



OneShot 4.0

Radiology

DBMCI · 2026



RADIOLOGY

<i>Sl. No.</i>	<i>CHAPTER</i>	<i>Page No.</i>
1.	<i>Radiology</i>	423

“

Never Give up.
Today is hard ,
Tomorrow will be
worse, but the day
after tomorrow
will be sunshine.

- Dr. Rajat Jain

”

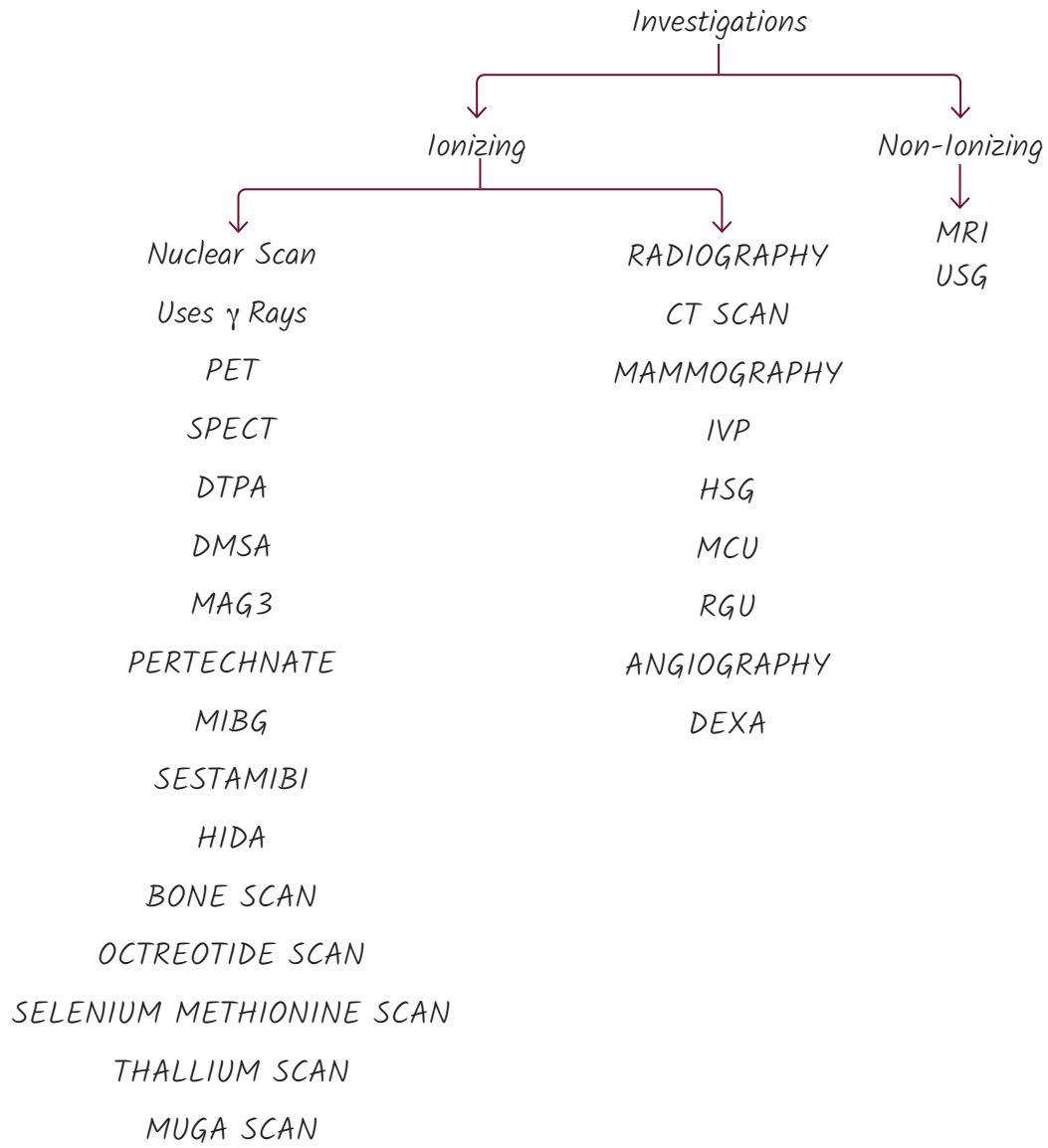


RADIOLOGY

1. 1 question on identify the name of the investigation?
2. 2-4 questions on diagnosis on the basis of Image.
3. 1 question from Nuclear scans.
4. 1 question from radiotherapy.
5. 2 questions on preferred radiological investigation.
6. 8-10 Qs on radiological image with management of patient.
7. 6-8 questions where radiology will be a part of question.

