarring papulosquamous eruption

c) Annular polycyclic lesions

d) Discoid plaque with adherent scale

Question 5:

Which of the following is the most common cutaneous manifestation of systemic lupus erythematosus?

a) Chronic urticaria

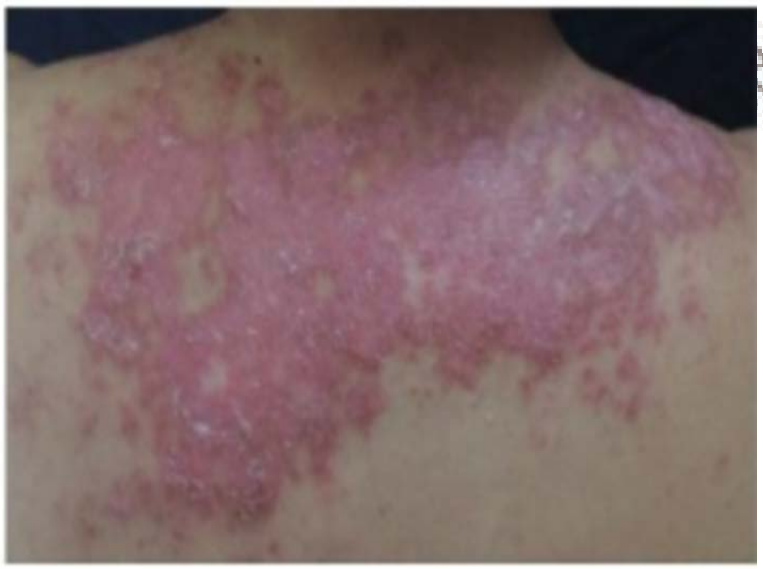
b) Malar rash

c) Raynaud's Phenomenon

d) Photosensitivity

Question 6:

A young woman presented to the OPD with the following rash. She also complained of myalgia, arthralgia, and hair loss. Her history was significant for sun-induced skin problems. Lupus band test was found to be positive only in the involved skin. Which of the following antibodies is closely associated with this condition?



a) Anti-Ro (SS-A)

b) Anti-Ribosomal P

c) Anti-La (SS-B)

d) Anti-RNP

Question 7:

A 20-year-old woman presented to the hospital with complaints of jamais vu and new-onset seizures. CT brain was normal. Her laboratory values are given below. Which of the following is not a dermatological manifestation of this disorder?

a) Discoid lesions

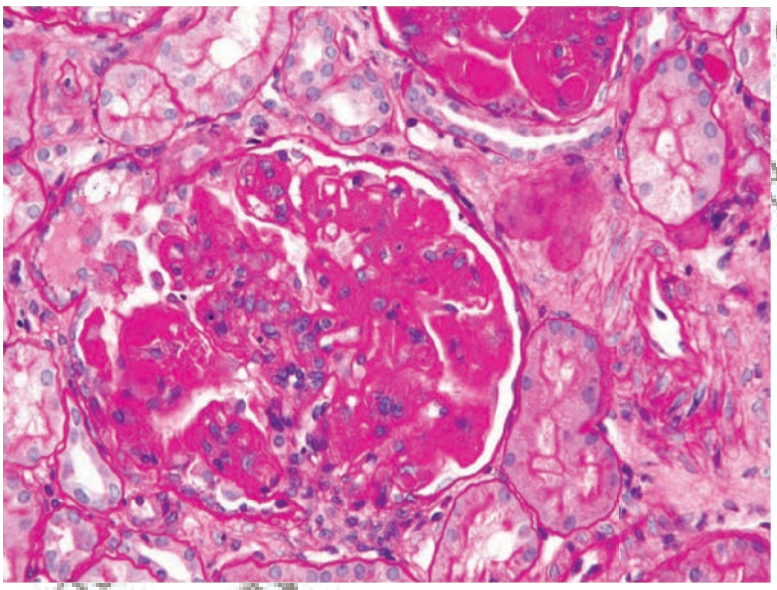
b) Painless ulcers on hard palate

c) Photosensitivity

d) Salmon rash

Question 8:

A 19-year-old woman presented to the hospital with complaints of progressive shortness of breath, chest pain, and lower extremity edema over the past month. Her initial laboratory values are given below. A renal biopsy showed the following. Which of the following antibodies is considered to be most specific for this disorder?



a) SS-A(Ro)

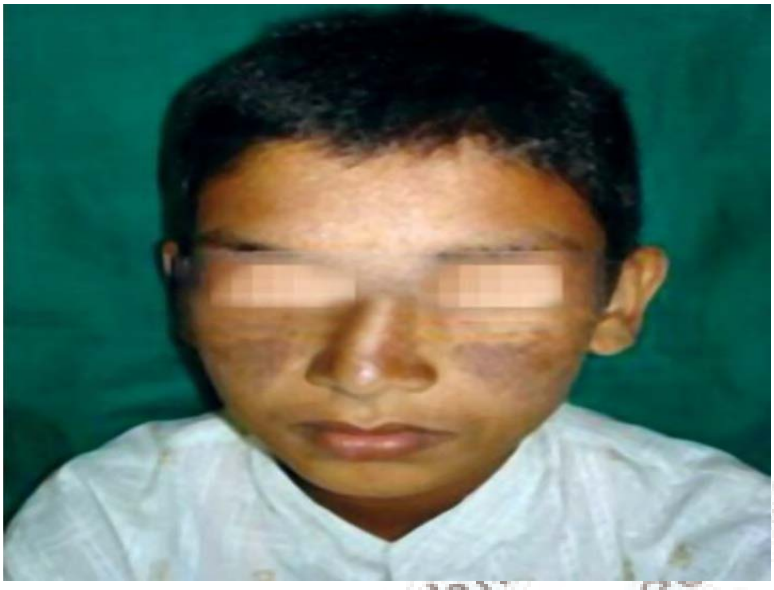
b) Anti-Sm

c) Anti ds-DNA

d) Antihistone

Question 9:

A 16-year-old boy who presented with joint pains and the following rash was diagnosed with SLE after a thorough work-up. Which of the following statements is incorrect regarding his diagnosis?



a) Anti-ds DNA correlates with disease activity

b) Anti-Sm correlates with disease activity

c) Anti-Ro antibody is associated with photosensitivity

d) Rim pattern of ANA positivity is specific for SLE

Question 10:

An infant born to an asymptomatic mother was found to have typical cutaneous and serological findings of neonatal lupus syndrome. Anti-Ro and anti-La antibodies were detected in both the mother and the child. Which of the following statements is true regarding the child's condition?

a) Approximately 90% of the infants manifest cutaneous lesions

b) Rash resolves over few months with scarring

c) UV exposure has no effect on the rash

d) The most common finding is raccoon sign

Question 11:

A 33-year-old patient presented with myalgia, dif■culty in climbing stairs, getting up from squatting position, and combing his hair for 3 months. An edematous purplish-red periorbital rash was seen. Investigations revealed elevated creatinine kinase levels. Muscle biopsy revealed perifascicular and perivascular lymphocytic infiltrates with muscle fiber degeneration. Which of the following is not true regarding this condition?

a) Dysphagia points to a worse prognosis

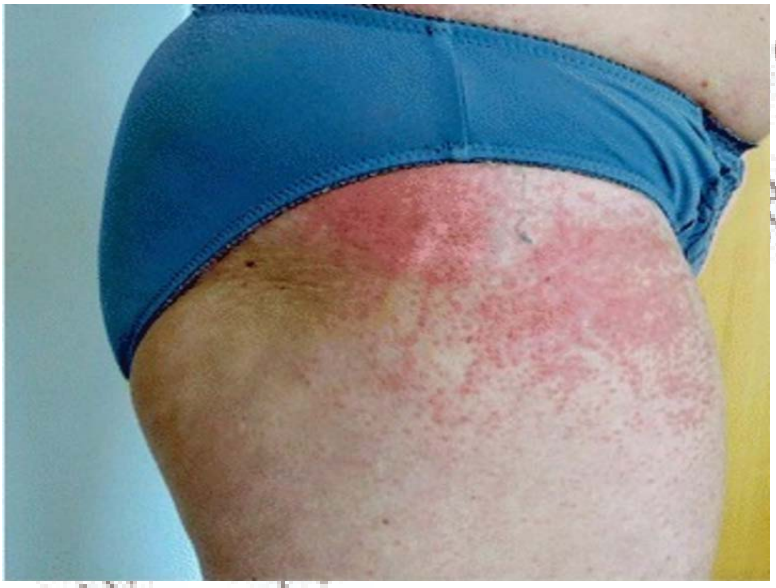
b) Muscle tenderness is common

c) 20 to 40% of patients have an underlying malignancy

d) Dilated capillary loops in nail fold can be seen

Question 12:

In which of the following disorders is the following sign seen?



a) Discoid lupus erythematosus

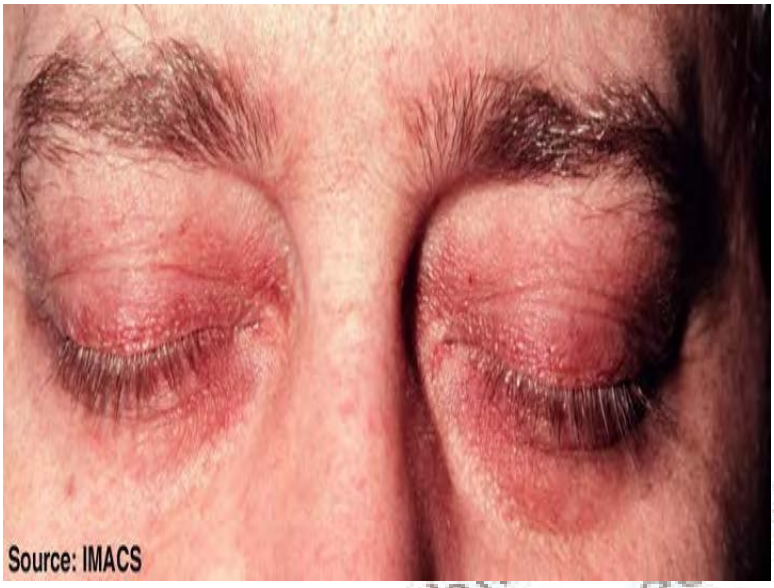
b) Systemic lupus erythematosus

c) Dermatomyositis

d) Localised scleroderma

Question 13:

Which of the following autoantibodies shows a strong association with the given clinical condition?



a) Anti-Mi-2

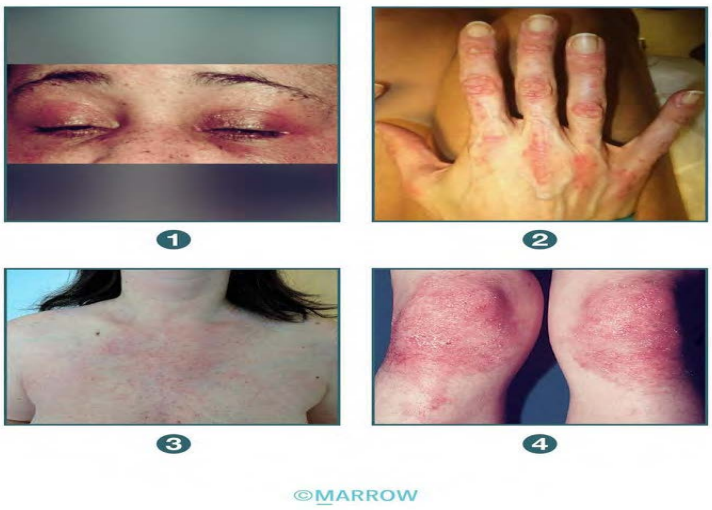
b) Anti P155/P140

c) Anti Jo-1

d) Anti Scl-70

Question 14:

Identify Gottron's sign.



a) 1

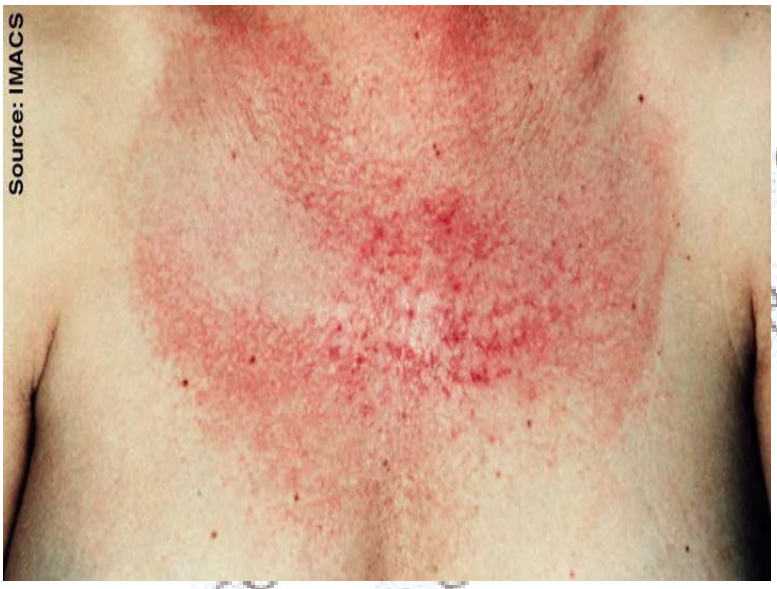
b) 2

c) 3

d) 4

Question 15:

In which of the following conditions is this finding characteristically seen?



a) Discoid lupus erythematosus

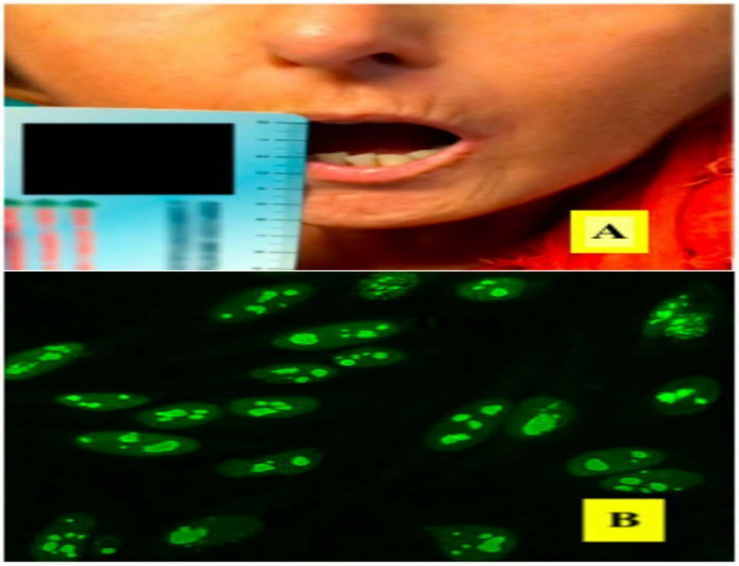
b) Cutaneous scleroderma

c) Systemic lupus erythematosus

d) Dermatomyositis

Question 16:

A 35-year-old female patient came with complaints of her hands turning very pale on exposure to cold for one month. She also gives a history of hand pain and swelling for the past 3 months. She informed that her skin felt firm and tight. Her past medical history is positive for GERD and arthritis. Image A shows a particular feature of this patient. On investigation, she was found to have the following immunofluorescence pattern (image B). Identify the wrong statement regarding her condition.



a) Interstitial lung disease is common in patients with Scl-70 antibodies

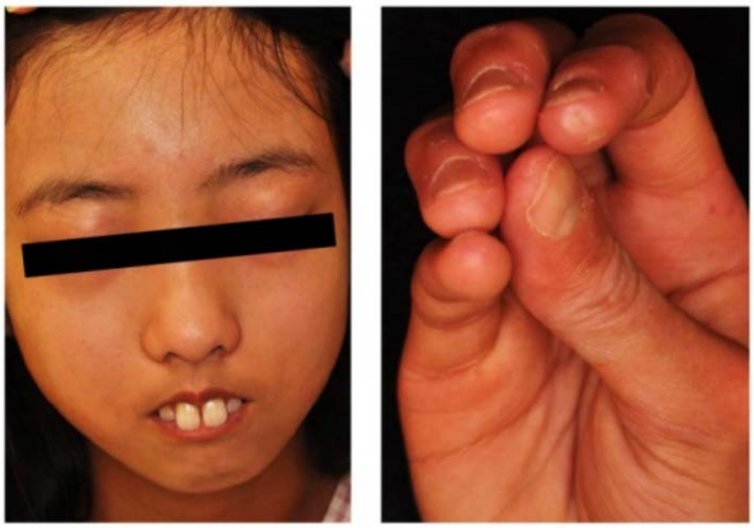
b) Telangiectasias and calcinosis are early manifestations

c) Earliest cutaneous manifestations are non■pitting oedema and puffiness

d) Pruritus correlates with severity of cutaneous sclerosis

Question 17:

Which of the following is not a feature of the condition shown below?



(a) (b)

a) Muscle weakness

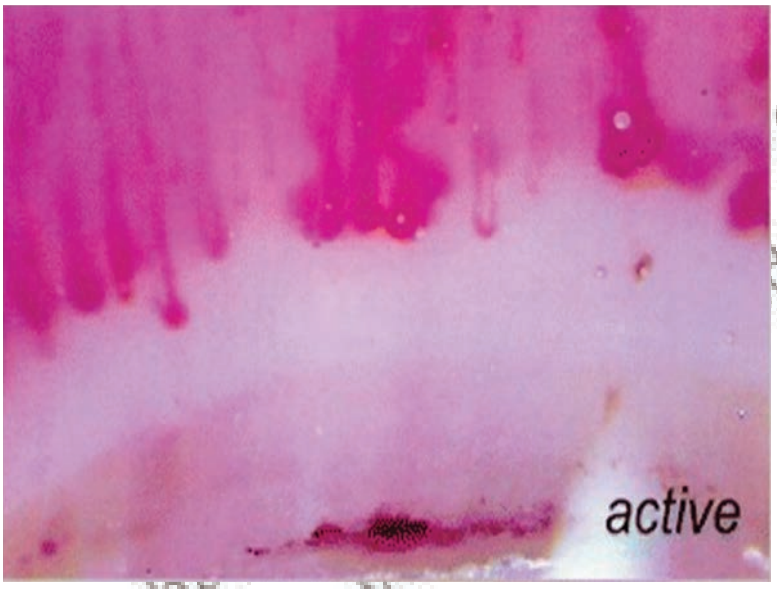
b) Gastroesophageal reflux disease

c) Loss of sweat glands in distal extremities

d) Female preponderance of 9:1

Question 18:

The image shows an investigative modality of nail folds. This along with ANA testing helps in the early diagnosis of:



a) Dermatomyositis

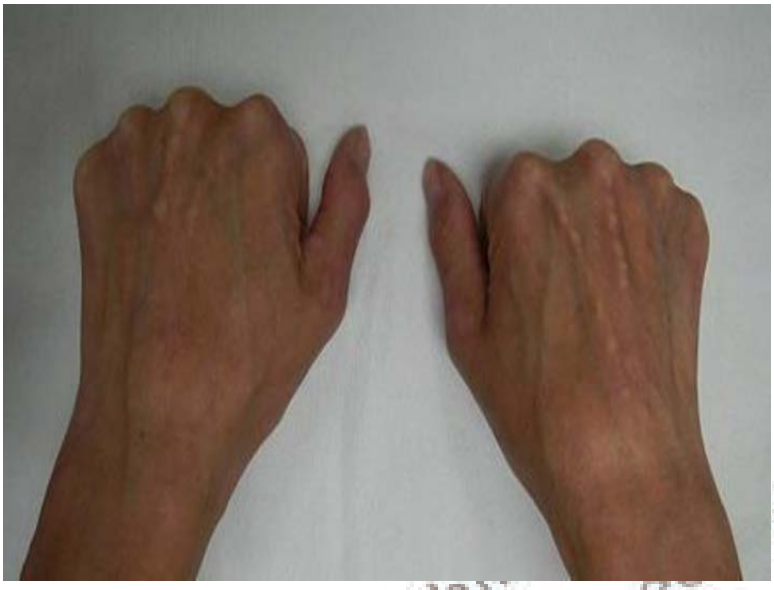
b) Systemic sclerosis

c) Systemic lupus erythematosus

d) Mixed connective tissue disorder

Question 19:

A woman presented to the medicine OPD with complaints of dysphagia and her fingers turning white and then blue when exposed to cold. On examination, she has telangiectasias on the face and the given findings on her hands. Which of the following statements is correct regarding her condition?



a) Anti-centromere antibodies are most commonly found

b) Involvement of skin areas proximal to the knees or elbows

c) Rapid onset and progression of disease

d) Short history and less severe form of Raynaud's phenomenon

Question 20:

Identify the false statement regarding morphea.

a) Plaque morphea is the most common form

b) Absence of sclerodactyly and nail fold capillary changes

c) Antitopoisomerase and anticentromere are usually positive

d) Encoup de Sabre is linear morphea presenting as scarring alopecia

Question 21:

A man presented with salt and pepper skin changes on his chest and back and with shortness of breath. A CT revealed fibrotic changes in the lower lobe of both the lungs. What is the most likely diagnosis?

a) Rheumatoid arthritis

b) Systemic lupus erythematosus

c) Dermatomyositis

d) Systemic sclerosis

Answer Key

Question No.	Correct Option
1	b
2	b
3	d
4	b
5	d
6	a
7	d
8	b
9	b
10	d
11	b
12	c
13	a
14	d
15	d
16	b
17	d
18	b
19	a
20	c
21	d

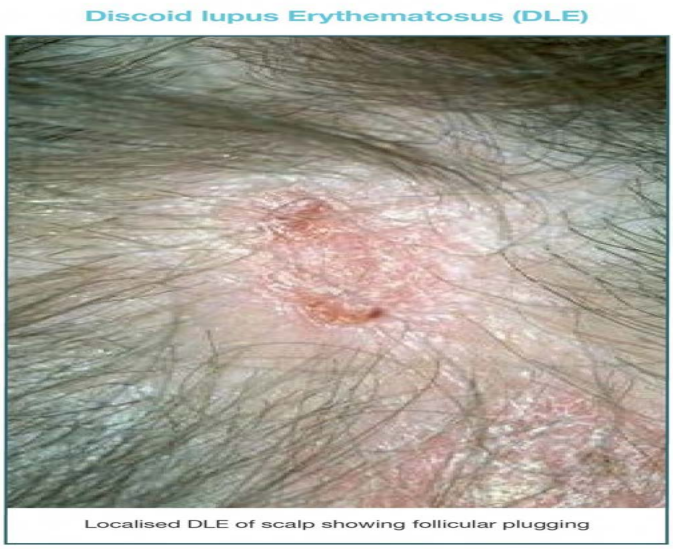
Detailed Explanations

Solution to Question 1:

Discoid lupus erythematosus is a benign inflammatory disorder of the skin, most frequently involving the face and scalp.