Important Topics

• Ankylosing Spondylitis	• Abdominal trauma
• Barium Studies	• Radiosensitivity
• IVP	• PNS
• Chest Xray	• Shape of vertebrae
• PET scan	• Shape of heart
• Renal masses	• Shape of skull
• MCU	• Brain tumors
• RGU	• Intussusception
• HSG	• Mediastinal mass
• Head Trauma	• Pregnancy USG
• Pneumoperitoneum	• Stroke
• Intestinal obstruction	• Aortic dissection
• AVN	• Pulmonary embolism
• Anatomy	• Pulmonary edema
• ERCP/MRCP	



MIBG → Pheochromocytoma

Sesta MIBI → Parathyroid adenoma.

HIDA → Biliary atresia

MDP → Bone Scan- osteoblastic Activity

Selenium Methionine → Pancreatic Imaging

Octreotide Scan → NET (Carcinoid)
(SRS)

Thallium scan → Myocardial viability
Reversibility of myocardial ischemia

MUGA Scan → Ventricular function

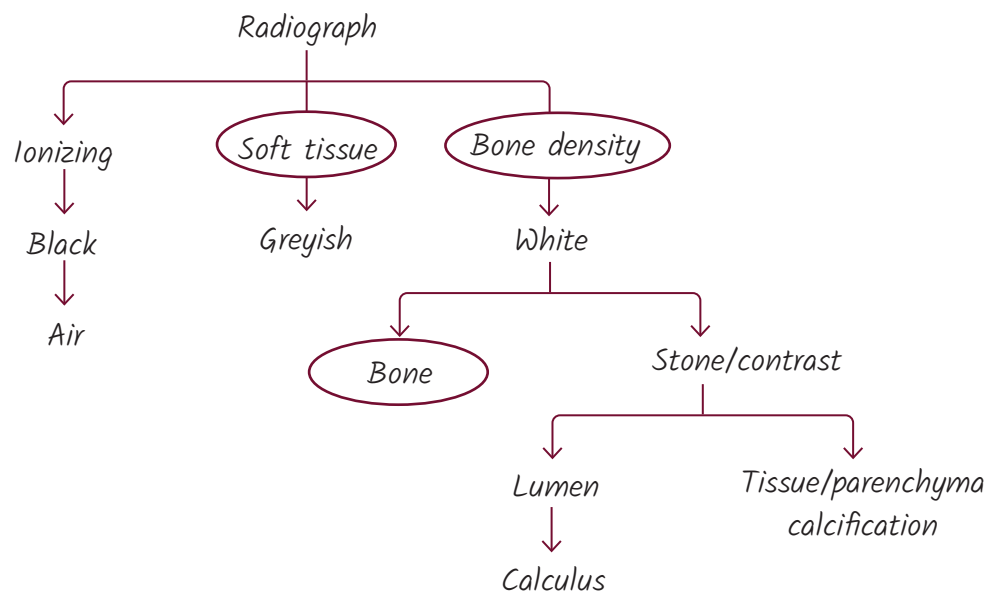
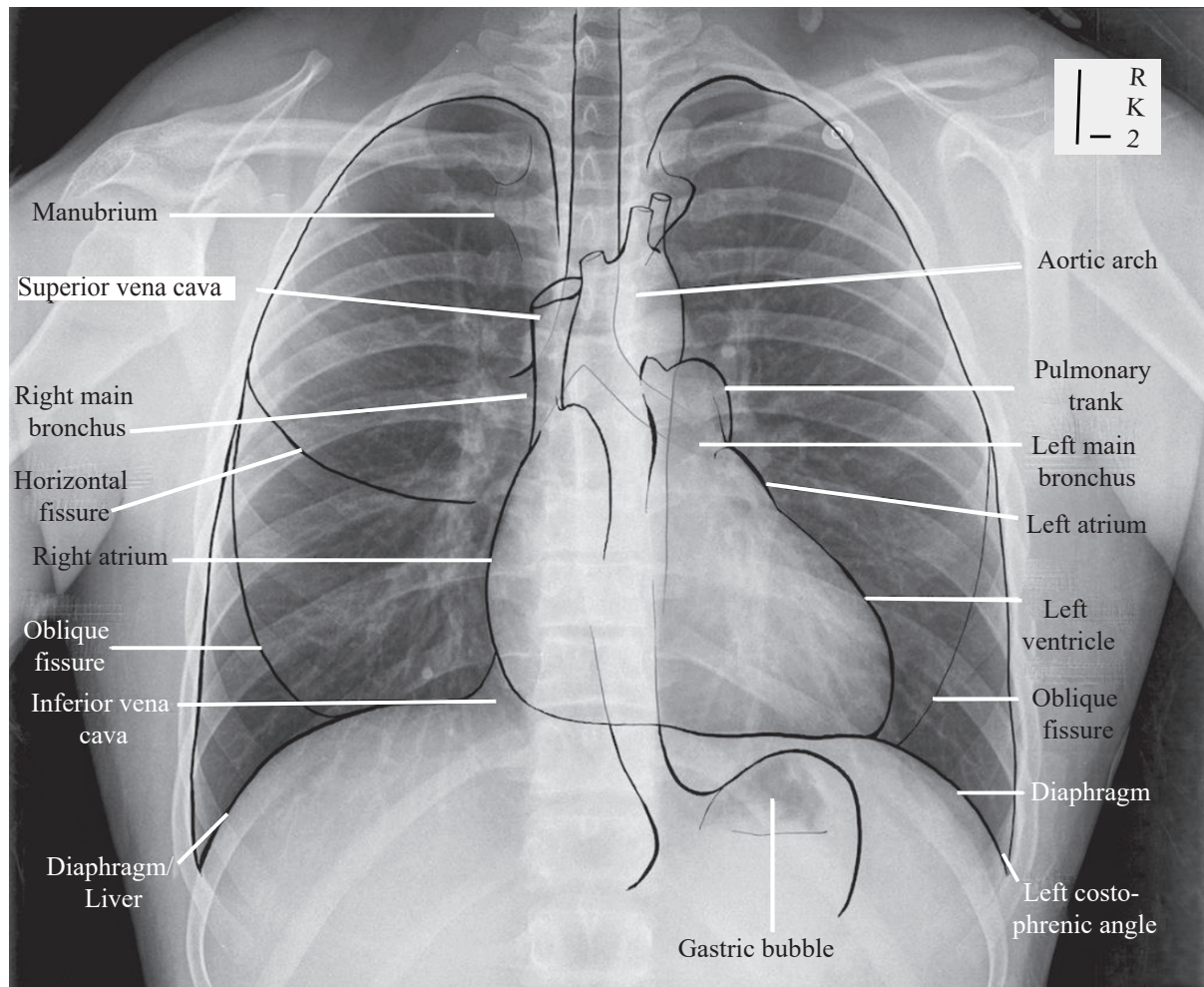
Cardiac MRI