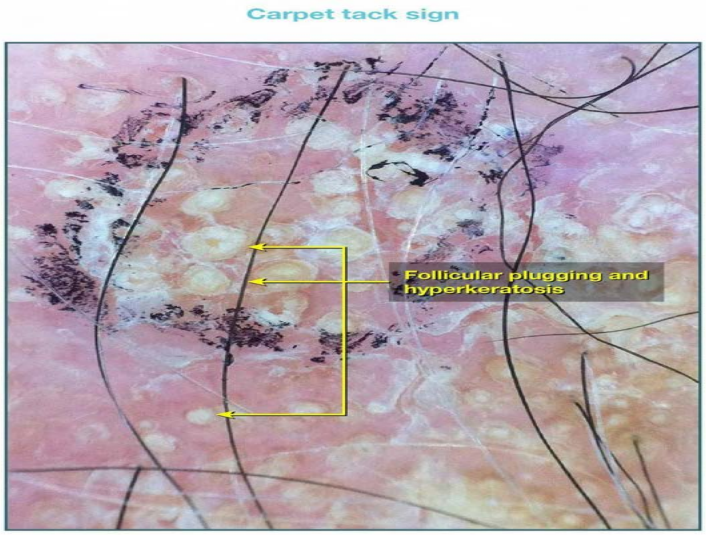
It is characterized by well■defined red, scaly patches of variable size, which heal with atrophy, scarring, and pigmentary changes. The circumscribed or discoid form is the most frequent type of disease and occurs particularly on the cheeks, bridge of the nose, ears, side of the neck, and scalp.

The image below shows a localized discoid lupus erythematosus of the scalp with follicular plugging.

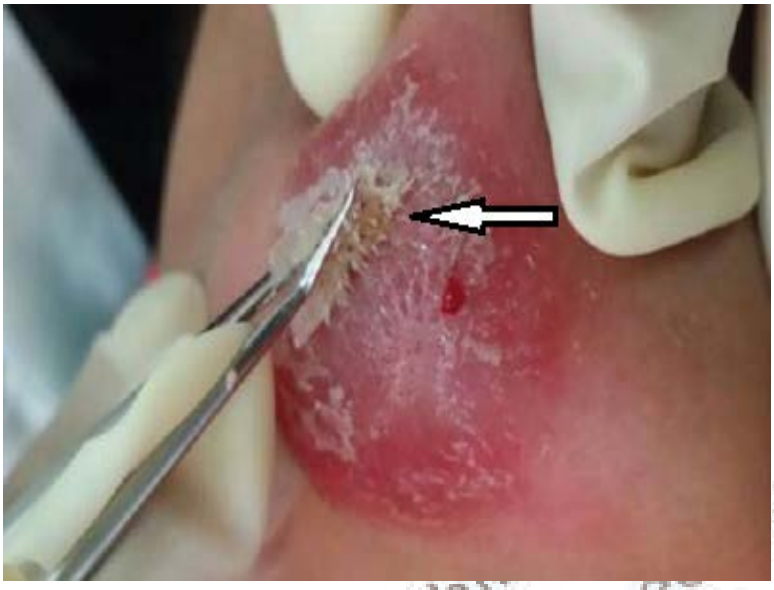


Solution to Question 2:

The image shows hyperkeratosis and plugging of the follicular ostia with keratotic material, otherwise known as the carpet tack sign or tin- tack sign, or cat's tongue sign, seen in discoid lupus erythematosus.



In cutaneous lupus erythematosus or discoid lupus erythematosus, the skin lesions present as well-defined erythematous patches with adherent scaling and peripheral hyperpigmentation. When the scale is removed its undersurface shows horny plugs that have occupied dilated pilosebaceous canals. This is called the 'tin■tack' sign.



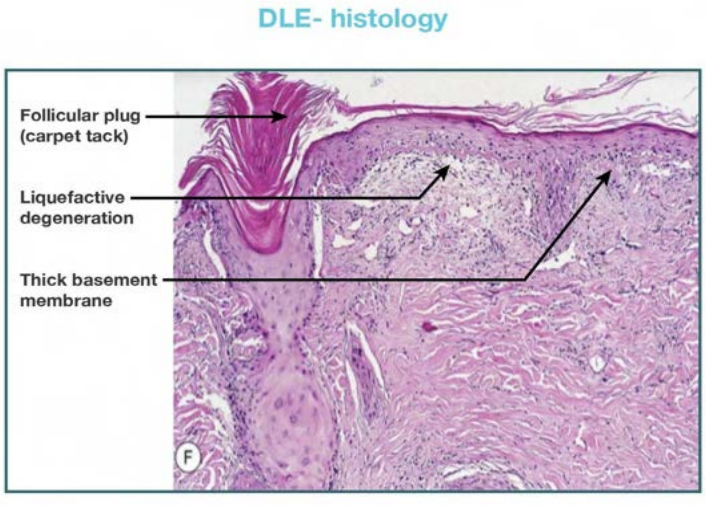
Solution to Question 3:

The clinical scenario along with the image showing discoid lesions on the face with central scarring and active erythematous margins with adherent scales are suggestive of discoid lupus erythematosus. Scarring type of alopecia is seen in discoid lupus erythematosus (DLE).

Histology of DLE shows lymphocytic interface dermatitis with basal layer degeneration, follicular plugging, dermal mucinosis, and epidermal atrophy.

The first-line treatment for localized lesions is topical corticosteroids.

Hydroxychloroquine and chloroquine are oral antimalarial drugs that can be used along with oral steroids and have a good response rate.



Solution to Question 4:

Subacute cutaneous lupus erythematosus presents most commonly as a non■scarring papulosquamous eruption. It can also present as annular polycyclic lesions.

Sites of lesions:

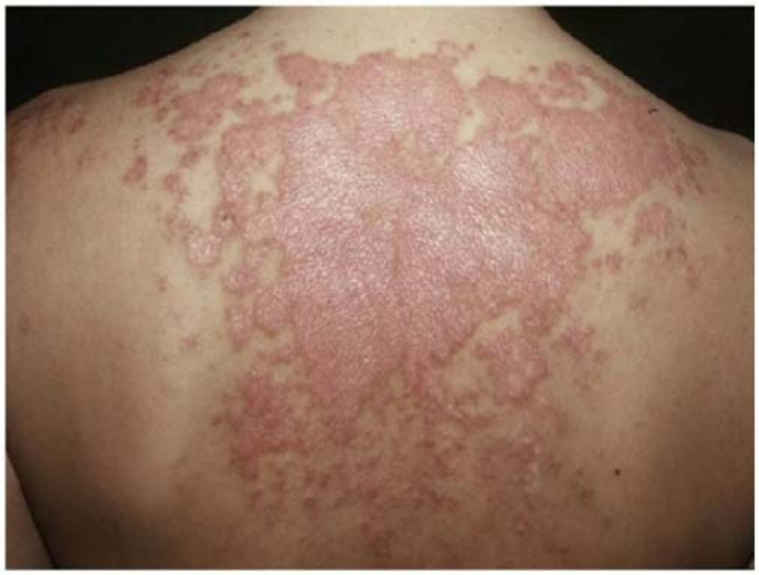
• Above the waist

• Around the neck

• On the trunk

• Outer aspects of the arms

The image below shows psoriasiform lesions of subacute cutaneous lupus erythematosus.



Solution to Question 5:

The most common cutaneous manifestation of systemic lupus erythematosus is photosensitivity.

In decreasing order, the cutaneous manifestations in SLE are:

• Photosensitivity

• Raynaud's phenomenon

• Malar rash

• Chronic urticaria >36 hrs

• Non-scarring alopecia

• Mouth ulceration

Solution to Question 6:

The image shows a psoriasiform papulosquamous lesion on the sun-exposed area(back). Along with the history and the positive lupus band test only in the involved skin, a diagnosis of subacute cutaneous lupus erythematosus can be made. Antibodies to the Ro/SS■A antigen are almost universally present in this subgroup.

Subacute cutaneous lupus erythematosus is a specific 'subset' of lupus in which patients exhibit mainly cutaneous disease and usually have a good prognosis.

The lupus band test (LBT) is a direct immunofluorescence technique for demonstrating a band of localized immunoglobulins at the dermal-epidermal junction in the skin of patients with lupus erythematosus (LE).

Solution to Question 7:

The given clinical details are suggestive of systemic lupus erythematosus (SLE). Salmon rash is seen in adult-onset of Still's disease. It is a rare systemic inflammatory disease characterized by the classic triad of:

• Persistent high spiking fever

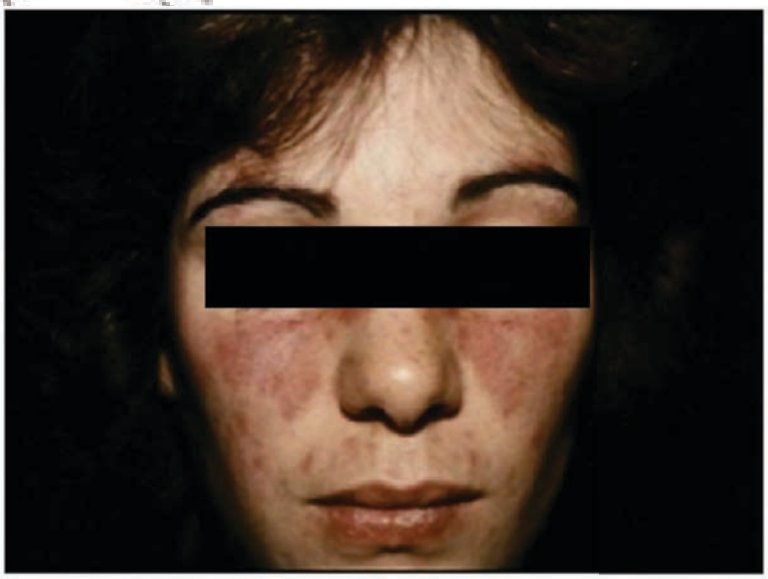
• Joint pain

• Salmon rash

SLE is more common in females (7:1 to 15:1). It is associated with classical erythematous rash, typically sparing the nasolabial folds called malar/butterfly rash.

Discoid rashes resembling discoid lupus erythematosus may also be seen. Clinical photosensitivity in the form of polymorphous light reaction and pruritus is associated with more severe systemic disease.

The image given below shows a malar rash.

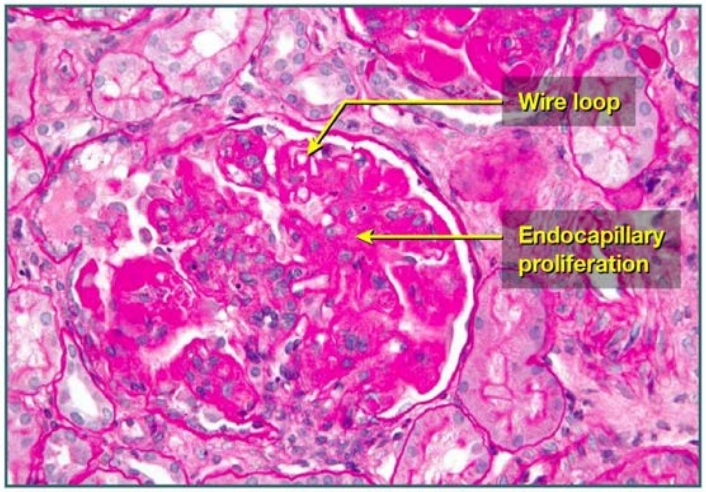


Solution to Question 8:

The given clinical details and histopathology are suggestive of systemic lupus erythematosus (SLE). Anti■Smith (anti■Sm) antibodies are present in only approximately 30% of patients with SLE, but are considered highly specific for the disease and are included in the ACR criteria.

Most sensitive antibody: ANA

In the image below, the glomerulus is hypercellular (endocapillary proliferation). Glomerular capillary loops appear circumferentially thickened, forming a "wire loop" lesion, which is classically seen in class IV or diffuse proliferative lupus nephritis.



Solution to Question 9:

Anti■Smith (anti■Sm) antibodies are present in approximately 30% of patients with SLE, but are considered highly specific for the disease and are included in the ACR criteria, however, they are not of use in monitoring overall lupus disease activity. Anti-ds DNA levels often correlate with disease activity.

The image shows the characteristic malar rash.

Anti■Ro antibody occurs in approximately 30–40% of patients, who have an increased tendency to photosensitivity, secondary Sjögren syndrome, interstitial pneumonitis, shrinking lung syndrome, or deforming arthropathy, as well as being a marker for neonatal lupus.

Rim pattern of ANA positivity is specific for SLE.

Solution to Question 10:

The most common finding in neonatal lupus erythematosus (NLE) is an erythematous, slightly scaly eruption on the face and periorbital skin (raccoon sign/owl eye/eye mask).

NLE is a well■recognized subtype of lupus erythematosus, thought to be caused by the transplacental passage of maternal antibodies.

The most frequent clinical manifestations are cutaneous lesions and congenital heart block (CHB). Approximately 50% of infants manifest skin lesions, which may be present at birth or occur in the first few weeks of life. The eruption can be exacerbated by UV exposure.

The rash improves over the first few months of life and has usually resolved without scarring by 12 months of age. Skin disease is often mild and often requires no treatment.

The image given below shows typical raccoon eyelid lesions in neonatal lupus erythematosus.

Solution to Question 11:

The above clinical scenario is suggestive of dermatomyositis. Muscle tenderness is not common in this disorder.

It is an autoimmune disorder affecting, predominantly, the skin and skeletal muscle and usually presents initially with a facial rash especially around eyelids which can be pruritic and sore. Myositis symptoms are usually weakness and fatigue especially while climbing stairs, raising arms, and standing from sitting due to proximal muscle weakness.

The presence of dysphagia points to a poorer prognosis.

The clinical signs seen in dermatomyositis are as follows:

• Heliotrope rash around eyelids with a lilac hue.

• Gottron papules - flat-topped lichenoid eruption on the proximal and distal interphalangeal joint

• Shawl sign or V sign - fixed erythematous macular erythema)

• Nail fold changes with periungal erythema with visible dilated capillary loops in the proximal nail fold

• Proximal myopathy

• Poikiloderma atrophicans vasculare

• Calcinosis cutis

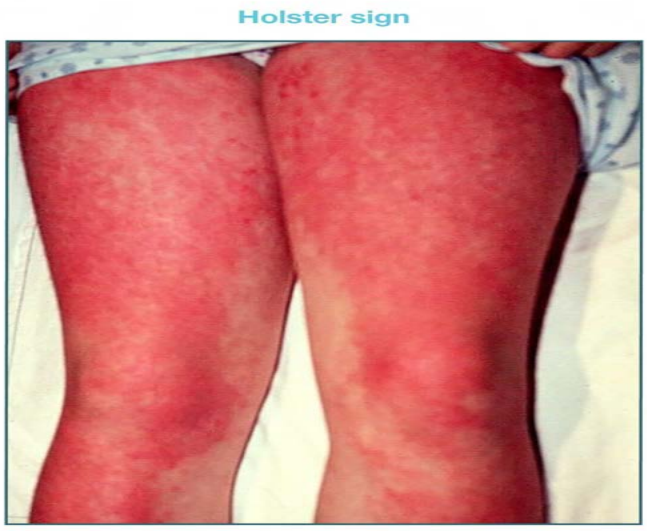
Approximately 20 to 40% of patients have an underlying malignancy (eg, lung, ovarian, breast) and hence screening should be done at the time of diagnosis.

The image below shows ragged cuticle and periungueal erythema in a patient with dermatomyositis.

Solution to Question 12:

The image shows a maculopapular rash on the lateral thigh which is also known as the holster sign, seen in dermatomyositis.

The buttocks are often involved and confluent macular violaceous erythema over the hips and lateral thighs has been termed the 'holster sign' corresponding to the site of hanging a holster.



Solution to Question 13:

The image shows pathognomonic involvement of eyelids in dermatomyositis in which the upper eyelids are preferentially affected with erythema that is lilac in color called heliotrope rash. This is associated with anti-Mi-2 antibodies.

Gottron's papule, heliotrope rash, and shawl sign are associated with anti-Mi2 antibodies.

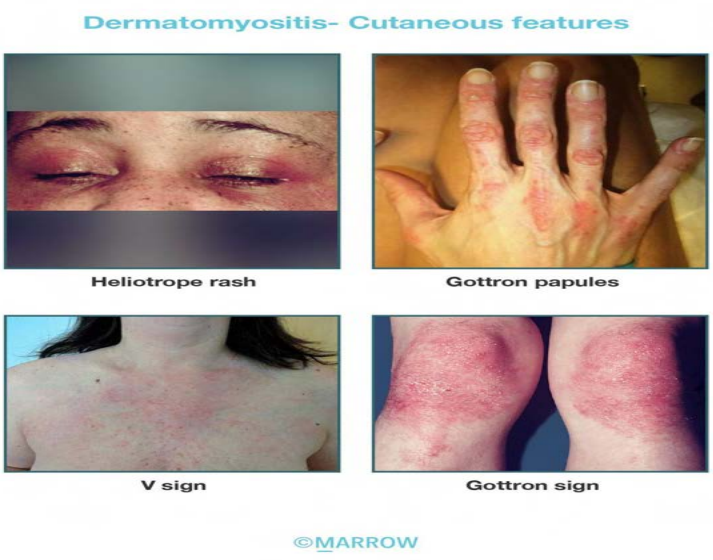
Mechanic hand, Myositis, and ILD (Interstitial Lung Disease) are associated with anti■histidyl tRNA synthetase (anti-Jo-1) antibodies.

Solution to Question 14:

Gottron's sign refers to erythematous or violaceous, macules or patches in the same symmetric distribution pattern but sparing the interphalangeal spaces and sometimes involving elbows and knees.

This should not be confused with Gottron's papules.

Gottron's papules are violaceous (of violet color), lichenoid (red-purple), inflammatory, flat-topped papules on proximal interphalangeal joints, distal interphalangeal joints, and metacarpophalangeal joints.



Solution to Question 15:

The image shows a confluent macular violaceous erythema called the V sign seen in patients of dermatomyositis.

It is an autoimmune disorder affecting, predominantly, the skin and skeletal muscle and usually presents initially with a facial rash, especially around eyelids, which can be pruritic and sore. Myositis symptoms are usually weakness and fatigue especially while climbing stairs, raising arms, and standing from sitting due to proximal muscle weakness.

The presence of dysphagia points to a poorer prognosis.

The clinical signs seen in dermatomyositis are as follows:

• Heliotrope rash around eyelids with a lilac hue.

• Gottron papules - flat-topped lichenoid eruption on the proximal and distal interphalangeal joint

• Shawl sign or V sign - fixed erythematous macular erythema

• Nail fold changes with periungual erythema with visible dilated capillary loops in the proximal nail fold

• Proximal myopathy

• Poikiloderma atrophicans vasculare

• Calcinosis cutis

Solution to Question 16:

The given clinical scenario featuring Raynaud's phenomenon, arthritis, GERD, and calcinosis cutis is suggestive of systemic sclerosis. Mat-like telangiectases on the face and upper trunk and limbs,

and cutaneous calcinosis, most often on the fingers over joints and at pressure points, develop in the later stages, particularly in the limited systemic form of systemic sclerosis, or CREST syndrome.

Image A is a classical fish mouth appearance (microstomia). Image B shows the nucleolar pattern of IF(some spots of fluorescence within the nucleus and it represents antibodies to RNA). This is seen in systemic sclerosis.

The majority of cases are adult-onset with Raynaud's phenomenon as the first symptom.

The earliest cutaneous manifestations are non■pitting edema and puffiness, which tend to be seen first in the fingers, hands, and face. The skin becomes taut, indurated, thickened, and then fixed to deeper structures on the fingers resulting in sclerodactyly.

Pruritus is described in 40% of patients and may be intense during the early or active stages of the disease. It correlates with the extent of skin sclerosis and gastrointestinal symptoms.