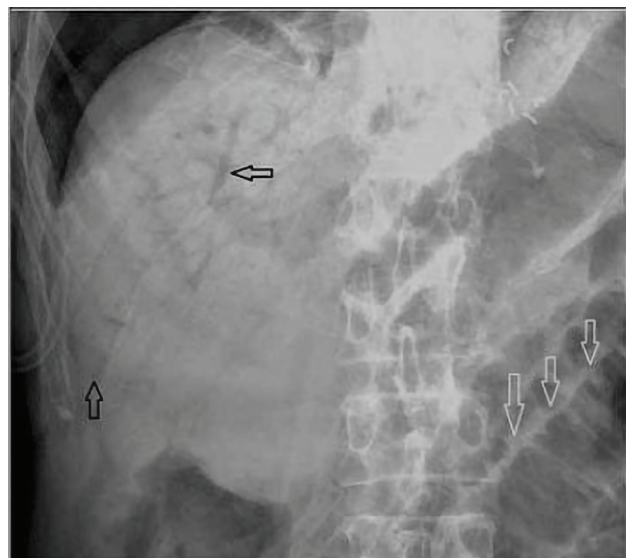
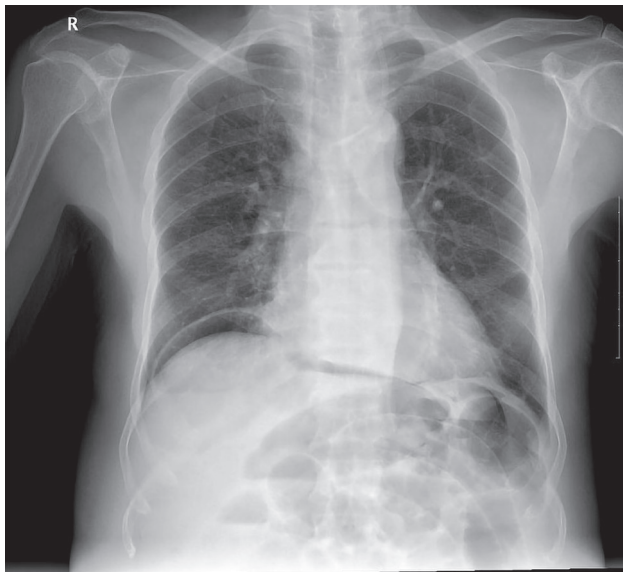
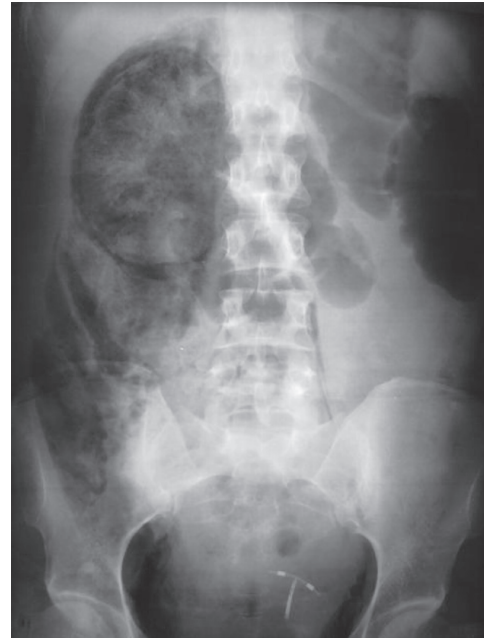
FDG - PET

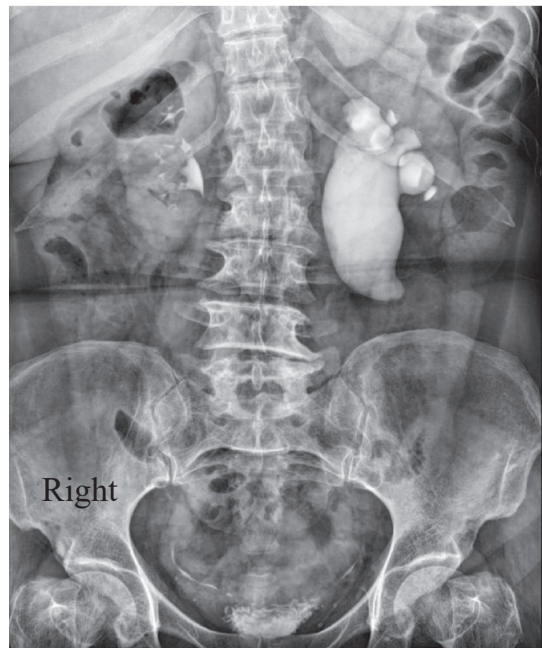
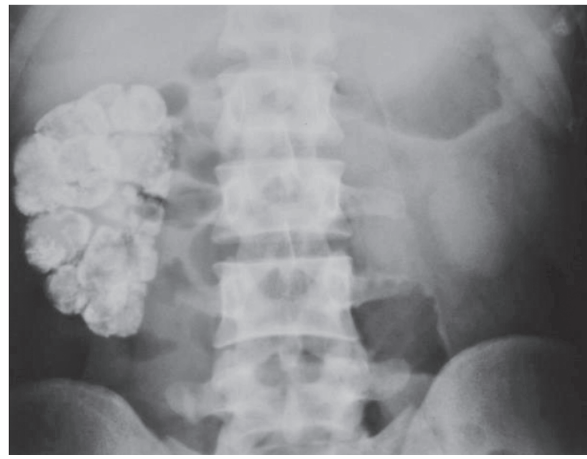
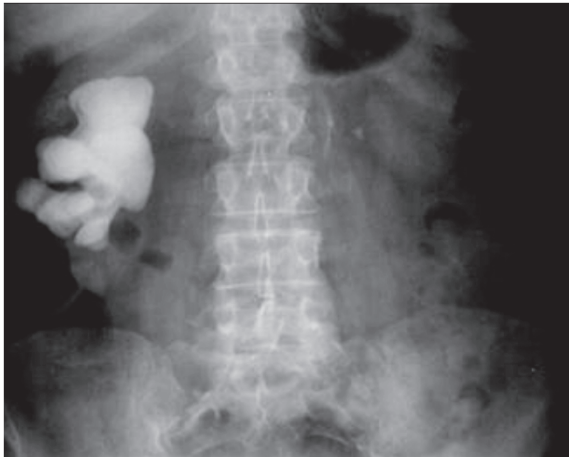
Most Accurate test
Cardiac MRI

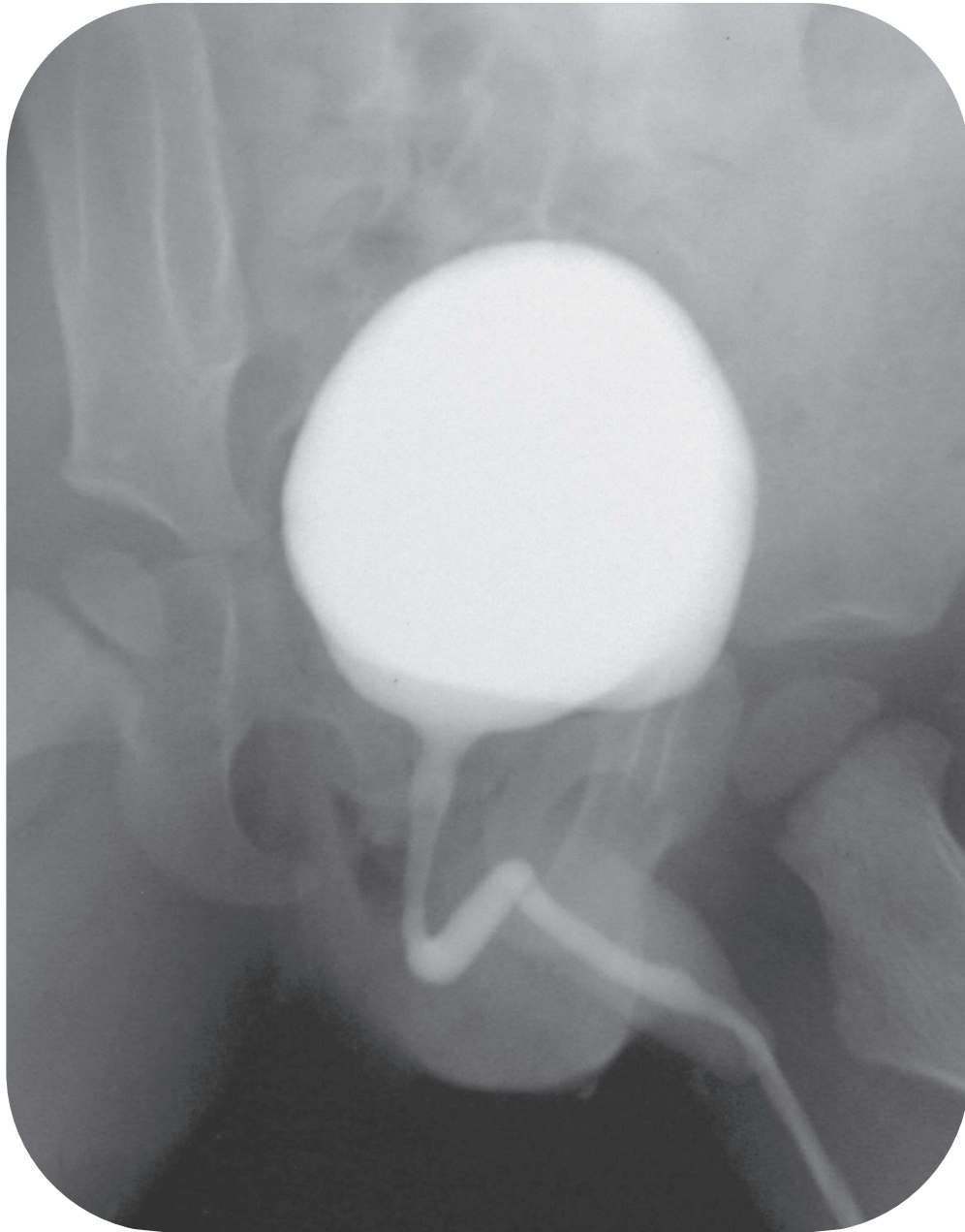
How to decide
any investigation?