Anti-scl-70 positivity in this disease is useful in predicting those at higher risk for interstitial lung disease. Anti centromere antibody is most specific for CREST syndrome.

Solution to Question 17:

The image shows a young woman with mask-like facies with stretched, shiny skin, and loss of normal facial lines, microstomia, and pitted scarring on the right index finger which is suggestive of scleroderma or systemic sclerosis, an autoimmune rheumatic disease in which there is a 4: 1 female predominance.

Cutaneous features:

• Hands and feet - Raynaud's phenomenon, non-pitting edema, painful ulcerations which heal with pitted scars, sclerodactyly, contractures, loss of sweat glands, bone resorption.

• Face - periorbital edema, mask-like facies, telangiectasia, and diffuse hyperpigmentation

• Trunk - firm, shiny, and thickened skin

The extent of skin sclerosis in systemic sclerosis can be measured, most commonly employing a modified Rodnan skin score (MRSS).

Systemic features:

• GIT- dysphagia, GERD, diminished peristalsis, malabsorption

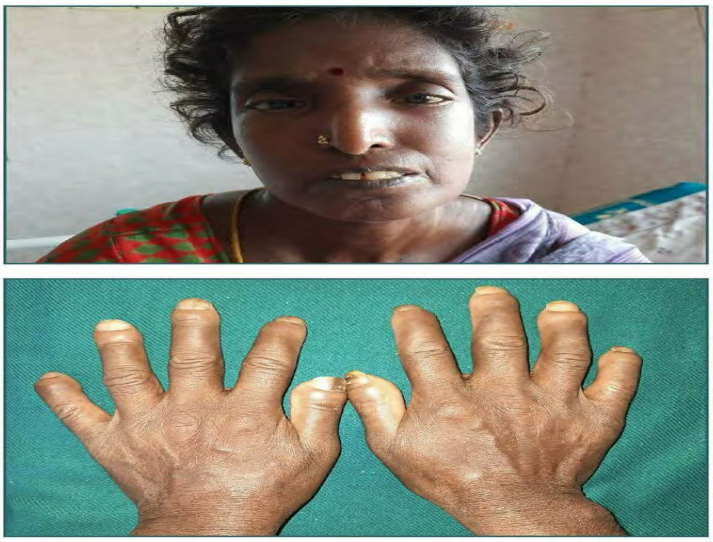
• Lungs- pulmonary fibrosis and alveolitis

• Heart- cardiac conduction defects, heart failure

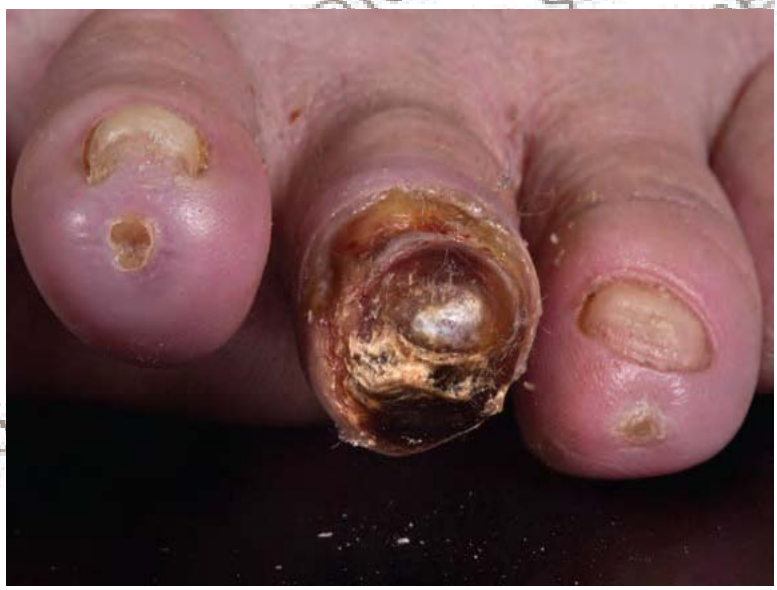
• Kidney- uremia, malignant hypertension

• Musculoskeletal- weakness, carpal tunnel syndrome

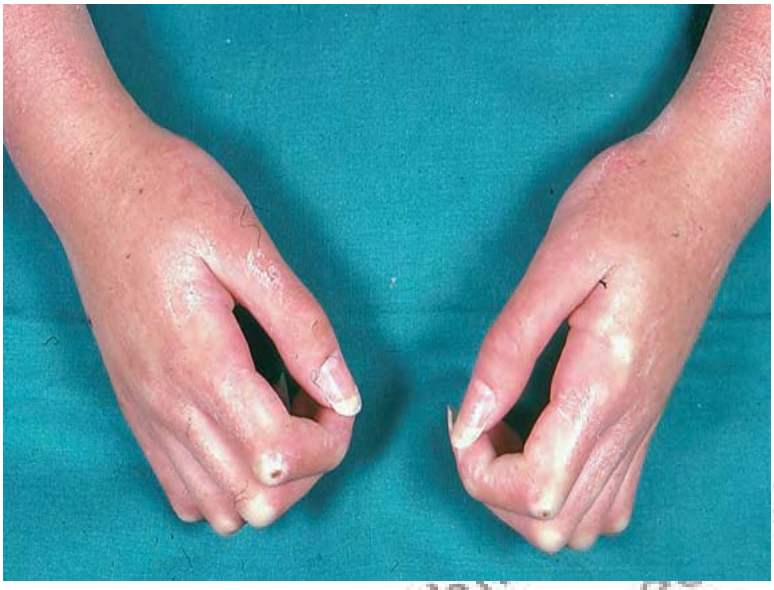
The image below shows typical facial features: note the expressionless facies, mat■like telangiectases, microstomia, perioral furrowing, and beak■like nose.



The image below shows digital ulceration



The image below shows advanced■stage sclerodactyly with contractures and vasculopathic ulcers over the bony prominences



In systemic sclerosis, progressive loss of fingerprints is seen in patients. These altered fingerprint ridges are seen due to changes in skin elasticity, hardness, and thickness and eventually make a patient with scleroderma a “fingerprintless person”.

Autoantibody patterns seen in systemic sclerosis:

• Reactivity to autoantibodies such as anticentromere (ACA) is commonly seen in limited skin sclerosis.

• Reactivity to autoantibodies such as antitopoisomerase 1 antibody (anti■Scl■70 or ATA), and anti■RNA polymerase III antibody (ARA or RNAP) is commonly seen in SSc.

Solution to Question 18:

The given image shows nail-fold capillaroscopy findings. The image shows giant capillaries, hemorrhages, and reducing capillary density suggesting an active pattern in systemic sclerosis.

The most important tests for systemic sclerosis are ANA reactivity and nail fold capillaroscopy. Investigations to exclude or confirm other autoimmune rheumatic diseases including arthritis or other forms of connective tissue disease are also done.

Nail-fold capillaroscopy is a non-invasive, easy, and safe diagnostic technique designed to evaluate the general architecture of capillary rows and fine details of small vessels of the microcirculation in the nail fold.

The most important indications for performing capillaroscopy include differential diagnosis of primary and secondary Raynaud's phenomenon, as well as the assessment of scleroderma spectrum disorders.

In systemic sclerosis, capillary abnormalities appear and evolve in a clearly defined sequence called the scleroderma pattern, which correlates with internal organ involvement.

Nail fold capillaroscopy is also listed as a systemic sclerosis classification criterion recognized by the European League Against Rheumatism (EULAR).

Solution to Question 19:

The history along with the image showing calcinosis cutis and sclerodactyly are suggestive of CREST syndrome.

In limited cutaneous systemic sclerosis or CREST syndrome, anti-centromere antibodies are the most commonly found antibodies.

All other options are true for diffuse cutaneous systemic sclerosis, not CREST syndrome.

Solution to Question 20:

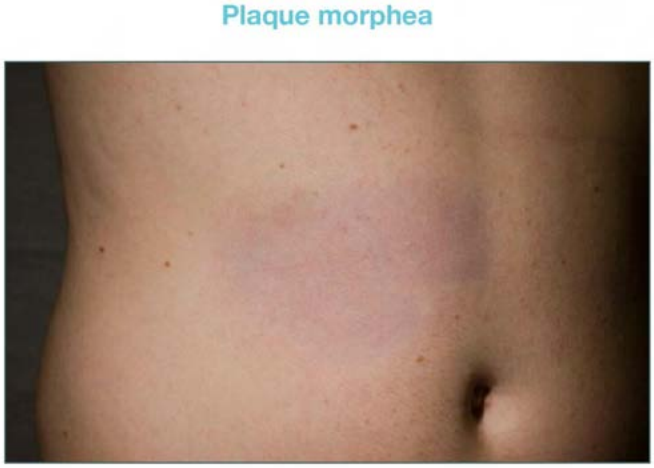
Autoantibodies such as ANA, anti-histone, and anti■ssDNA may be present in morphea, but the systemic sclerosis specific autoantibodies such as anti-topoisomerase, anti-centromere and anti■RNA polymerase are rarely found.

Morphoea, a term used in preference to 'localized scleroderma', encompasses a group of related conditions characterized by varying degrees of sclerosis, fibrosis, and atrophy in the skin and subcutaneous tissues.

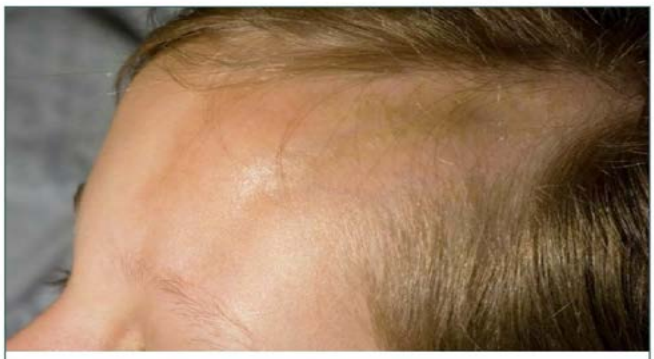
It is distinguished from systemic sclerosis by the absence of sclerodactyly and nail-fold capillary changes.

Overall, plaque morphea is the commonest subtype.

Morphoea en coup de sabre: Blaschkoid linear induration affecting the face and scalp, may involve underlying muscle, bone, eye, and the brain.



Morphea en coup de sabre



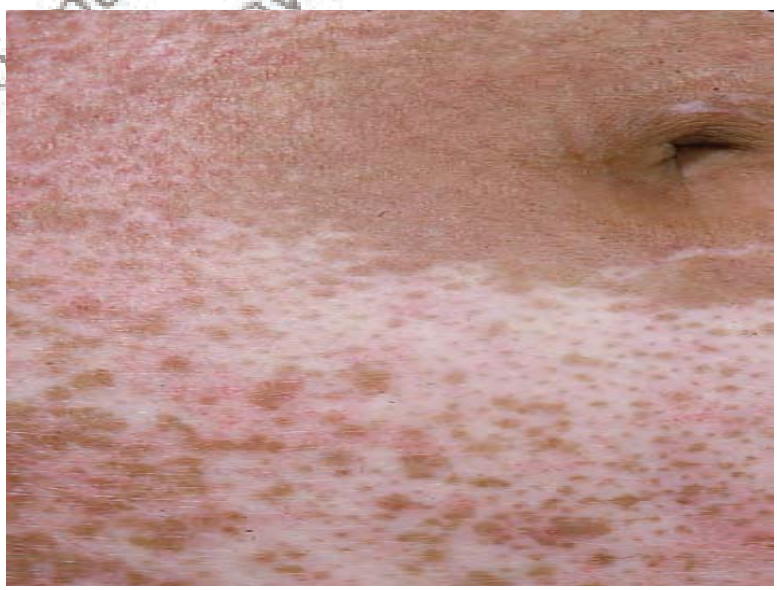
Damaged hair follicles in a blaschkoid linear distribution causing scarring alopecia.

Solution to Question 21:

Salt-and-pepper appearance is characterized by the presence of patchy hypopigmentation and hyperpigmentation of the skin manifesting as depigmentation with perifollicular pigmentary retention. This along with lung fibrosis is seen in systemic sclerosis.

This appearance may also be seen in areas of repigmentation in lesions of vitiligo.

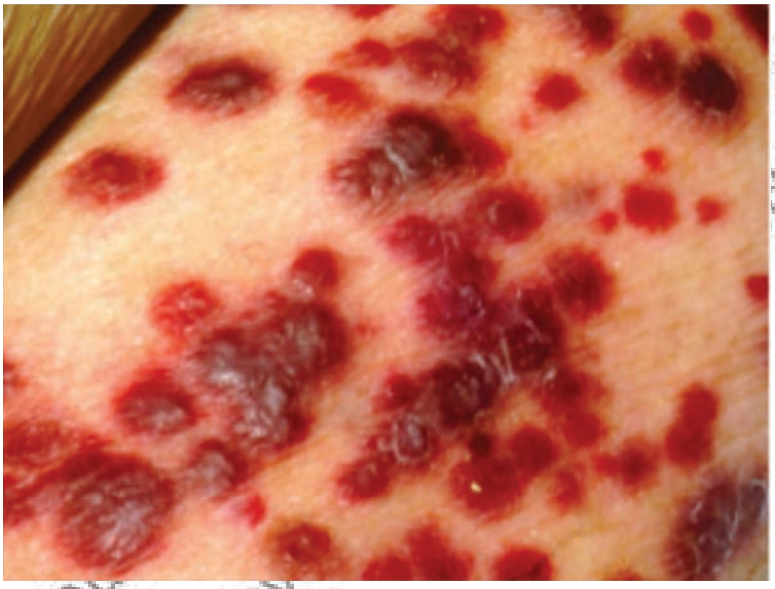
The image below shows salt and pepper appearance of skin over the abdomen seen in systemic sclerosis.



Skin Malignancies

Question 1:

A 23-year-old truck driver presents with the following lesion on his legs which have progressed in size from the time he first noticed them. On examination, you find some degree of edema in the lower limbs. Which of the following is the most common organism associated with this condition?



a) HHV6

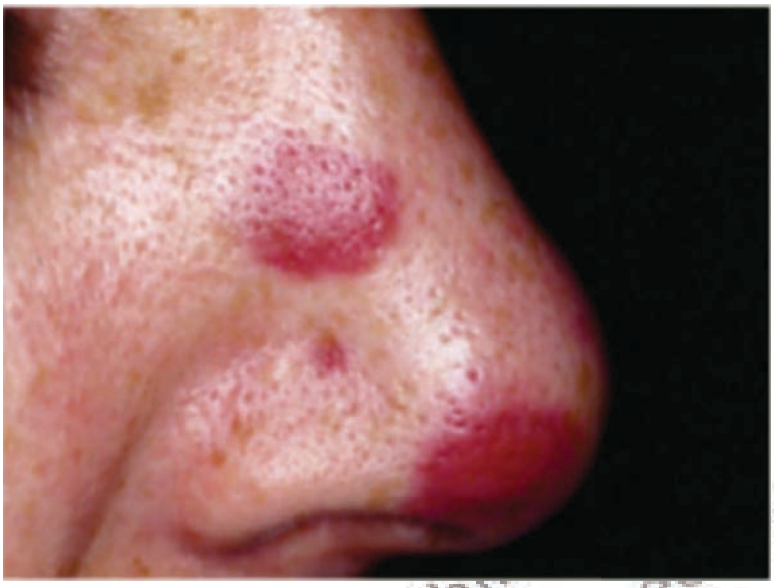
b) HHV7

c) HHV8

d) HHV5

Question 2:

A 50-year-old post-renal transplant patient on cyclosporine presented with the following lesion. You suspect it to be a cancerous growth. Which of the following statements regarding this condition is false?



a) It has a high grade malignant potential

b) The most common site is extremities

c) Lesions are usually multifocal

d) Lymph nodes may be involved

Question 3:

Which of the following is the most common cutaneous T■cell lymphoma?

a) Sézary syndrome

b) Follicular mucinosis

c) Pagetoid reticulosis

d) Mycosis fungoides

Question 4:

Which of the following is not included in the clinical triad of Sézary syndrome?

a) Erythroderma

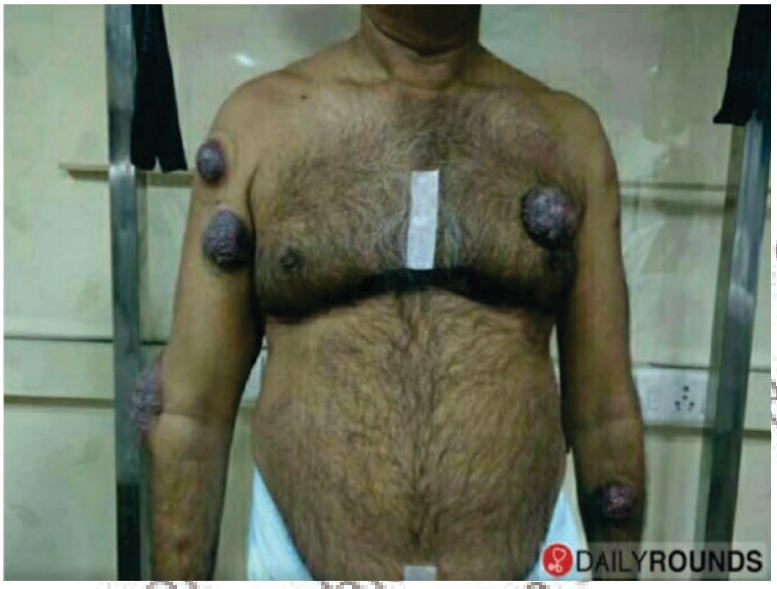
b) Peripheral lymphadenopathy

c) Atypical mononuclear cells > 20% of total lymphocytes

d) Seborrhoeic keratosis

Question 5:

A 52-year-old male presents with the following lesions. DNA analysis from tissue samples for T-cell receptor analysis showed clonal rearrangements of the T-cell receptor genes. What is the possible diagnosis?



a) Follicular mucinosis

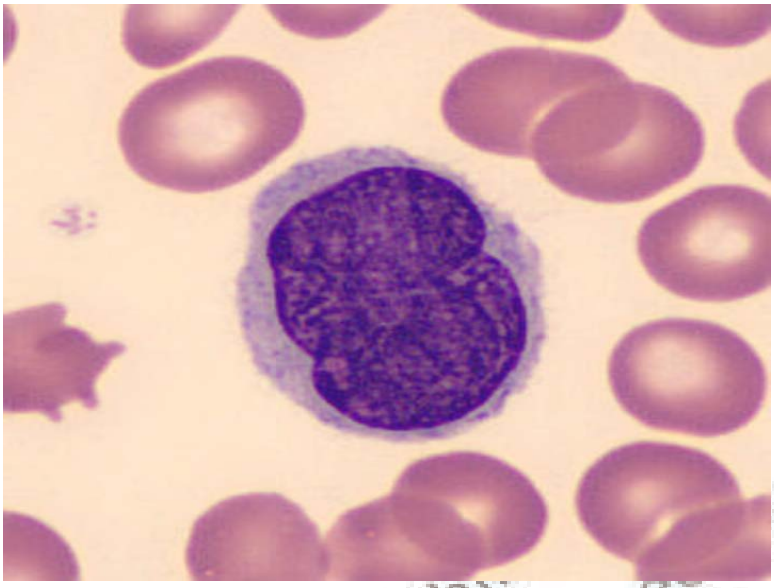
b) Bowen's disease

c) Psoriasis

d) Mycosis fungoides

Question 6:

A 50-year-old retired petroleum refinery worker came with complaints of scaly pruritic patches on his upper and lower extremities. An elliptical skin biopsy was sent for histopathological study and the following T-cell morphology was noted. What is the most probable diagnosis?



a) Pseudolymphoma

b) Mycosis fungoides

c) Adult T Cell leukemia

d) Chronic Myeloid Leukemia

Question 7:

Extracorporeal photopheresis is used in the management of which of the following malignancies?

a) Squamous cell carcinoma

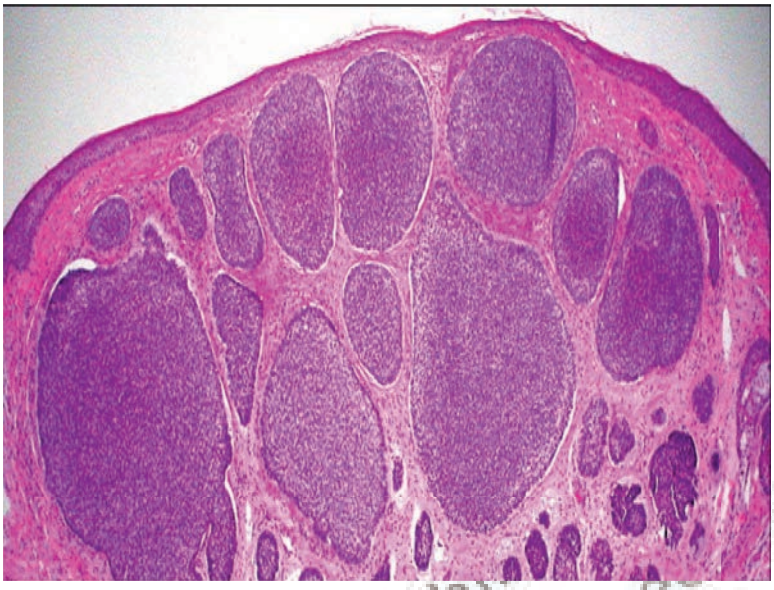
b) Mycoses fungoides

c) Melanoma

d) Keratoacantoma

Question 8:

A 50-year-old male presented with a cancerous growth on his face. Biopsy was taken and the following appearance was noted. What is the most likely diagnosis?



a) Squamous cell carcinoma

b) Basal cell carcinoma

c) Malignant melanoma

d) Keratoacanthoma

Question 9:

Which of the following is the commonest type of basal cell carcinoma?

a) Nodular

b) Ulcerated

c) Infiltrative

d) Superficial

Question 10:

Choose the correct risk factors for basal cell carcinoma.

a) 1,2

b) 1,2,3,5

c) 2,3,5

d) 1,3,4,5

Question 11:

Which of the following features is incorrect regarding basal cell carcinoma?

a) There is a pre-malignant stage

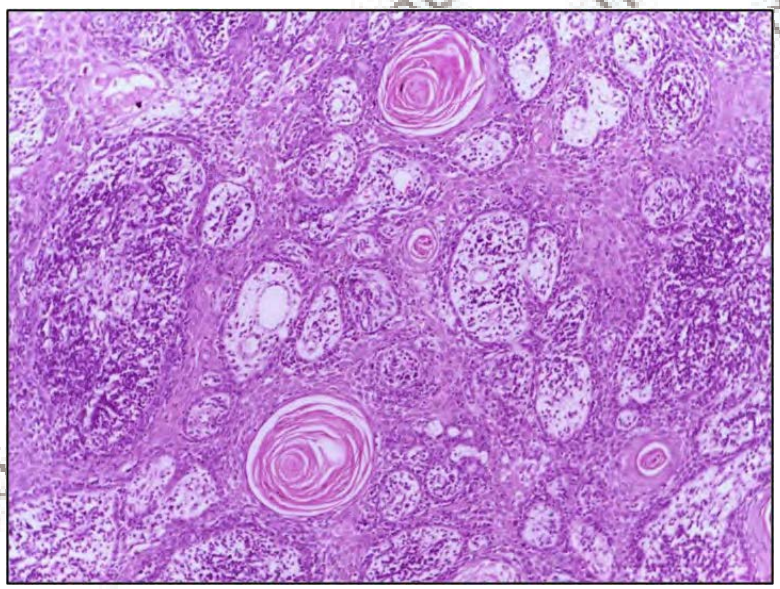
b) Pearly translucent nodule

c) Rapid growth is unusual

d) Metastasis is rare

Question 12:

The biopsy from an indurated plaque-like lesion is shown below. Keeping the diagnosis in mind which of the following is not a premalignant lesion of this condition?



a) Actinic keratosis

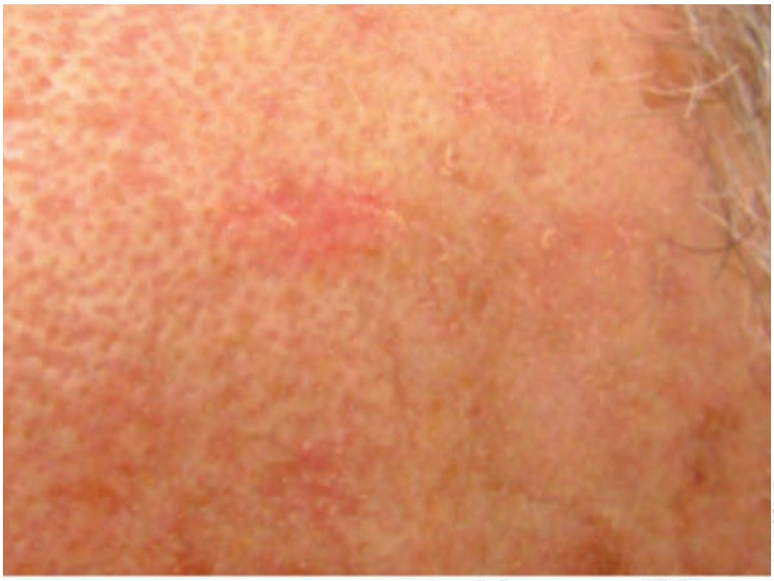
b) Cutaneous horn

c) Arsenical keratosis

d) Keratoacanthoma

Question 13:

Which of the following is incorrect regarding the premalignant lesion shown below?



a) Low risk of progression to squamous cell carcinoma

b) Associated with HPV infection

c) Associated with mutation of RAS gene

d) More common in the elderly

Question 14:

Which of the following is not true regarding Bowen's disease?

a) Intraepidermal squamous cell carcinoma

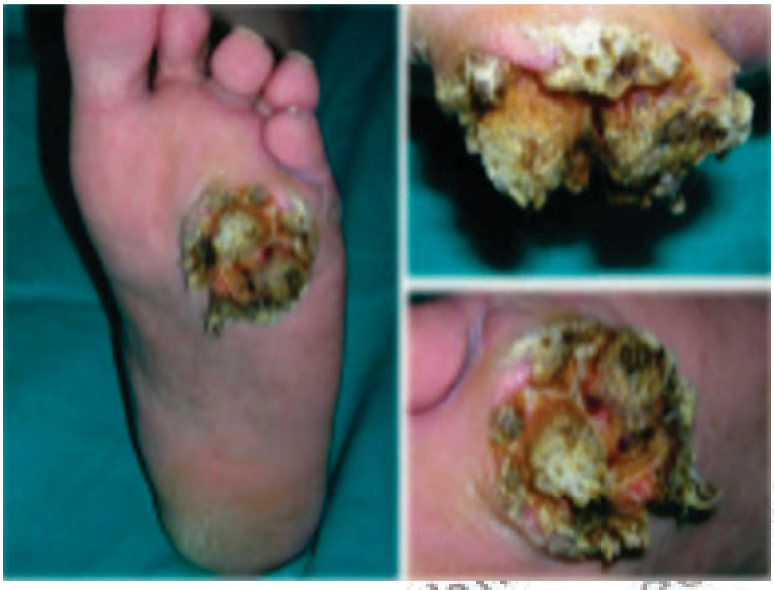
b) Red scaly plaque is present

c) High potential for invasive malignancy

d) Occasionally it may undergo spontaneous partial resolution

Question 15:

Choose the correct statement with respect to the histology of the lesion shown below.



a) Well-differentiated squamous cell carcinoma

b) Poorly differentiated basal cell carcinoma

c) Well-differentiated basal cell carcinoma

d) Poorly differentiated squamous cell carcinoma

Question 16:

In which of the following syndromes do patients develop multiple sebaceous tumors, with multiple primary internal malignancies, particularly colorectal cancers?

a) Cowden syndrome

b) Muir-Torre syndrome

c) Gorlin syndrome

d) Gardner syndrome

Question 17:

Which of the following conditions is associated with PTCH gene mutation?

a) Muir-torre syndrome

b) Gorlin syndrome

c) Rombo syndrome

d) Cowden syndrome

Question 18:

A 58-year-old lady presents with pain, swelling, and discoloration in her left thumb for 4 months. On examination, the following clinical sign is noted. What is this sign called?

a) Frank's sign

b) Fitzpatrick's sign

c) Hutchinson's sign

d) Pastia's sign

Question 19:

Which of the following is the most common type of melanoma?

a) Nodular

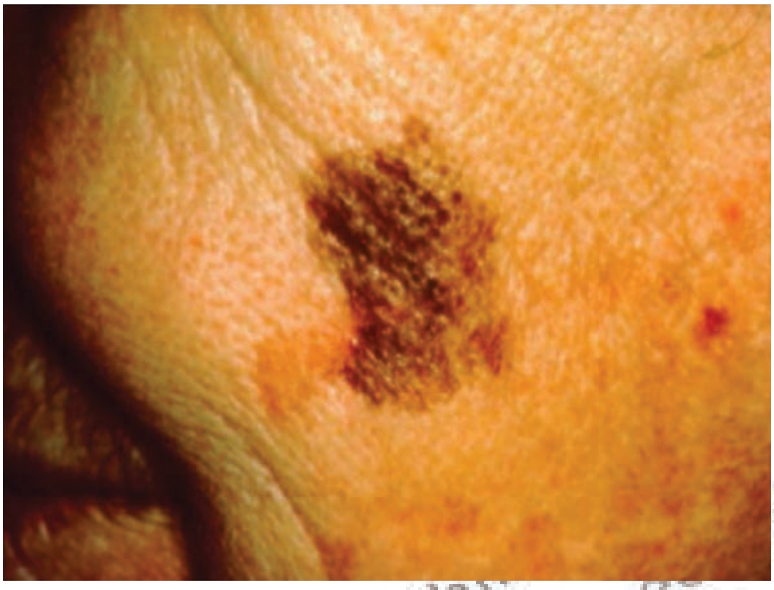
b) Superficial spreading

c) Lentigo maligna melanoma

d) Acral lentigious melanoma

Question 20:

Choose the incorrect statement with respect to the skin malignancy shown below.



a) More than 50% of them originate from pre-existing nevus

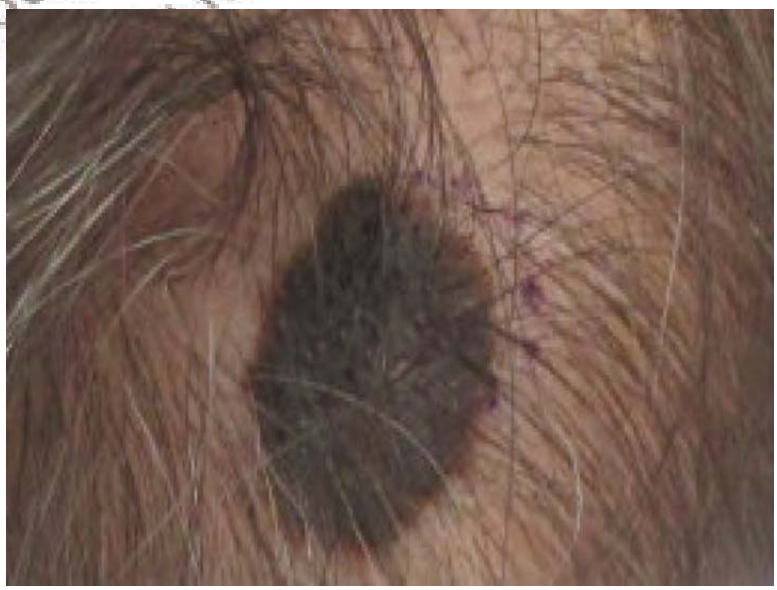
b) The number of dysplastic/atypical nevus is proportional to the risk

c) Skin type I in Fitzpatrick's classification has higher risk

d) Sun exposure in childhood is considered an important risk factor

Question 21:

An elderly Australian man presented with a slowly progressing lesion on his scalp for 3 years. Which of the following is considered as a high-risk susceptibility gene for this condition?



a) CDKN1A

b) CDKN2A

c) CDKN3A

d) CDKN4A

Question 22:

Which is the best indicator for the prognosis of primary melanoma?

a) Tumor thickness

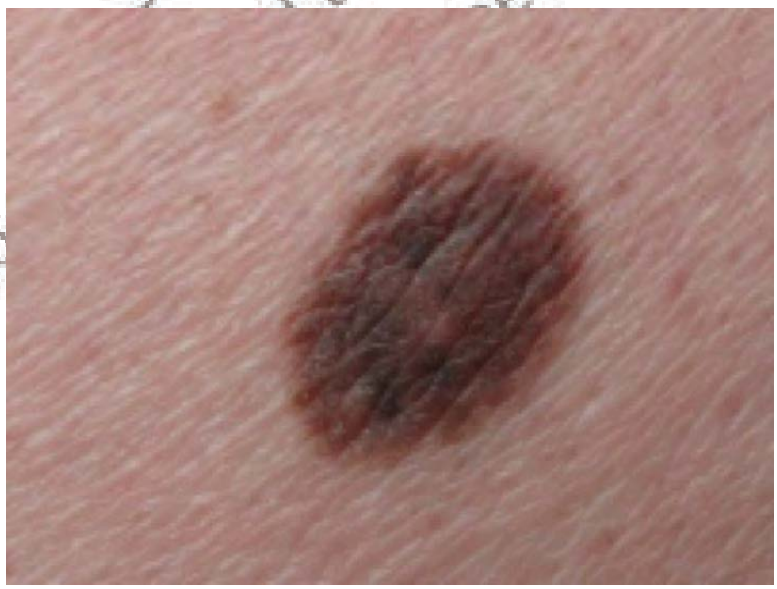
b) Tumor size

c) Regularity of margins

d) Symmetry of tumor

Question 23:

Shown below is a skin lesion. Which of the following is not a criterion to assess its malignant potential?



a) Irregular border

b) Inhomogenous colour

c) Diameter >4 mm

d) Asymmetry

Question 24:

Your neighbor is a cancer survivor who developed radiotherapy epilation of the scalp and has now developed multiple, small, pink nodular growths on the temples. Which of the following is not a possible diagnosis?

a) Cylindroma

b) Trichoblastoma

c) Spiegler's tumor

d) Turban tumor

Answer Key

Question No.	Correct Option
1	c
2	a
3	d
4	d
5	d
6	b
7	b
8	b
9	a
10	d
11	a
12	d
13	c
14	c
15	a
16	b
17	b
18	c
19	b
20	a
21	b
22	a

23	c
24	b

Detailed Explanations

Solution to Question 1:

The above image shows multiple plaque-like lesions coalescing with each other which is suggestive of Kaposi sarcoma. All forms of Kaposi sarcoma are associated with HHV 8 infection as an aetiological agent.

It is a multifocal, endothelial proliferation most often with cutaneous involvement and with or without visceral extension. This virus is transmitted through saliva and blood products.

It has a low-grade malignant potential. The most important cofactor associated is HIV co-infection which increases the risk up to 20,000 fold.

Solution to Question 2:

The above image showing purple-colored plaques on the ala and tip of the nose in an immunocompromised patient is suggestive of Kaposi sarcoma. It is mostly seen in extremities, commonly on feet and occasionally on hands, ears, and nose, and has a low-grade malignant potential.

Skin lesions are usually purple and multifocal which eventually evolve into plaques and tumors. Lymph nodes, mucosae, and viscera may be involved as the disease progresses, although this can occur without skin involvement.

Solution to Question 3:

The most common type of primary cutaneous T cell lymphoma is Mycosis fungoides.

Option A: Sézary syndrome may develop either ab initio or rarely as a progression from classic mycosis fungoides. It is a severe form of cutaneous T cell lymphoma with a poor prognosis.

Option B: Follicular mucinosis is a type of cutaneous T cell lymphoma that consists of boggy cutaneous plaques showing follicular prominence and histological evidence of mucinous degeneration of the hair follicles.

Option C: Pagetoid reticulosis is a localized, solitary variant of cutaneous T cell lymphoma, which histologically shows intense epidermotropism. It is also called Woringer–Kolopp disease.

Note: Mycosis fungoides is derived from skin■resident effector memory T cells, whereas Sézary syndrome is derived from central memory T cells.

Solution to Question 4:

Seborrhoeic keratosis is not a part of the clinical triad of Sézary syndrome

The clinical triad of Sézary syndrome consists of the following:

• Erythroderma - As a result of diffuse infiltration of the skin by neoplastic cells

• Peripheral lymphadenopathy

• Atypical mononuclear cells (Sézary cells) comprising more than 20% of total lymphocyte count or total Sézary count of more than 1000 × 109/L

Solution to Question 5:

The given clinical features along with the characteristic investigation of T-cell receptor analysis showing clonal rearrangement of the T-cell receptor (TCR) genes is diagnostic of Mycosis fungoides.

Mycosis fungoides is characterized by erythematous, polymorphic patches and plaques which are fine, scaly, and slightly atrophic (wrinkled) usually involving limb/girdle, breast, and especially the buttock area.

Analysis of TCR genes is now a standard approach that has diagnostic, prognostic, and therapeutic implications. It consists of the analysis of DNA from tissue samples for the detection of clonal rearrangements of the TCR genes as a marker of a monoclonal T■cell population. T■cell clones can be detected in a proportion (70% overall) of skin biopsies from patients with early■stage disease and are almost invariable in patients with later stages of the disease.

Option A: Follicular mucinosis consists of boggy cutaneous plaques showing follicular prominence and histological evidence of mucinous degeneration of the hair follicles. It is often associated with an atypical pilotropic T■cell infiltrate.

Option B: Bowen's Disease is a type of squamous cell carcinoma in situ that presents as an erythematous scaly plaque.

Option C: Psoriasis is a papulosquamous disorder presenting with erythematous plaques with silver coloured scales.

Note: Follicular mucinosis is the only other cutaneous T-cell lymphoma given in the options.

Solution to Question 6:

The image shows a characteristic cerebriform appearance of T-lymphocytes as seen in Mycosis fungoides.

It is a type of cutaneous T cell lymphoma with an indolent (slowly progressive) clinical course. Most accepted theory is that human T■cell leukemia virus 1 (HTLV-1) is the causative organism.

Histopathology findings:

• Moderate lymphocytic infiltrate in the papillary dermis.

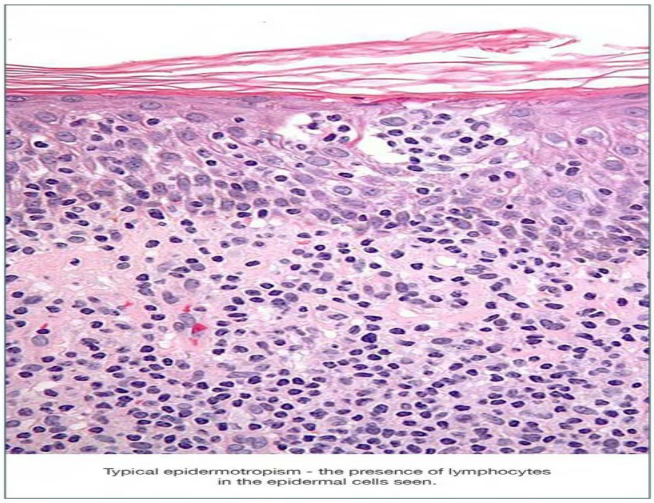
• Epidermotropism - presence of lymphocytes in the epidermal cells.

• Pautriers's microabscesses consisting of clusters of atypical lymphocytes.

• Atypical lymphocytes have a cerebriform appearance with an irregular nuclear outline and halo around cells.

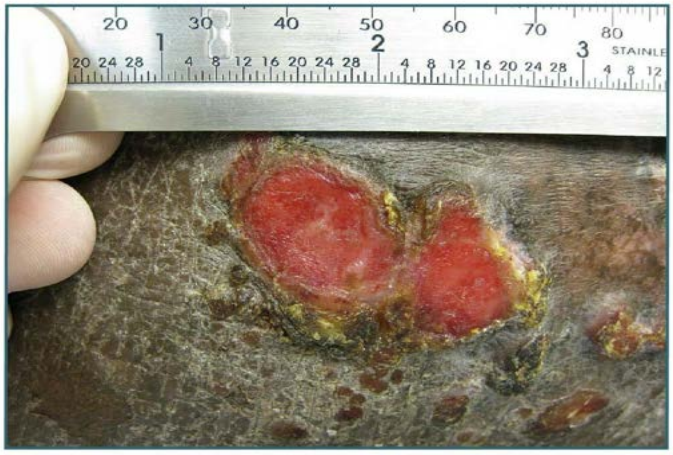
Note - Cerebriform appearance is also seen in Sézary syndrome.

Mycosis fungoides



Typical epidermotropism - the presence of lymphocytes in the epidermal cells seen.

Plaques of mycosis fungoides



Solution to Question 7:

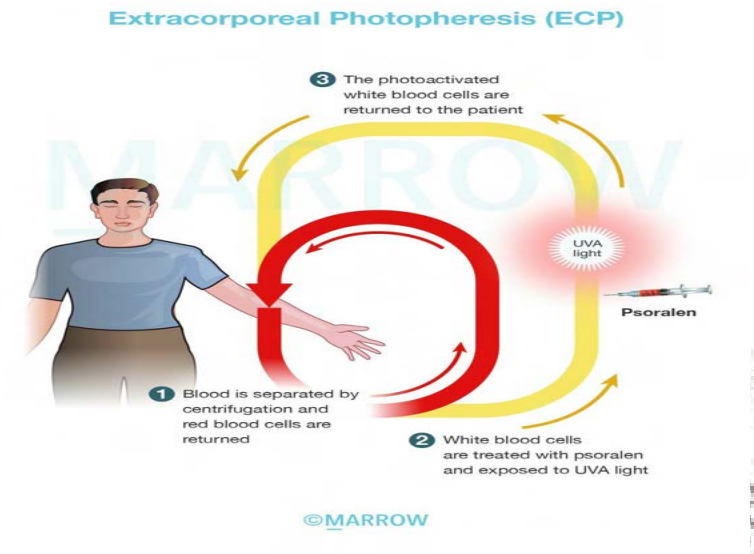
Extracorporeal photopheresis is a systemic therapy used for mycosis fungoides.

The procedure consists of three stages:

• Leukapheresis

• Photoactivation (with psoralen and UVA)

• Reinfusion of buffy coat



After exposure to UVA, psoralen binds covalently to DNA in separated leukocytes leading to cell cycle arrest and apoptosis. These apoptotic leukocytes when reintroduced into the peripheral circulation are phagocytosed by antigen-presenting cells (APCs). These APCs then produce tumor suppressor cells against the malignant cells responsible for mycosis fungoides.

Skin-directed therapy is preferred in the early stages whereas advanced stages require systemic therapy.

Skin-directed therapies:

• Topical corticosteroids

• Topical chemotherapy: nitrogen mustard (mechlorethamine) and carmustine (BCNU)

• Topical rexinoids

• Phototherapy and photochemotherapy (PUVA)

• Radiotherapy and electron beam therapy: Mycosis fungoides and variants are highly radiosensitive

Systemic therapies:

• Immunotherapy: Pegylated IFN■°

• Oral Retinoids and rexinoids

• Combination therapy

• Systemic chemotherapy

• Extracorporeal photopheresis (ECP)

• Toxin therapies: Denileukin diftitox

• Monoclonal antibody therapy

• Histone deacetylase inhibitors.

Solution to Question 8:

The above image shows a characteristic peripheral palisading of tumor cells which is seen in basal cell carcinoma.

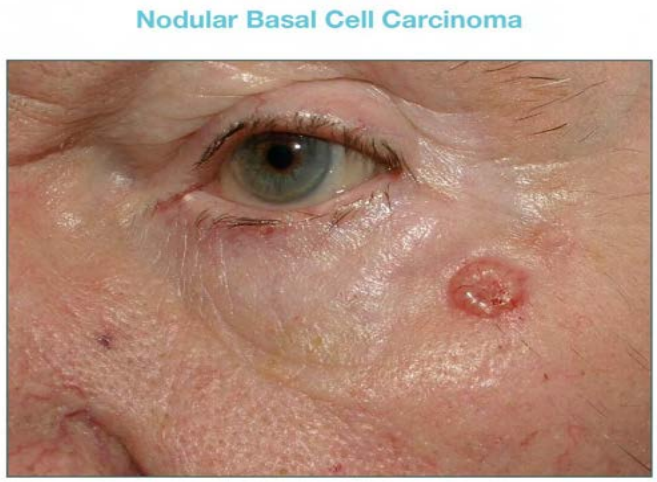
The tumour cells resemble cells of stratum basale that have grown into the dermis. This cluster of cells is surrounded at the periphery by perpendicularly arranged cells. It also has a well-organised stroma surrounding it.

Solution to Question 9:

Nodular type is the commonest type of basal cell carcinoma. Telengiectasia and cystic areas may be present. Some areas may be pigmented.

Histopathological patterns of basal cell carcinoma include:

- Superficial
- Nodular
- Infiltrative
- Micronodular
- Pigmented.



Solution to Question 10:

PUVA therapy, HPV infections, surgical scar and iatrogenic infections are risk factors for basal cell carcinoma.

The following are the risk factors for basal cell carcinoma:

- Solar radiation
- Psoralen-UVA Therapy (PUVA)
- Human Papilloma Virus infections
- Iatrogenic infections
- Surgical scar
- UV-B rays
- Ionising radiation
- Photosensitising drugs
- Previous history of basal cell carcinoma

Solution to Question 11:

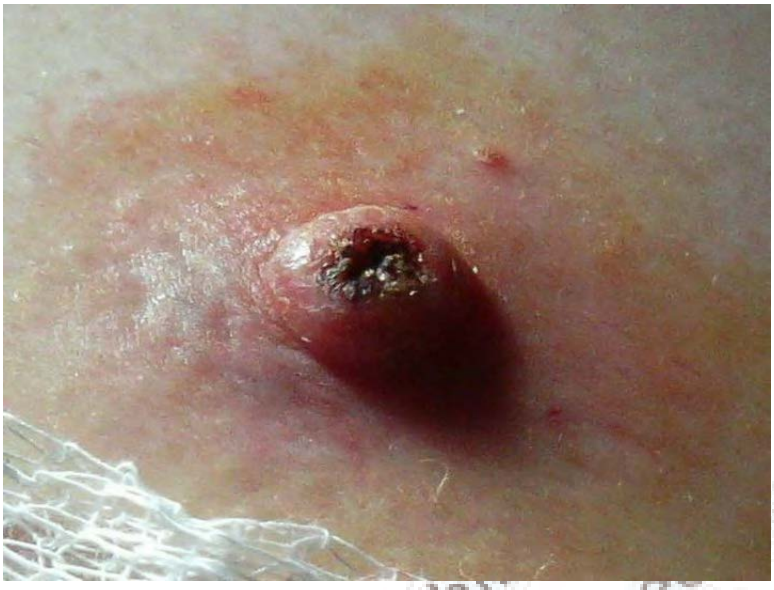
Basal cell carcinoma typically has no premalignant stage.

The typical basal cell carcinoma runs a slowly progressive course of peripheral extension. The pearly translucent nodule with surface telangiectasia undergoes central necrosis resulting in rodent ulcer with a rolled-out margin.

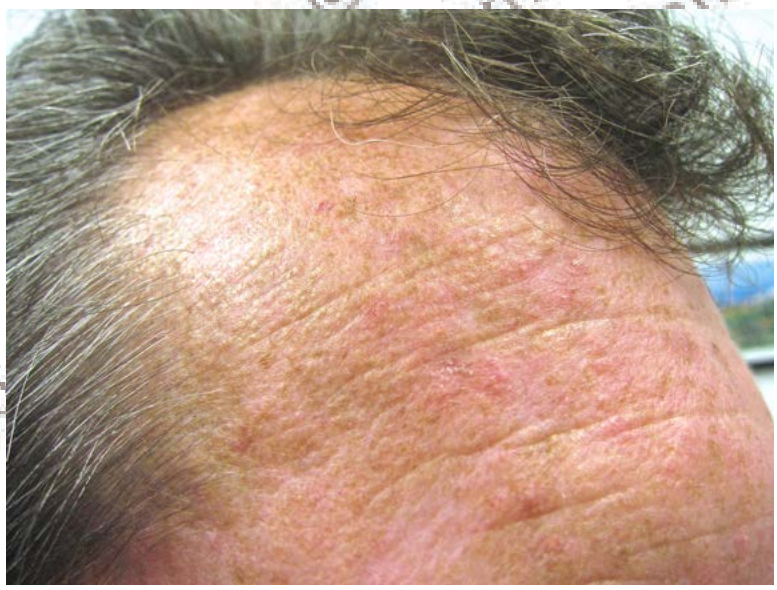
Metastasis is extremely rare in basal cell carcinoma.

Solution to Question 12:

The above image shows malignant cells resembling normal squamous epithelial cells with individual cell keratinization and nests of keratin pearls suggestive of squamous cell carcinoma. Keratoacanthoma is considered a form of well-differentiated squamous cell carcinoma, not a premalignant condition.



Option A: Actinic keratosis is characterized by hyperkeratotic lesions that have a low risk of progression to invasive squamous cell carcinoma(SCC).



Option B: Cutaneous horns are hard conical projections from the skin, made of compact keratin. They arise from benign, premalignant, or malignant skin lesions. Approximately 9% showed SCC pathological features at the base.

Option C: Arsenical keratosis: A corn■like, punctate keratosis caused by arsenic, characteristically affecting the palms and soles, which may progress to squamous cell carcinoma.

Solution to Question 13:

The above image is suggestive of actinic keratosis which is associated with mutation of the TP53 gene.

Actinic keratoses are hyperkeratotic lesions occurring on chronically light■exposed adult skin that carry a low risk of progression to invasive squamous cell carcinoma.

Lesions are usually multiple and comprise either macules or papules with a rough scaly surface resulting from disorganized keratinization and a variable degree of inflammation. It is more common in the elderly. Human papillomavirus (HPV) is present in significant numbers in actinic keratosis.

Histopathology is characterized by solar elastosis and disordered epidermal keratinocyte maturation with cytological atypia. The typical lesion shows hyperkeratosis, parakeratosis, and hypergranulosis.

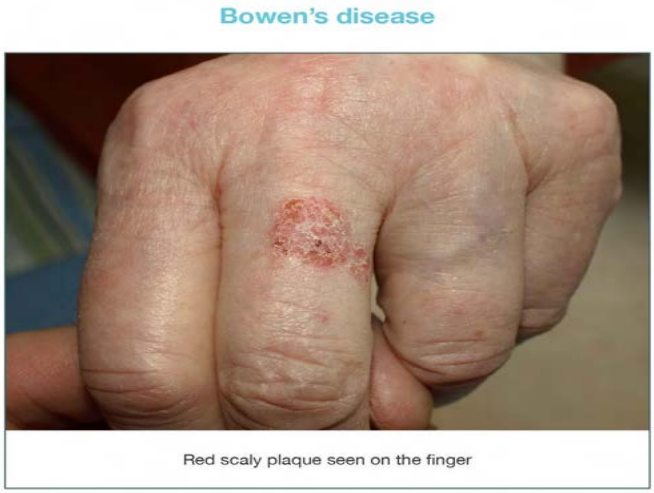
Solution to Question 14:

Bowen's disease has a low potential for invasive malignancy.

It is an intraepidermal squamous cell carcinoma that is characterized by a persistent, non■elevated, red, scaly, or crusted plaque with a small potential for invasive malignancy. Histologically, it is characterized by full-thickness epidermal dysplasia.

It usually grows progressively but sometimes undergoes spontaneous partial resolution. It can occur anywhere, but it occurs more in the head and neck region.

Human papilloma virus infection is associated with it.



Red scaly plaque seen on the finger

Image: Red scaly plaque seen on the finger, in an 81-year-old woman with Bowen's disease.

Solution to Question 15:

The above image shows exophytic verruciform growth suggestive of verrucous carcinoma which is a well-differentiated squamous cell carcinoma.

It is slow-growing and rarely metastasizes. The etiology of verrucous carcinoma is unknown but it can develop in areas of chronic inflammation. Human Papillomavirus (HPV) has been associated with this tumor and specifically HPV types 11 and 16 have been described in plantar lesions.

Solution to Question 16:

Muir-Torre syndrome is an autosomal-dominant inherited condition and has multiple sebaceous tumors with multiple visceral malignancies like colorectal carcinoma. Other internal malignancies include carcinoma of the endometrium, stomach, small bowel, genitourinary tract, breast, ovary, pancreas, liver, and kidney.

Option A: Cowden syndrome- mucocutaneous lesions, facial trichilemmomas, acral keratosis, papillomatous lesions, and mucosal lesions. The mucosal lesions comprise a warty, 'cobblestone' hyperplasia of the tongue and buccal mucosal surfaces. Multiple hamartomatous lesions of ectodermal, endodermal, and mesodermal origin occur.

Option C: Gorlin syndrome or nevoid basal cell carcinoma- an autosomal dominant familial cancer syndrome in which affected individuals are predisposed to the development of multiple BCCs at an early age, characteristic facies, and various skeletal abnormalities.

Option D: Gardner Syndrome- a variant of familial adenomatous polyposis (FAP), is an autosomal dominant disease characterized by gastrointestinal polyps, multiple osteomas, and skin and soft tissue tumors.

Solution to Question 17:

Gorlin syndrome, also known as nevoid basal cell carcinoma syndrome, has an autosomal dominant inheritance with mutation of PATCHED (PTCH1) gene.

It consists of the following features:

• Multiple Basal cell carcinomas

• Highly characteristic facies (with large forehead)

• Bifid or misshapen ribs

• Vertebral and other skeletal anomalies

• Pits of the skin of the palms and soles

• Dysgenesis of the corpus callosum

• Calcification of the falx cerebri (at an earlier age than is seen in non■affected individuals)

• Macrocephaly.

Option A: Muir-Torre syndrome- defect in DNA mismatch repair genes (MLH-1 or MSH-2) and microsatellite instability

Option C: Rombo syndrome- autosomal dominant syndrome with basal cell carcinoma as prominent feature; defective gene unidentified

Option D: Cowden syndrome- PTEN (phosphatase and tensin homologue) mutation

Solution to Question 18:

The above image shows melanonychia with the pigmentation of proximal nail fold which is called the Hutchinson's sign. It is seen in subungual melanoma.

In benign nail pigmentation due to drugs (eg. minocycline) or injury (hematoma), the colour stays within the margins of the nail plate and doesn't extend to nail folds.

Option A: Frank's sign - diagonal crease in the earlobes of adults has been associated with an increased risk for atherosclerotic heart disease.

Option B: Fitzpatrick sign (Dimple sign) - squeezing the skin adjacent to a dermatofibroma causes a dimpled appearance on its surface. It is also termed a positive pinch sign or dimple sign.

Option D: Pastia's sign - linear petechial eruption in the skin folds especially on the ante-cubital fossa and axillary fold seen in streptococcal scarlet fever.

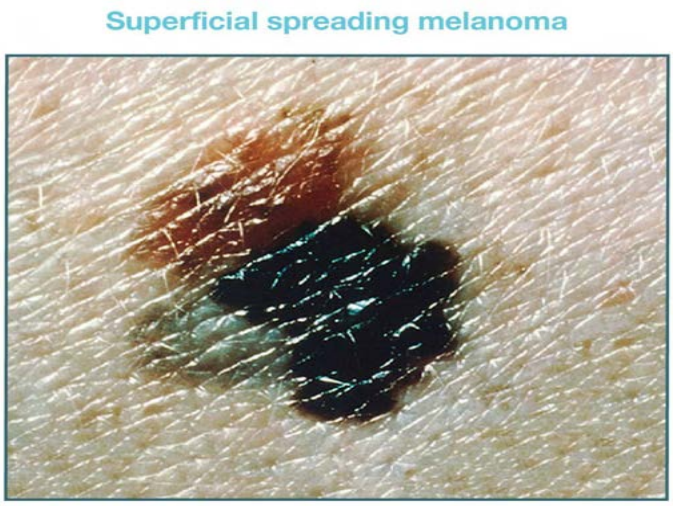
Solution to Question 19:

Superficial spreading type is the most common type (70%) of melanoma, usually arising in pre-existent nevus.

The growth is slow at first and later becomes rapid.

Types of melanoma:

- Superficial spreading melanoma
- Lentigo maligna melanoma
- Acral lentiginous melanoma
- Nodular melanoma



Solution to Question 20:

The above image depicts melanoma. Only about 20–25% of melanomas arise from pre-existing nevus others arise de novo. The number of naevi will be proportional to the risk.

Risk factors for melanoma are as follows:

• Family history- a positive family history is associated with a two-fold increased risk of melanoma

• Melanocytic nevus- may be congenital nevus or atypical/dysplastic nevus

• Genetic mutations- mutations of CDKN2A gene (major susceptibility), MC1R gene (moderate susceptibility), TYR gene (low susceptibility)

• Skin pigmentation and tanning abilities- skin type I in Fitzpatrick's classification has two-fold increased risk as compared to type IV.

• Sun exposure- intermittent sun exposure during childhood is considered to be an important risk factor.

• Artificial sources of UV- sunbeds and therapeutic UV increase the relative risk for the development of melanoma.

Solution to Question 21:

The above image shows a flat, brownish, irregularly shaped lesion suggestive of melanoma. The cyclin■dependent kinase (CDK) inhibitor 2A gene (CDKN2A), located on chromosome 9p21, is the best established high■risk locus for melanoma susceptibility.

CDKN2A mutations are found in approximately 40% of individuals with familial melanoma.

In melanoma, tumor suppressors that play a protective role against melanoma are mutated. CDKN2A encodes via alternative splicing for two proteins involved in cell cycle regulation:

p16/Ink4a and p14/Arf, both act as tumor suppressors through the Rb and p53 cancer pathways, respectively.

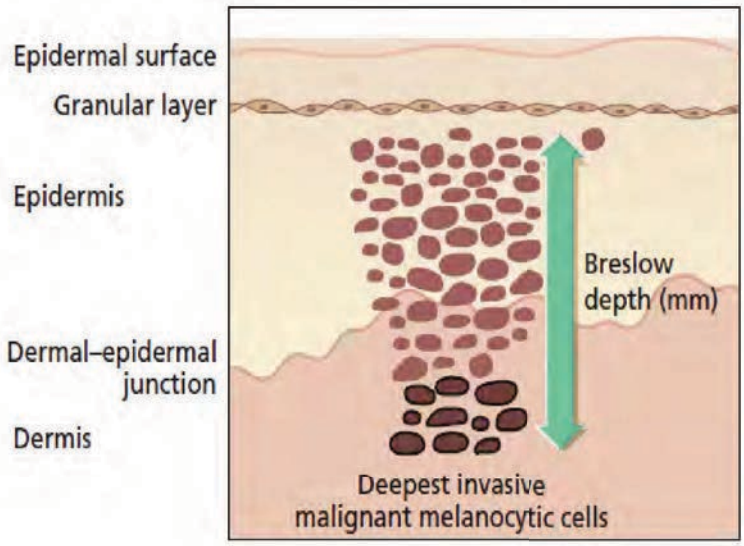
Solution to Question 22:

Tumor thickness or Breslow index is the best prognostic factor of melanoma.

It is the distance in millimeters (mm) between the epidermal granular layer and the deepest level of invasion of the primary lesion.

Thicker tumors have a higher metastatic potential.

Image: Breslow Depth



Solution to Question 23:

The image shown above depicts a nevus. Diameter >6 mm is the diagnostic clue for the transformation of a nevus to a melanoma.

Solution to Question 24:

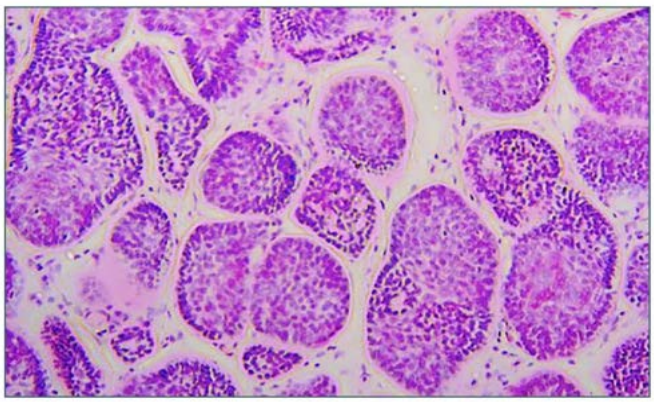
The above scenario is suggestive of cylindroma or turban tumor or Spiegler's tumor which is a tumor of the sweat gland. Trichoblastoma is a tumor of the germ cells of the hair follicle and commonly develops within naevus sebaceous.

Cylindroma is familial, inherited as an autosomal dominant disorder, due to the loss of the cylindromatosis gene, CYLD on chromosome 16q12-13, and have been reported to follow radiotherapy epilation of the scalp.

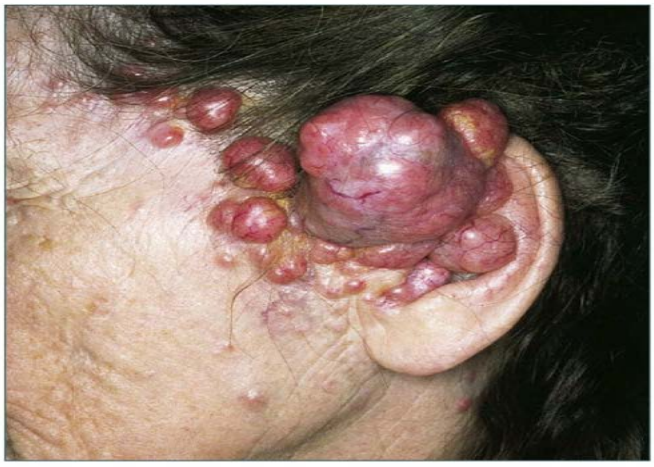
The lesions are frequently multiple, smooth, firm, pink to red, and somewhat pedunculated. They are mostly seen on the scalp. Histologically, it contains mosaic■like masses - a jigsaw appearance. Malignant transformation is very rare.

Surgery is the treatment of choice.