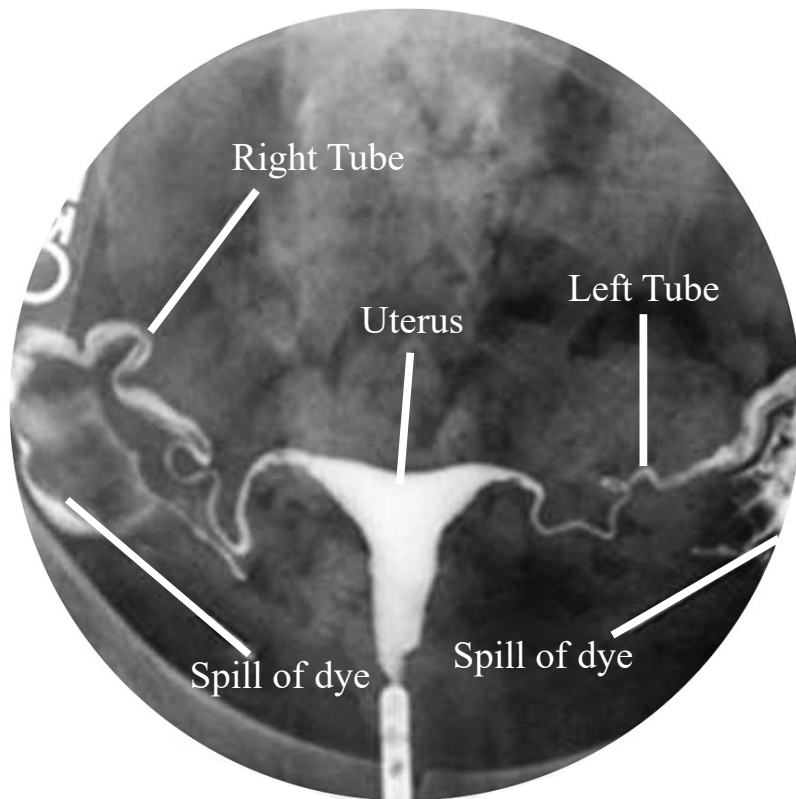
- Bone
 - Cortical Bone → CT
 - Marrow → MRI
 - Air
 - Acute Hematoma
 - Calculi/calcification
- } CT
- Neural Tissue
 - Ligaments/tendons/cartilage/
 - Fibrous tissue/Muscles
- } MRI
- Fluid → USG