Jigsaw-puzzle appearance of cylindroma



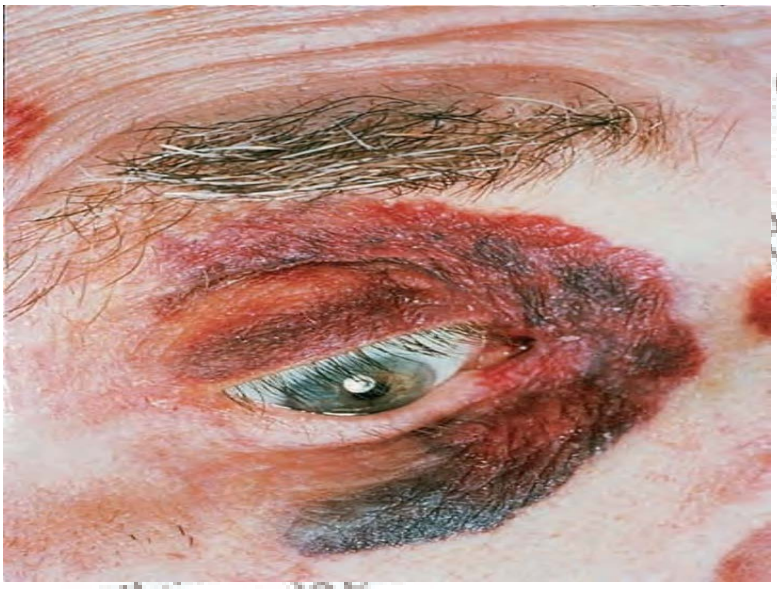
Cylindroma



Systemic Diseases and Skin

Question 1:

A 74-year-old lady presented with a 6-month history of easy bruising. Her physical examination revealed only pinch purpura as shown below. This finding is characteristically seen in:



a) Primary systemic amyloidosis

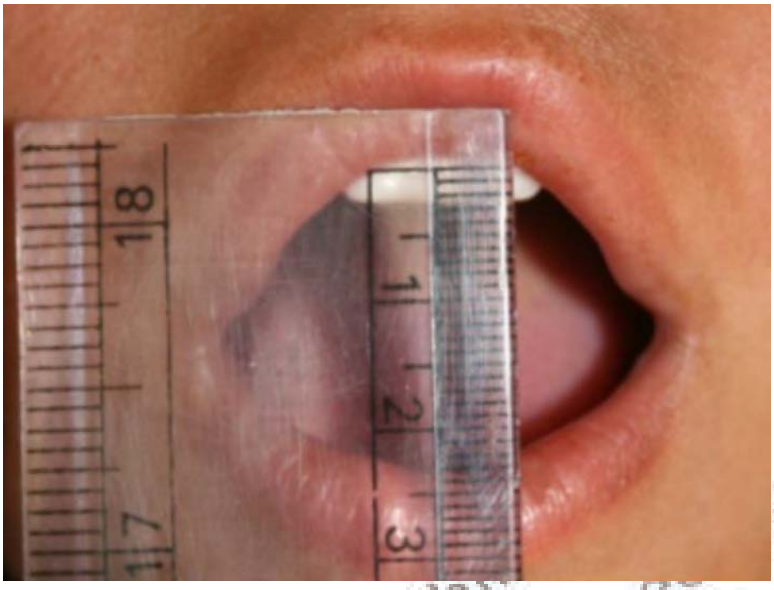
b) Secondary systemic amyloidosis

c) Idiopathic thrombocytopenic purpura

d) Drug induced purpura

Question 2:

A woman presented with generalized swelling of the upper body. On examination, her skin was extremely taut with marked, non-pitting, symmetric induration. The following finding was also noted. A diagnosis of scleredema was made. Which of the following statements is false regarding this condition?



a) The dermis is 3–4 times thicker than normal

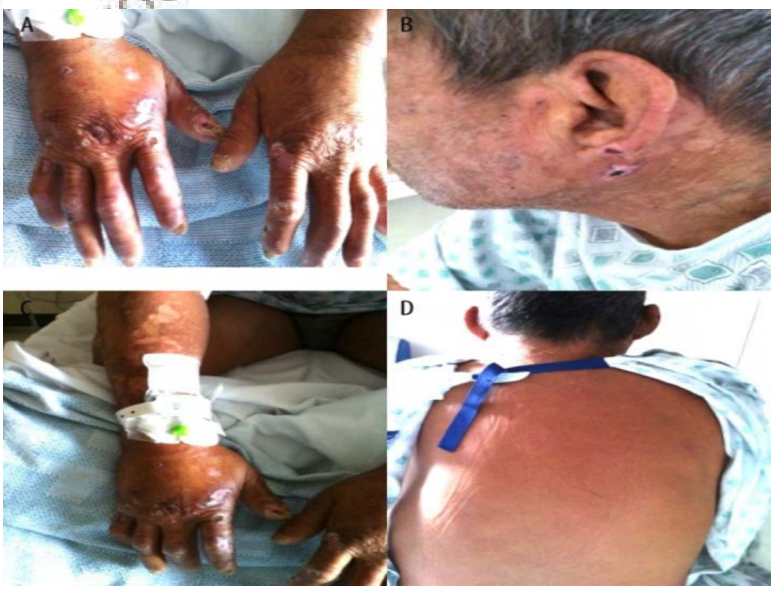
b) Erythema and peau d'orange appearance of the skin can be seen

c) Can occur in association with diabetes

d) Associated with sclerodactyly or Raynauds phenomenon

Question 3:

A first-year dermatology resident is called to see a child admitted with the following findings. The parents inform that the child prefers to stay indoors during the day. On investigation, urine porphyrin levels were elevated. Which of the following types is unlikely here?



a) Congenital erythropoietic porphyria

b) Acute intermittent porphyria

c) Erythropoietic protoporphyria

d) Porphyria cutanea tarda

Question 4:

Which of the following is the most common type of porphyria?

a) Porphyria cutanea tarda

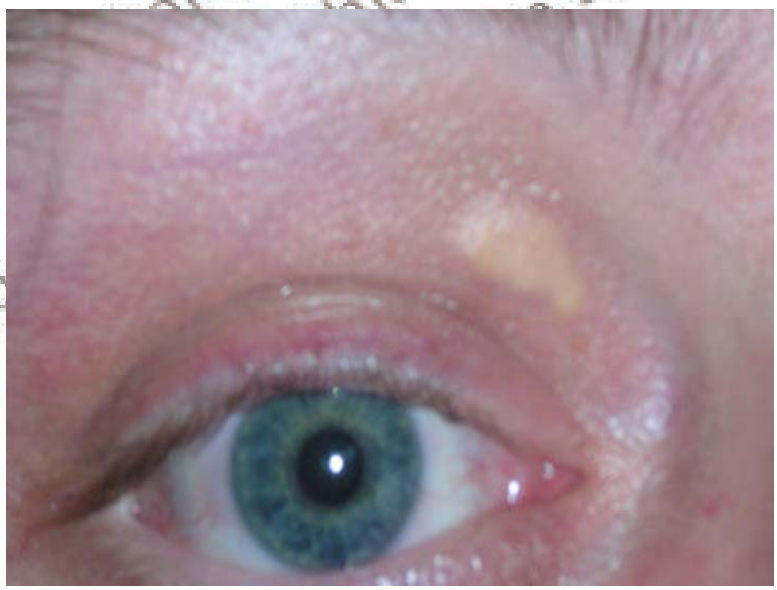
b) Congenital erythropoietic porphyria

c) Erythropoietic protoporphyria

d) Variegate porphyria

Question 5:

What is the least likely cause for the finding shown below?



a) Broad beta disease

b) Familial hypercholestrolemia

c) Type 1 hyperlipoproteinemia

d) Primary biliary cirrhosis

Question 6:

A 25-year-old otherwise healthy man presented with painless, linear, yellowish patches running along the palmar creases and the flexor creases of the wrists. Histopathology revealed lipid-laden macrophages in the dermis. What is the most likely diagnosis?

a) Type IV hyperlipoproteinaemia

b) Type III hyperlipoproteinaemia

c) Type II hyperlipoproteinaemia

d) Type I hyperlipoproteinaemia

Question 7:

Choose the incorrect statement regarding diabetic dermopathy.

a) Occurs over shins, forearms, thighs and over bony prominences

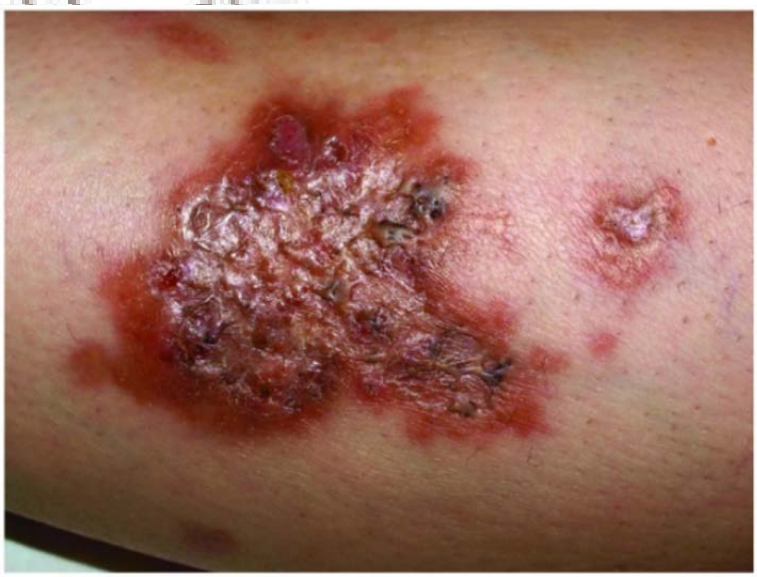
b) Cannot be used as a marker for microvascular complications of diabetes

c) Lesions are brown atrophic macules

d) Deposition of haemosiderin and melanin in the dermis is present

Question 8:

A 59-year-old lady, a known diabetic for the past 10 years, presents with rashes over shin as shown in the image. What is the possible diagnosis?



a) Granuloma annulare

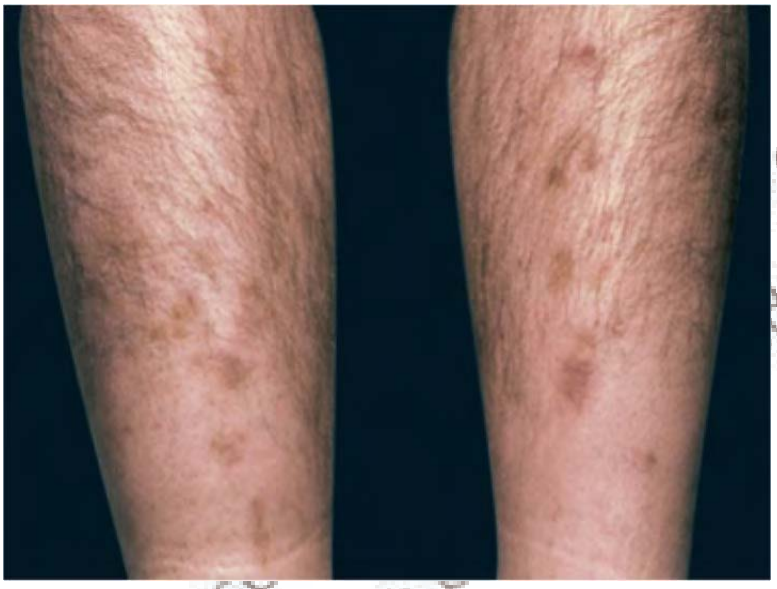
b) Necrobiosis lipoidica

c) Reactive perforating collagenosis

d) Rubeosis

Question 9:

Identify the condition.



a) Diabetic dermopathy

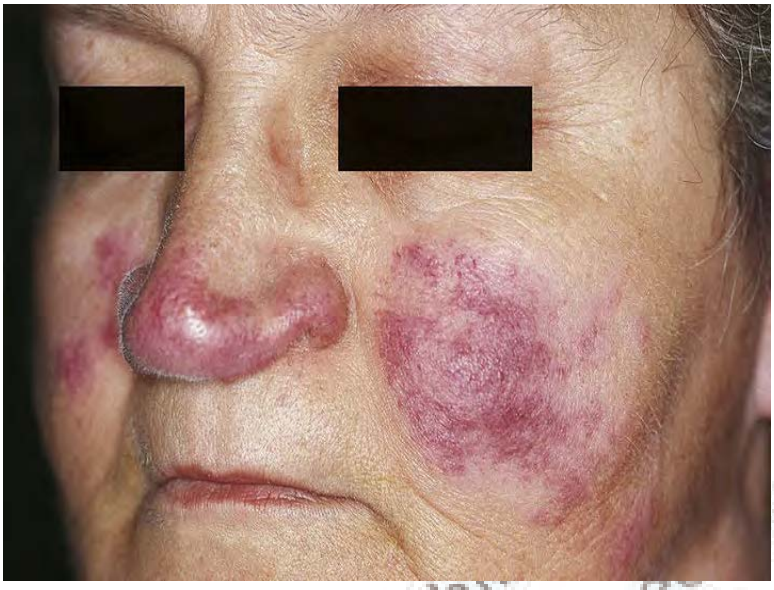
b) Cutaneous sarcoidosis

c) Lupus vulgaris

d) Rain drop pigmentation

Question 10:

A 45-year-old woman presented with the following. Apple jelly nodules are seen on diascopy. Her serum angiotensin-converting enzyme levels were found to be higher than normal. What is the possible diagnosis?



a) Lupus vulgaris

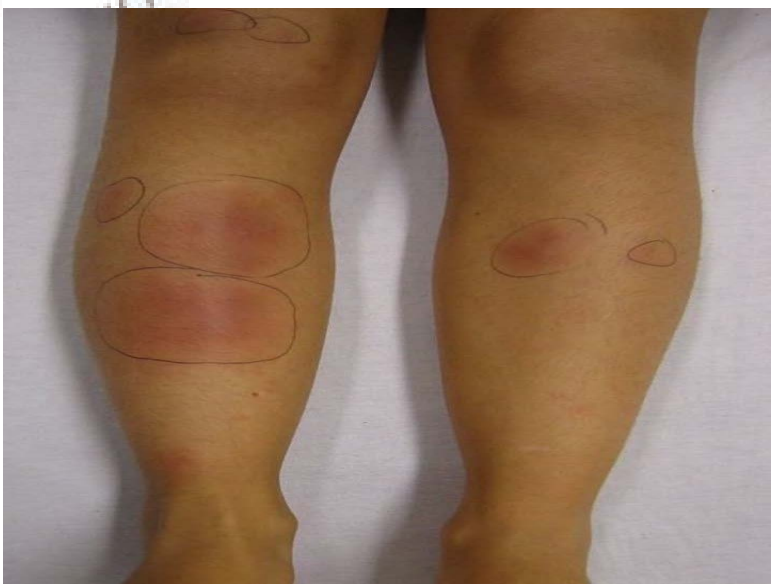
b) Scleroderma

c) Erythema nodosum

d) Lupus pernio

Question 11:

A 44-year old previously healthy lady, presented with complaints of pain in both her ankles, knees, and elbows. On examination, a tender rash as shown below is noted. The chest x-ray showed bilateral hilar lymphadenopathy. What is the possible diagnosis?



a) Heerfordt Syndrome

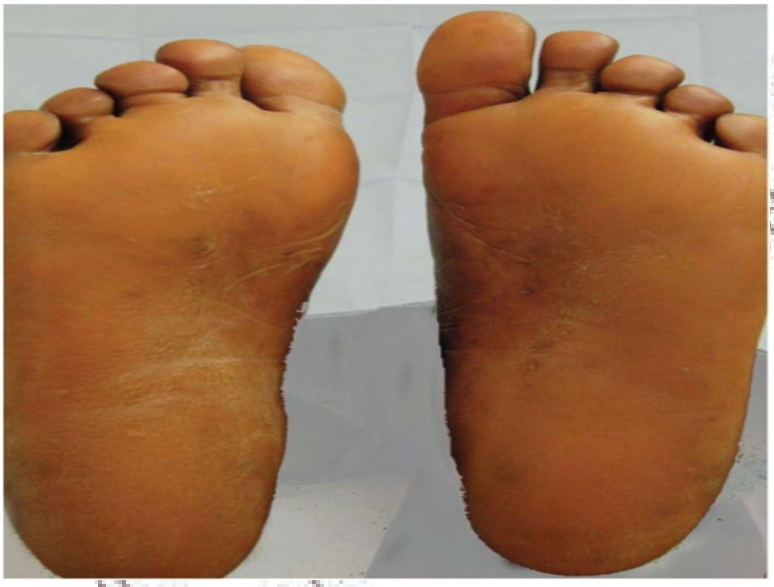
b) Tuberculosis

c) Löfgren Syndrome

d) Rheumatoid arthritis

Question 12:

A patient presented with the following. Similar lesions were seen on the palms. The lifetime risk for which malignancy is high in this patient?



a) Gastric cancer

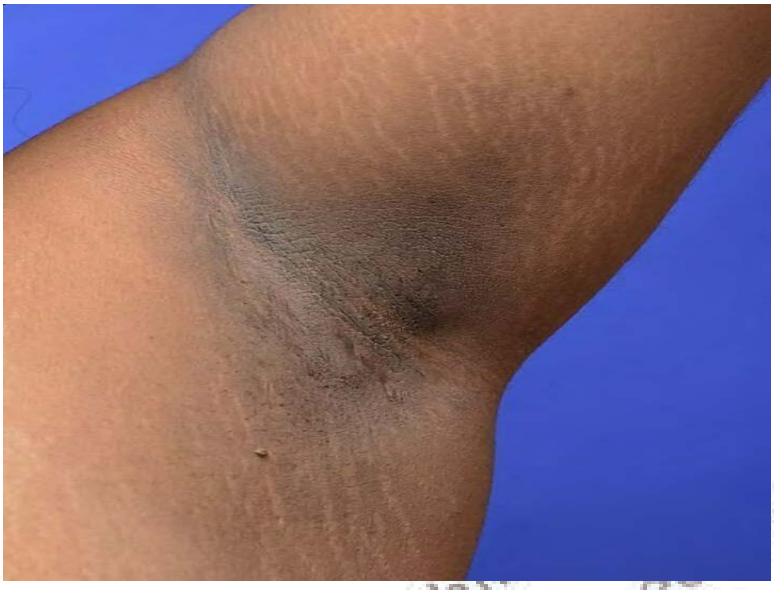
b) Esophageal cancer

c) Colon Cancer

d) Lung cancer

Question 13:

Identify the condition given in the image :



a) Dermatomyositis

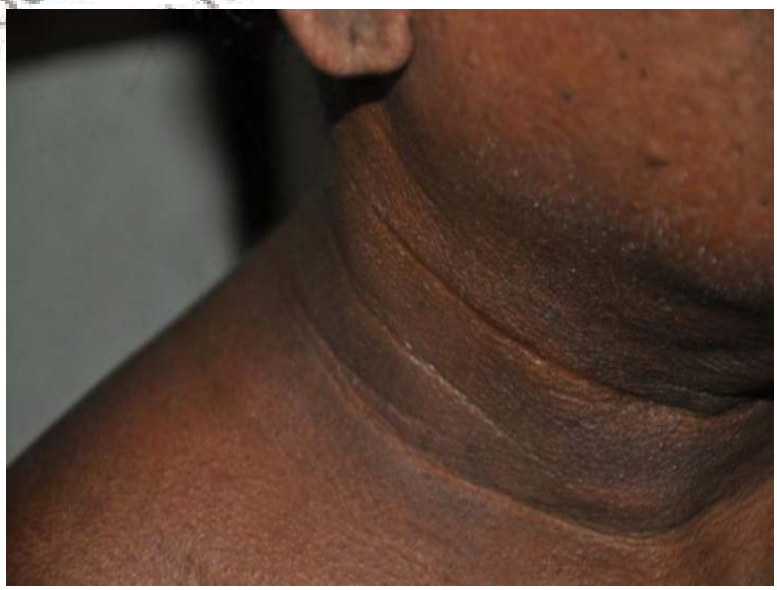
b) Acanthosis nigricans

c) Pityriasis rotunda

d) Melasma

Question 14:

Which of the following malignancies is most commonly associated with the paraneoplastic manifestation shown below?



a) Breast carcinoma

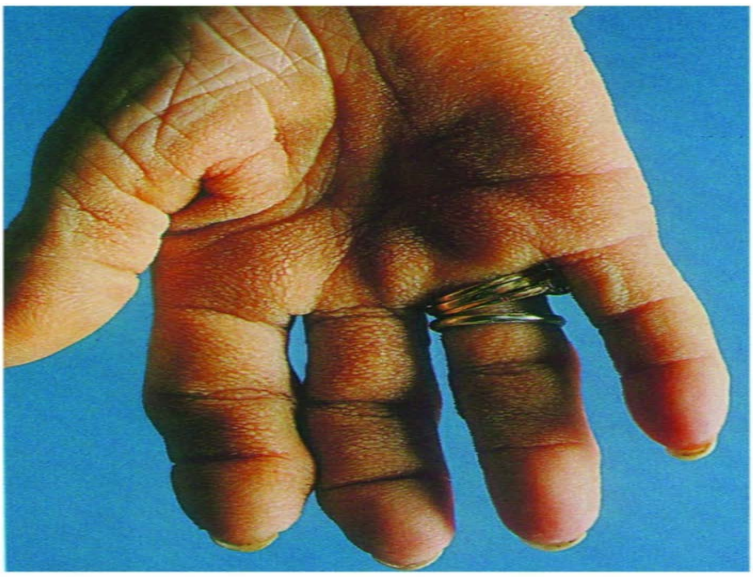
b) Bladder cancer

c) Gastric adenocarcinoma

d) Lung adenocarcinoma

Question 15:

In 40% of patients, this is the first sign of undiagnosed cancer. This finding in isolation is associated with which of the following internal malignancies?



a) Lung cancer

b) Gastric carcinoma

c) Breast cancer

d) Colon cancer

Question 16:

Pick the incorrectly matched cutaneous marker and its commonly associated internal malignancy.

a) Acquired Icthyosis - Hodgkin Lymphoma

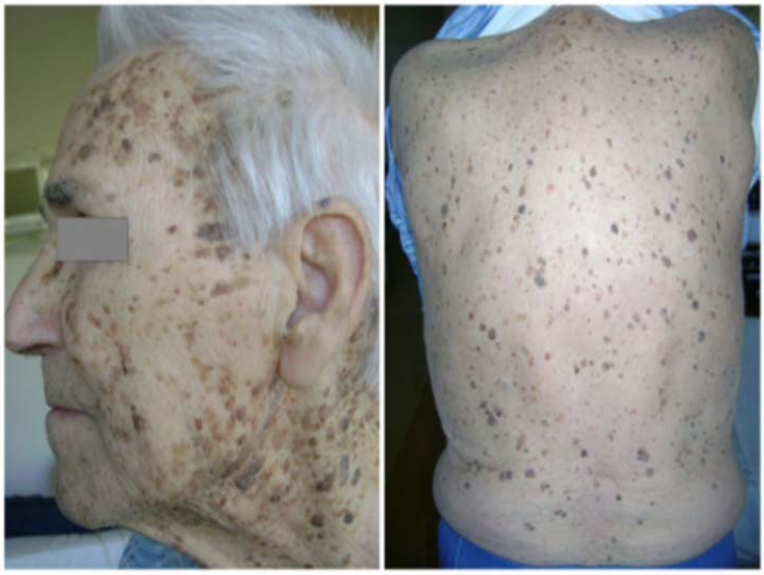
b) Erythema gyratum repens - Glucagonoma

c) Dermatitis herpetiformis - Lymphoma

d) Porphyria cutanea tarda - Hepatocellular carcinoma

Question 17:

A 56-year-old man presented with the sudden development of the eruption shown below. Which internal malignancy should be suspected?



a) Carcinoma pancreas

b) Carcinoid syndrome

c) Bronchial adenocarcinoma

d) Gastrointestinal adenocarcinoma

Question 18:

Leukemia cutis is most commonly seen in association with which of the following malignancies?

a) Acute lymphocytic leukemia

b) Acute myeloid leukemia

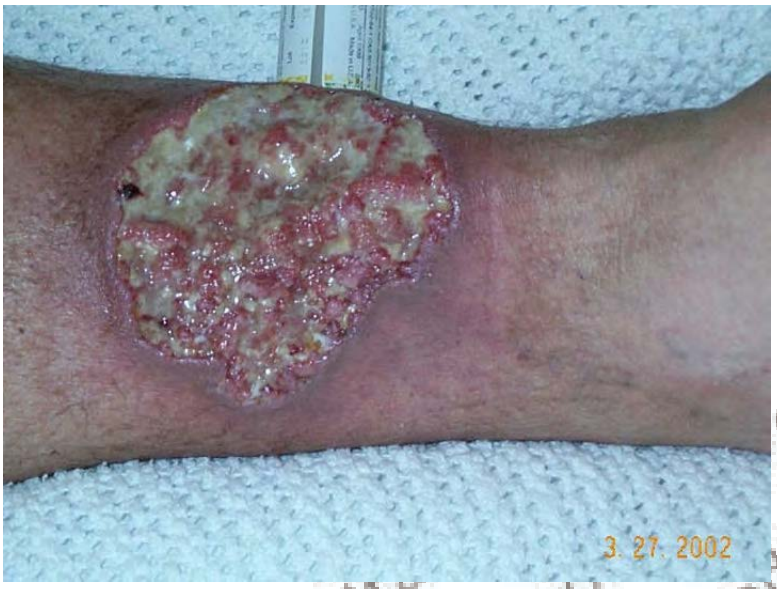
c) Chronic lymphocytic leukemia

d) Chronic myeloid leukemia

Question 19:

A patient with ulcerative colitis presented with the lesion shown below. He gave a history of a papulopustular lesion over his leg that had ulcerated to the current painful form over 4 days. HPE of the ulcer edge revealed neutrophilic infiltrates. Which of the following statements

regarding the cutaneous lesion is false?



a) Pathergy is seen in this condition

b) Cribriform or wrinkled paper scars are seen at the sites of healed ulcer

c) Bullous form of this lesion is associated with hematological malignancy

d) Treatment is with oral and topical antibiotics

Question 20:

A child presented with fever and multiple erythematous tender plaques. On microscopic examination, the skin lesions have neutrophilic infiltration in the dermis. What is the diagnosis?

a) Behcet's Syndrome

b) Pyoderma gangrenosum

c) Kasabach-Meritt Syndrome

d) Sweet's Syndrome

Question 21:

A 35-year-old woman presented to the medicine OPD with complaints of fatigue, constipation, and low mood for the past 3 months. Physical examination revealed diffuse enlargement of the thyroid gland and bradycardia. Which of the following skin findings is least likely to be seen in her?

a) Sign of Hertoghe

b) Aurantiasis cutis

c) Dry coarse skin

d) Palmar erythema

Question 22:

Which of the following is the most common cutaneous manifestation of end-stage renal disease?

a) Pigmentation

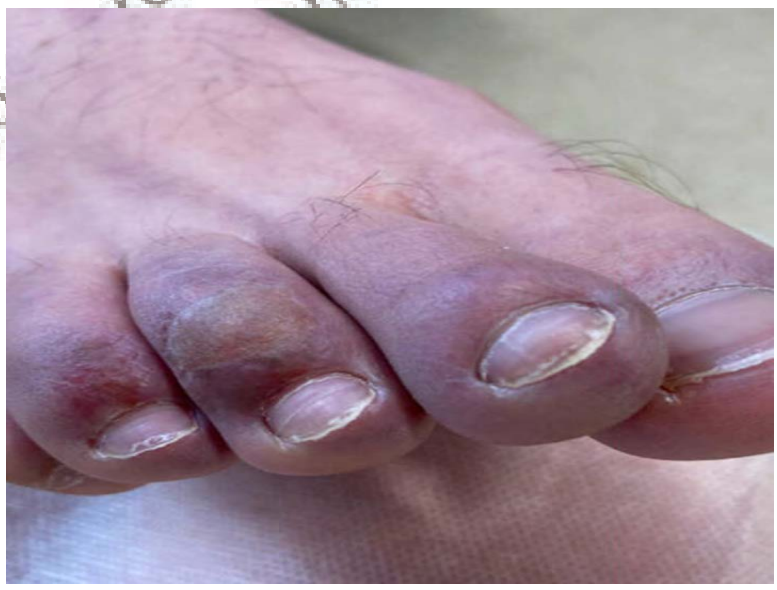
b) Pruritus

c) Half and half nails

d) Pseudoporphyria

Question 23:

A 44-year-old man came to the OPD with complaints of a violaceous rash on his toes that appeared one day ago. He denies any exposure to cold in the last 24 hours. Which of the following is suspected to be the cause?



a) Chilblains

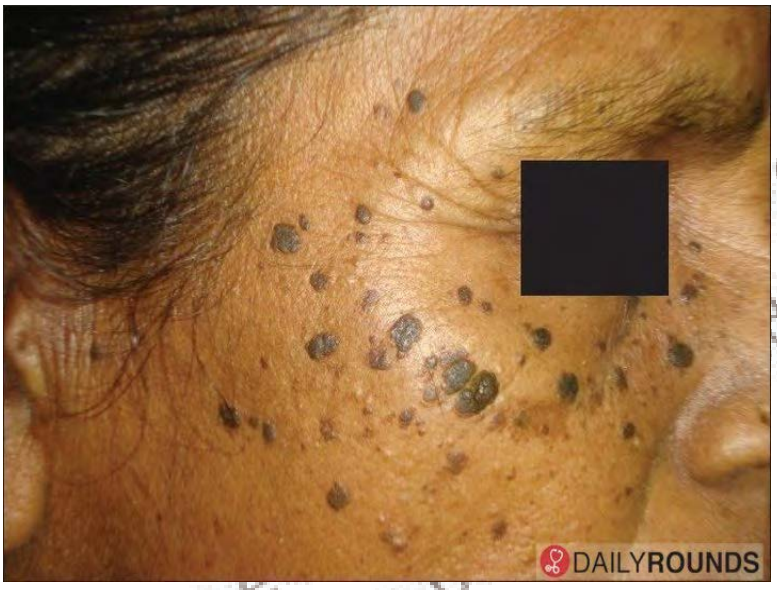
b) COVID-19

c) Varicella

d) Eczema

Question 24:

An elderly woman presents with a sudden increase in size and number of lesions given in the image. Which of the following should be suspected?



a) Melanoma

b) Visceral malignancy

c) HIV-AIDS

d) Parkinson's disease

Answer Key

Question No.	Correct Option
1	a
2	d
3	b
4	a
5	c
6	b
7	b

8	b
9	a
10	d
11	c
12	b
13	b
14	c
15	a
16	b
17	d
18	b
19	d
20	d
21	d
22	b
23	b
24	b

Detailed Explanations

Solution to Question 1:

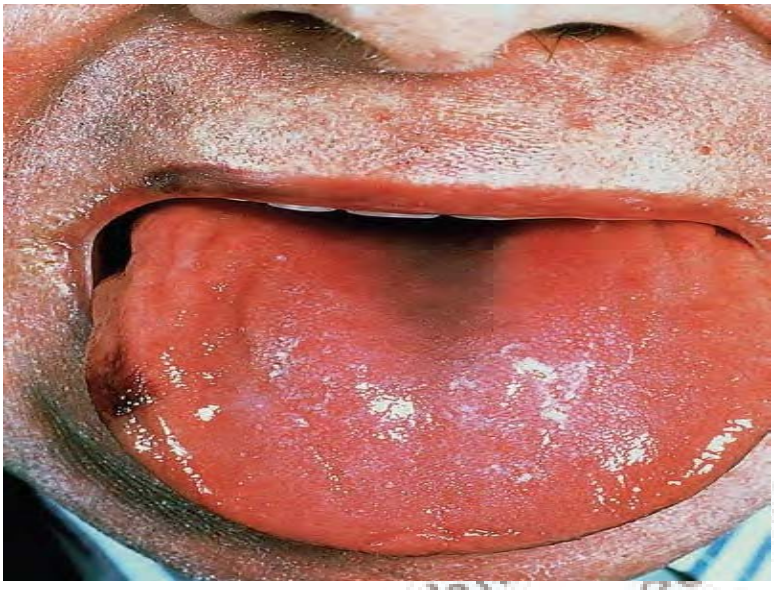
Pinch purpura is diagnostic of primary systemic amyloidosis.

Purpuric macules and ecchymoses, especially in the periorbital area, develop with minor trauma due to fragility from amyloid deposition around cutaneous vessels.

The common feature of these diseases is the production of monoclonal immunoglobulins of mostly light chains (isotypes κ and λ) serving as amyloid precursors (AL = light chain type/Bence Jones amyloid).

Amyloid precipitation within the oral cavity mucosa may present as macroglossia.

The given image below shows macroglossia associated with amyloidosis.



Solution to Question 2:

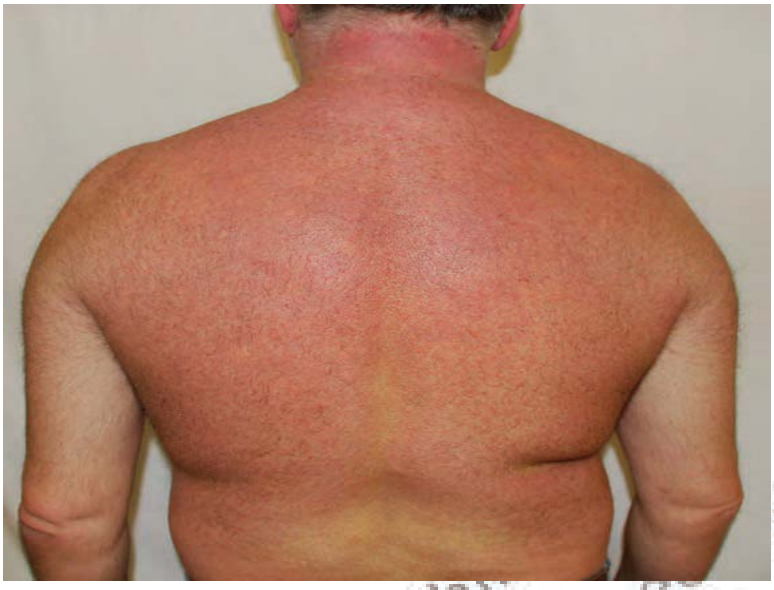
Sclerodactyly and Raynauds phenomenon are seen in scleroderma (not scleredema).

The symptoms of scleredema are due to a thickened dermis, deposition of mucin, and replacement of subcutaneous fat with coarse collagen fibers.

The dermis is 3–4 times thicker than normal due to an increase of type 1 collagen synthesis by dysfunctional fibroblast. However, fibroblast proliferation is not seen. Erythema and a peau d'orange appearance of the skin are commonly observed. The hands and feet are characteristically spared.

Diabetic scleredema is the most common type. Here, the accumulation of collagen may be due to irreversible non■enzymatic glycosylation of collagen and resistance to degradation by collagenase. It can also occur post-streptococcal infections.

The image shows scleredema in a diabetic patient with firm non■pitting edema and induration on the upper back, neck, and shoulders on an erythematous background.



Solution to Question 3:

The given clinical scenario and the findings shown- blistering, hypo, and hyperpigmented lesions over the sun-exposed areas (seen in panels A-C), and the absence of similar lesions on non-sun exposed areas (back) are suggestive of porphyria which presents with cutaneous features. Acute intermittent porphyria presents with acute abdominal pain, psychosis with no cutaneous features.

The common porphyrias are:

- Cutaneous disease only:
- Porphyria cutanea tarda (PCT)
- Congenital erythropoietic porphyria (CEP)
- Erythropoietic protoporphyria (EPP)
- Cutaneous disease and acute attacks:
- Hereditary coproporphyria (HC)
- Variegate porphyria (VP)
- Acute attacks only - Acute intermittent porphyria.

Solution to Question 4:

Porphyria cutanea tarda (PCT) is the commonest porphyria.

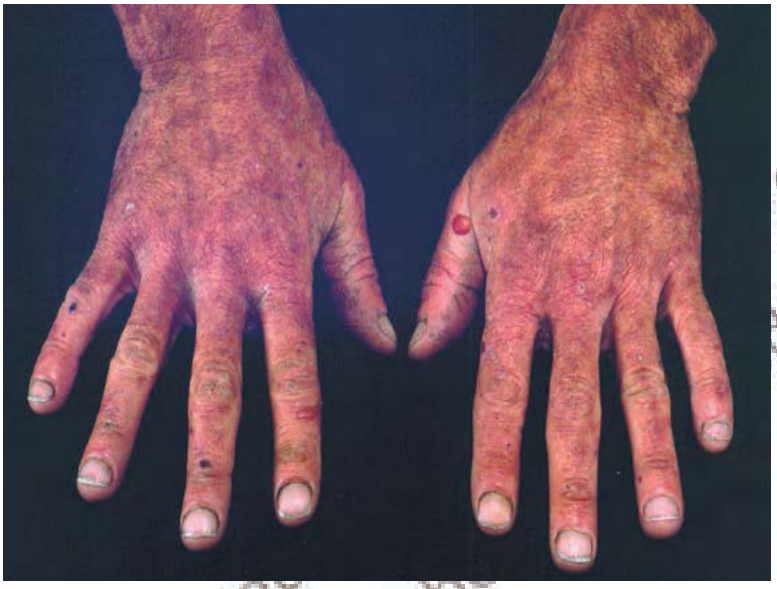
It results from the deficiency of uroporphyrinogen decarboxylase (UROD). This causes an accumulation of uroporphyrin and other highly carboxylated porphyrins

It is usually acquired (75%, sporadic) and is often associated with liver disease. It does not cause acute attacks.

Patients notice increased fragility on light■exposed skin, particularly the backs of the hands and forearms, with minor trauma shearing the skin away to leave sharply marginated erosions that crust and resolve over few weeks leaving atrophic scars, milia, and often mottled hyper■ or hypopigmentation. Hypertrichosis on the upper face and forehead is common

Pink or coral-red fluorescence of urine is seen under Wood's light.

The image given below is of porphyria cutanea tarda: erosions, blisters, pigmentary changes, and scarring.



Solution to Question 5:

The given image shows xanthelasma palpebrarum. They are seen in:

• Familial hypercholesterolemia

• Type III hyperlipoproteinemia (broad beta disease)

• Primary biliary cirrhosis (chronic cholestasis)

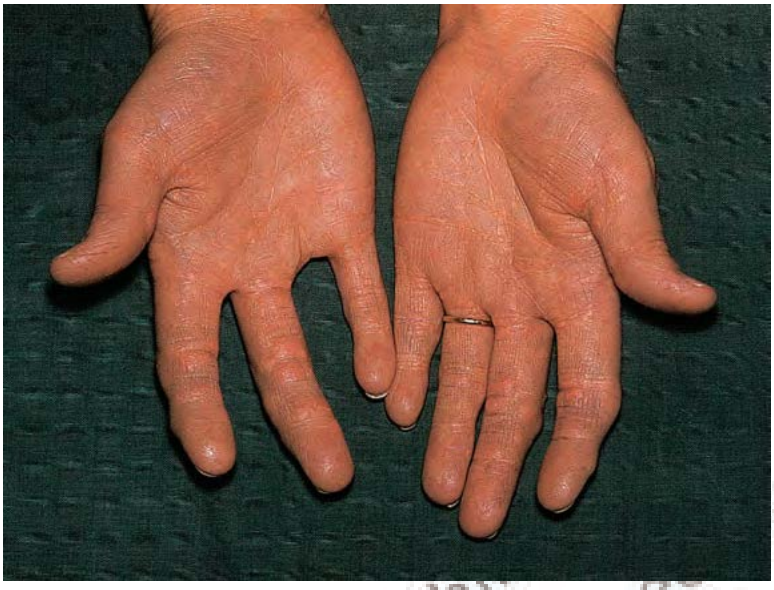
They are not seen in type I hyperlipoproteinemia (familial chylomicronemia).

Xanthelasmas most commonly affect the upper eyelids and the area around the medial canthus. They are relatively soft on palpation and range from pale yellow to yellow■orange in color.

Solution to Question 6:

Painless, linear, yellow, lipid deposition along the palmar creases and flexor creases of the wrist are descriptive of xanthomata striata palmaris. It is pathognomonic of type III hyperlipoproteinaemia.

The image given below shows xanthomata striata palmaris.



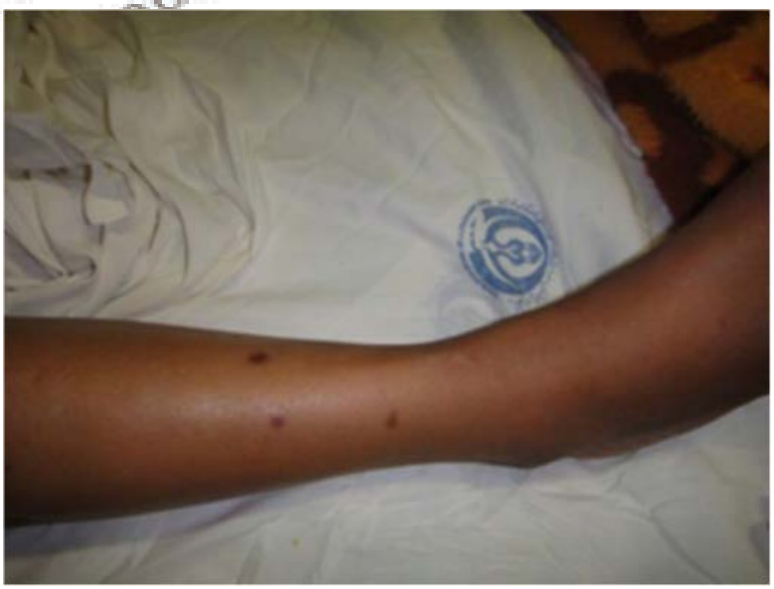
Solution to Question 7:

Diabetic dermopathy is common and is a marker for complications of diabetes such as retinopathy, nephropathy, and neuropathy.

It presents as asymptomatic, oval, dull■red papules 0.5–1 cm in diameter evolve slowly on the shins, forearms, thighs, and over bony prominences, producing a superficial scale and, ultimately, atrophic brown scars.

Pathologically, there is hyperpigmentation of the epidermal basal layer, deposition of haemosiderin and melanin in the dermis, and arteriolar basement membrane thickening.

The image given below shows Binkley's spots (diabetic dermopathy).



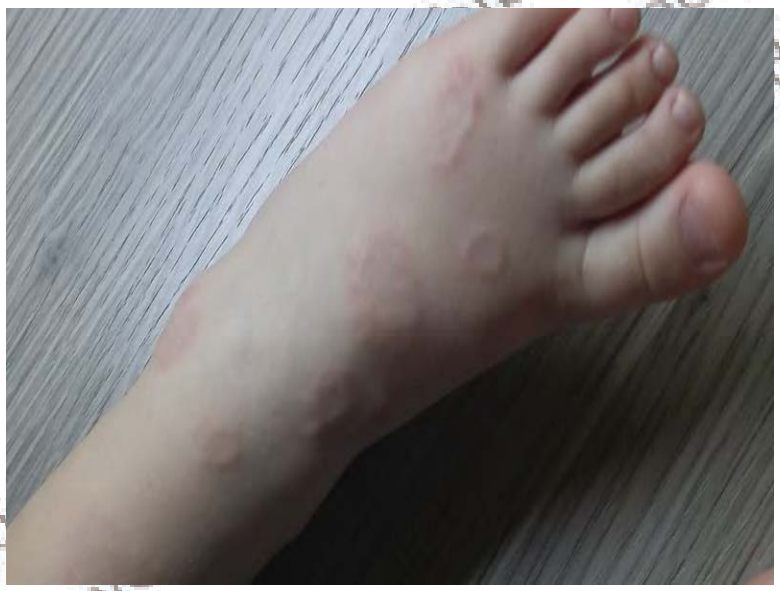
Solution to Question 8:

The given image shows an erythematous rash with ulceration and healing over the shin. This clinical presentation in a diabetic patient is indicative of necrobiosis lipoidica.

Necrobiosis lipoidica diabeticorum is a rare chronic and granulomatous skin disorder that affects only 0.3% of diabetic patients. The average age of onset is 30 years, with females being affected more commonly. Its postulated etiology is microangiopathy.

Most rashes are located on the legs, especially above the tibiae. It may present as red papules that enlarge to form patches or plaques with an atrophic yellowish-brown and slightly depressed center.The lesions may resolve spontaneously or become persistent chronic lesions, that can ulcerate.

Option A: Granuloma annular is most commonly found in children and females <30 years. It manifests as groups of 1-2mm papules that range from skin colored to violaceous, in an annular arrangement over distal extremities. There is no confirmed association with diabetes.



Option C: Reactive perforating collagenosis (folliculitis) has been reported in patients with diabetes. It is attributed to collagen glycation.

Option D: Rubeosis is a peculiar rosy reddening of the face, and sometimes hands and feet. In longstanding diabetes, it is attributed to microangiopathy or decreased vascular tone.

Solution to Question 9:

The image shows Binkley's spots or diabetic shin spots which is another name for diabetic dermopathy. The phrase diabetic dermopathy was coined by Binkley in 1965.

It is characterized by asymptomatic, oval, dull■red papules 0.5–1 cm in diameter evolve slowly on the shins, forearms, thighs, and over bony prominences, producing a superficial scale and atrophic brown scars.

Solution to Question 10:

Lupus pernio (cutaneous sarcoidosis) is the most likely diagnosis.

Cutaneous sarcoidosis or presents as red■brown or red violaceous nodules or plaques, generally multiple. It is usually asymptomatic. Diascopy reveals the subtle brown■yellow or 'apple jelly' color characteristic of granulomatous diseases but usually more opaque than in lupus vulgaris. At diagnosis, at least 60% of patients have an increased serum angiotensin■converting enzyme level.

Lupus pernio is the most distinctive manifestation of cutaneous sarcoidosis. Infiltrated erythematoviolaceous plaques involve the nose, cheeks, ears, lips, forehead, and fingers. On the cheeks, a prominent telangiectatic component is characteristic. The clinical appearance is due to the presence of epithelioid cell granulomas in the dermis.

Lupus pernio is usually painless and, as it does not tend to ulcerate, is not as mutilating as lupus vulgaris.In more than half of cases, lupus pernio is associated with sarcoidosis of the upper respiratory tract, especially in patients with involvement of the nasal rims.

It is also frequently associated with pulmonary fibrosis, chronic uveitis, and bony cysts, particularly affecting the terminal phalanges.

Solution to Question 11:

The image given shows erythematous shiny plaques over the shin, indicative of erythema nodosum. The characteristic triad association of erythema nodosum with bilateral hilar and right paratracheal adenopathies, with or without pulmonary infiltrates, and polyarthritis is known as Löfgren syndrome. (it is a type of acute sarcoidosis).

Arthritis in sarcoidosis is usually symmetrical; the ankles (>90% cases), knees, small joints of the hands or feet, wrists, and elbows are involved.

Erythema nodosum is the most common non■specific lesion of sarcoidosis and the first manifestation of the disease but may not be present in all patients. It may be accompanied by fever, polyarthralgia, and uveitis.

Inflammatory markers are elevated in >80% of patients with acute sarcoid polyarthritis. Serum ACE level is usually increased, and rheumatoid factor is negative.

It usually resolves spontaneously. Some require treatment is with oral corticosteroids. The prognosis is very good.

Option A: Heerfordt Syndrome is a rare presentation of sarcoidosis and is characterized by the presence of parotid gland enlargement, facial palsy, anterior uveitis, and fever.

Option B: Tuberculosis generally does not show bilateral hilar lymphadenopathy.

Option D: Rheumatoid arthritis also presents with polyarthralgia and erythema nodosum. Rheumatoid factor is often positive without chest involvement.

Solution to Question 12:

The given image shows keratoderma or thickening of the soles. When this condition is present in both palms and soles, it is called palmoplantar keratoderma or tylosis. It is associated with a very high lifetime risk of developing squamous cell carcinoma of the esophagus.

Pressure points of the sole are predominantly affected, and the palms, less affected.

Tylosis esophageal cancer syndrome, also called as Howel-Evans syndrome is inherited as an autosomal dominant trait with complete penetrance of the cutaneous features.

The cutaneous features usually present by 7 to 8 years of age but can present as late as puberty. Esophageal cancer associated with tylosis usually presents in middle to late life (from mid-fifties onwards) and shows no earlier development than the sporadic form of the disease.

Solution to Question 13:

The condition in the given image is acanthosis nigricans. It is characterized by thickened, gray-brown velvety plaques seen in flexural areas such as the back of the neck, axillae, inframammary creases, waist, and groin.

The causal mechanism is due to the secretion of epidermal growth factors in the region involved. It can be benign or malignancy-associated.

• Benign - commonly associated with obesity or insulin resistance, usually mild.

• Malignancy - much less common, associated with gastric, lung, and uterine cancers.

Acanthosis nigricans can also be seen in the following:

• Drugs such as nicotinic acid used to treat hyperlipidemia

• Sudden onset of multiple seborrhoeic keratoses

Solution to Question 14:

This image shows velvety warty hyperpigmentation on the front of the neck called acanthosis nigricans. By far, the commonest site of underlying neoplasm is the gastrointestinal tract (70–90%), and gastric adenocarcinoma is the most frequent.

Production by tumor cells of either transforming growth factor ° (TGF-°) or cytokines that activate insulin■like growth factors or their cutaneous receptors has been proposed as the pathogenetic mechanism.

Solution to Question 15:

The image shows enhanced dermatoglyphics with thickened velvety palms that have the appearance of tripe, the stomach lining of beef. Tripe palms or acanthosis palmaris occurring alone is more often associated with bronchial carcinoma.

Other sites of tumors are:

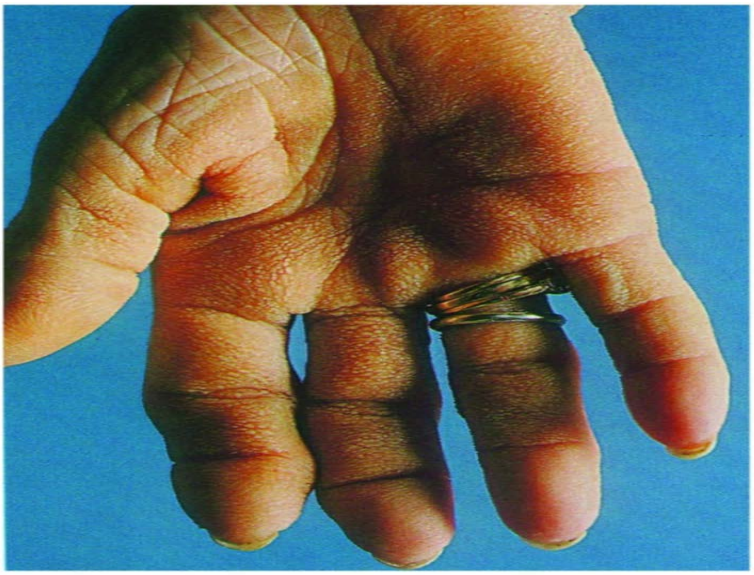
• Genitourinary tract

• Carcinoma breast

Acanthosis nigricans or sign of Leser-Trelat is most commonly associated with gastric carcinoma

The appearance or exacerbation of tripe palms in a known cancer patient may be a sign of recurrence of the malignancy.

The image below shows tripe palms.

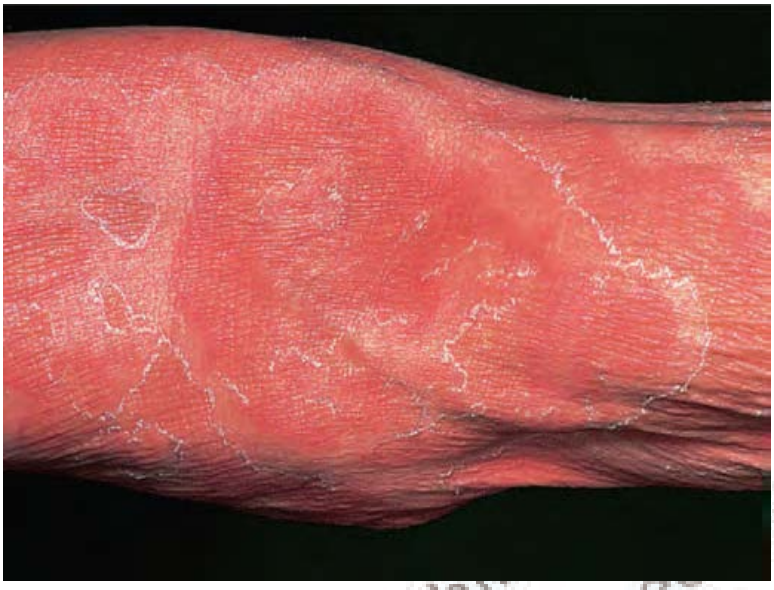


Solution to Question 16:

Erythema gyratum repens is commonly associated with lung cancer.

Necrolytic migratory erythema is commonly associated with glucagon secreting pancreatic islet cell adenoma.

The image given below shows erythema gyratum repens of the arm secondary to carcinoma of the bronchus.



Solution to Question 17:

The given image shows multiple eruptive seborrheic keratoses over the back, abdomen, and neck. This acute onset of an increase in size and number of seborrheic keratoses is a sign of internal malignancy called the sign of Leser-Trélat.

When it is associated with pruritus or acanthosis nigricans, especially in younger patients, it warrants investigation for internal malignancy.

About 1/3rd of associated tumors are in the gastrointestinal tract, and about half of these tumors are adenocarcinomas.

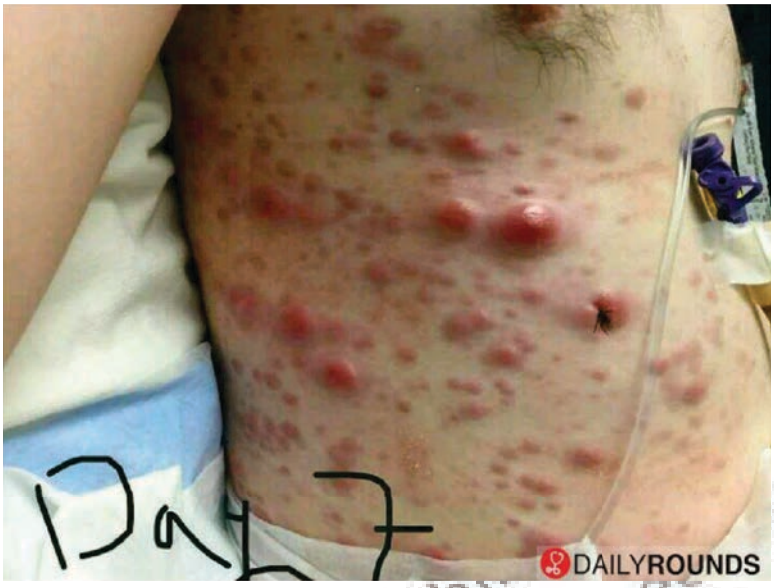
Solution to Question 18:

Leukemia cutis is most common in patients with myeloid neoplasms, especially acute myeloid leukemia (AML). The risk is higher with translocation t(8,21).

Leukemia cutis is an infiltration of the skin by myeloid or lymphoid neoplastic leukocytes resulting in clinically identifiable cutaneous lesions. When made up of malignant granulocytic precursor cells, leukemia cutis lesions are also called myeloid sarcoma, granulocytic sarcoma, or chloroma.

Leukemia cutis typically presents as single or multiple monomorphic violaceous, dark■red or hemorrhagic skin nodules and plaques, especially on the legs, arms, and face.

The image below shows violaceous infiltrated nodules and plaques on the trunk suggestive of leukemia cutis.



Solution to Question 19:

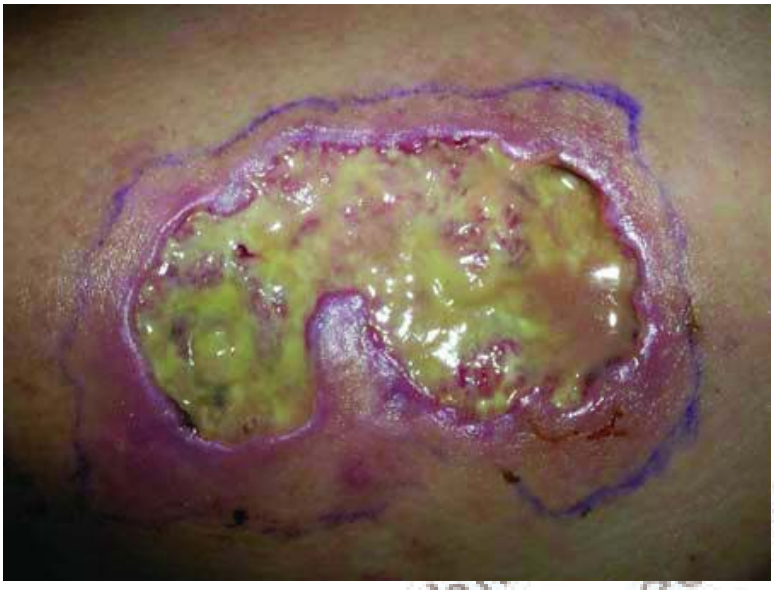
The given scenario is suggestive of pyoderma gangrenosum (PG). It is an autoinflammatory disease (excessive response to an internal antigen) due to neutrophil dysfunction and hence antibiotics have no role in its management.

It commonly presents on the anterior aspect of the lower limbs. The disease starts as a papule/pustule/bulla and rapidly progresses to an ulcerative lesion. The undermined edges of the ulcer show neutrophilic infiltration. Deep ulcers heal with a characteristic cribriform or criss-cross pattern of scarring.

The pustular form of PG is associated mainly with inflammatory bowel disease (ulcerative colitis > Crohn's disease), the bullous form with hematological malignancies.

Pathergy is the phenomenon whereby skin trauma provokes lesions at the site of injury. It is seen in pyoderma gangrenosum, Behcet's disease.

The image below shows a large purulent ulcer with violaceous undermined borders which is a feature of pyoderma gangrenosum.



Solution to Question 20:

Neutrophilic infiltration of the dermis indicates one of the diseases under neutrophilic dermatosis. Sweet's Syndrome presents as an acute febrile neutrophilic dermatosis which is characterized by non■itchy, sometimes tender, erythematous plaques and papules.

The plaques are often oedematous and as the process develops they may become studded with pseudovesicles or pseudopustules (no fluid collection present).

The lesions in Sweet's Syndrome are most commonly distributed on the arms, upper body, head, and neck. An associated fever and peripheral leucocytosis are commonly seen and females are more frequently affected.

Histological findings include a dense dermal neutrophilic infiltrate with edema. Three subgroups are recognized:

• Classical

• Malignancy-associated

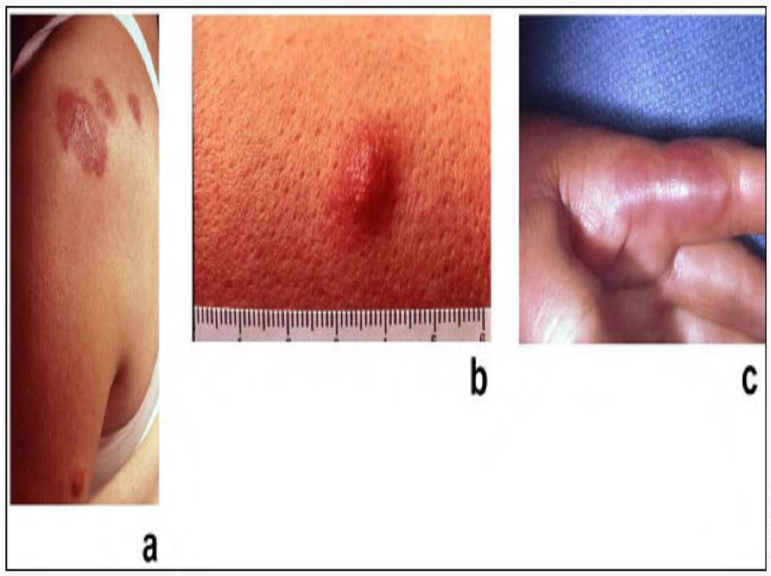
• Drug-induced

Option A: Behcet's syndrome is also a neutrophilic dermatosis but presents as recurrent oral and genital aphthous ulcers with an erythematous halo.

Option B: Pyoderma gangrenosum, another neutrophilic dermatosis presents as painful ulcerative erythematous plaques or papules with undermined violaceous borders.

Option C: Kasabach-Merritt's syndrome shows hemangiomas with thrombocytopenia.

The image given below shows Sweet syndrome- pseudovesicles may occur within the inflammatory plaques.



Solution to Question 21:

The given clinical scenario is suggestive of hypothyroidism. Palmar erythema is seen in hyperthyroidism.

Graves disease may also cause thyroid dermopathy resulting in pretibial myxoedema and exophthalmos, which are associated with the presence of thyroid antibodies.

Hypothyroidism	Hyperthyroidism
Cold peripheries with pale and dry coarse skin	Smooth, moist, and warm skin
Aurantiasis cutis,yellowish tinged skin secondary to beta-carotene accumulation	Facial andpalmar erythema
Sparse and brittle hair	Fine, soft, and thinned scalp hair
Sign of Hertoghe -loss of hair in the outer third of eyebrows	Distorted and overgrown nails (thyroid acropachy) that may lift off the nail bed (onycholysis)
Myxoedema - puffy face, eyelids, hands, and feet	Generalized pruritis
Delayed wound healing	Urticaria

Solution to Question 22:

Localized (trunk, head) or generalized pruritus occurs in 90% of patients with end■stage kidney disease due to irritation of free nerve endings caused by uremia.

Other cutaneous manifestations of end-stage renal disease are:

• Xerosis

• Anemic pallor

• Hyperpigmentation

• 'Half and half' nails

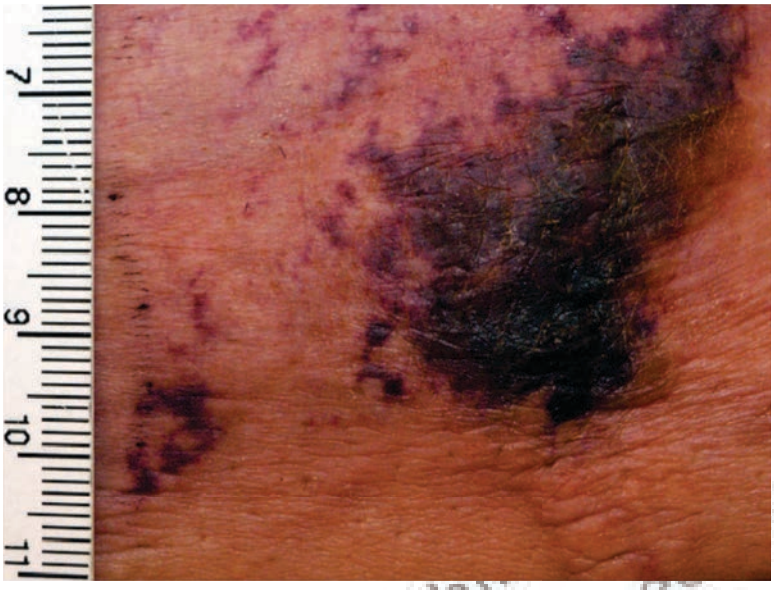
• Pseudoporphyria (following hemodialysis)

• Nephrogenic fibrosing dermopathy

• Calciphylaxis

Lindsay's nails (Half and half nails)

The image given below shows calciphylaxis- also known as calcific uremic arteriolopathy (CUA) or “Grey Scale”, is a rare painful syndrome of calcification of the small blood vessels located within the fatty tissue and deeper layers of the skin, blood clots, and the death of skin cells due to too little flow.



Solution to Question 23:

The most likely cause of the above picture is COVID-19, an entity called COVID toes.

Pernio (chilblains) present as erythematous-violaceous or purpuric macules on fingers, elbows, toes, and lateral aspect of the feet, with or without accompanying edema and pruritus. The underlying mechanism is thought to be an inflammatory process. They can be:

• Idiopathic, due to exposure to cold that present within 12-24 hours.

• Secondary to hematological disorder (paraproteinemia), autoimmune disease, viral hepatitis or malignancy.

The latest guidelines suggest patients presenting with new-onset, pernio-like lesions that have no other clear cause should be tested for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by polymerase chain reaction (PCR). There are no treatment guidelines for COVID-19-associated, pernio-like lesions of the feet or hands. However, high-potency topical corticosteroids may be helpful if the lesions are causing discomfort.

Solution to Question 24:

The finding seen in the case scenario provided is seborrheic keratosis and this is highly suggestive of visceral malignancy.

A sudden appearance of multiple seborrheic keratoses in association with skin tags and acanthosis nigricans has been associated with a variety of malignancies, including gastrointestinal and lung cancers; it is also known as the Leser-Trélat sign.

Seborrheic keratoses are common epidermal tumors consisting of a benign proliferation of immature keratinocytes. They present as well-demarcated, round or oval lesions with a dull, verrucous surface and a typical stuck-on appearance.