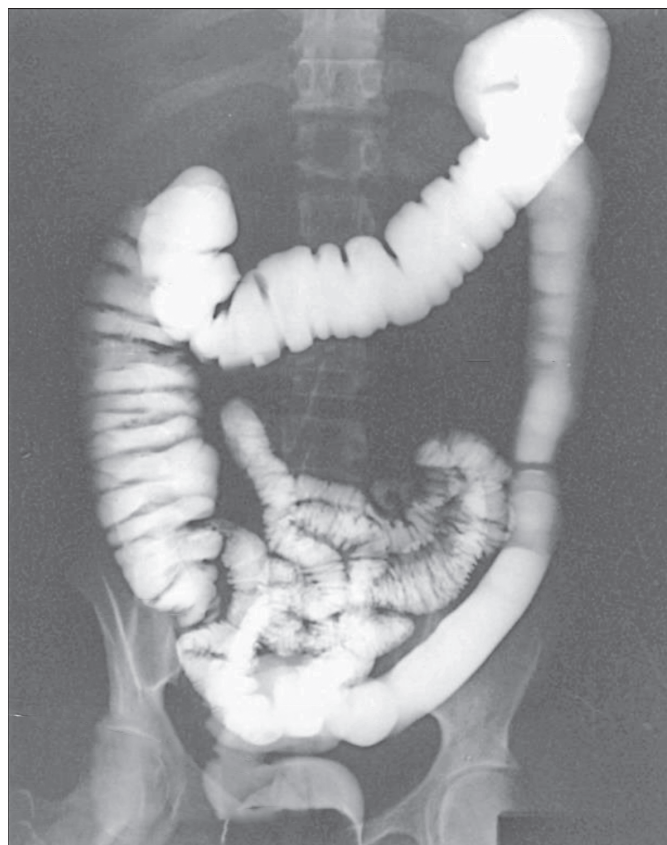
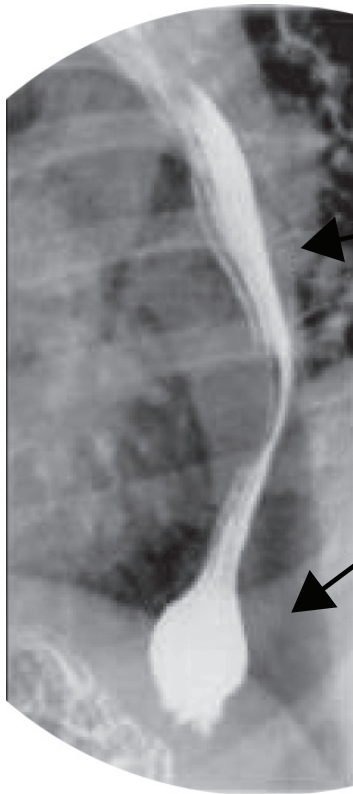


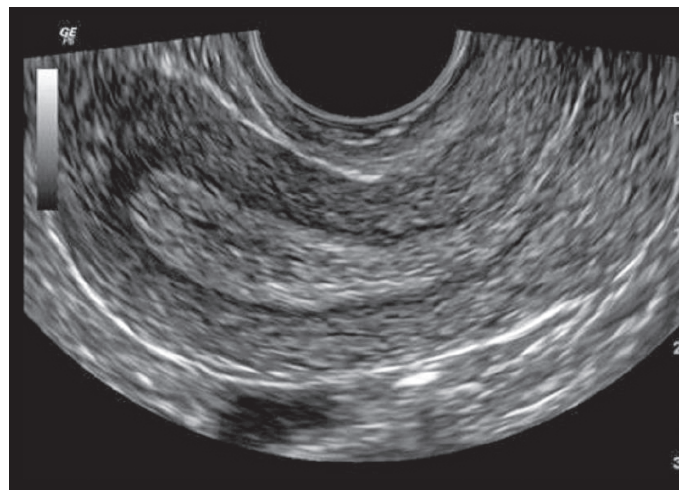
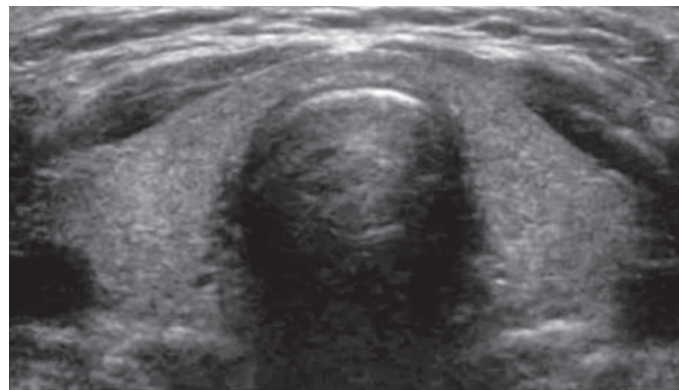
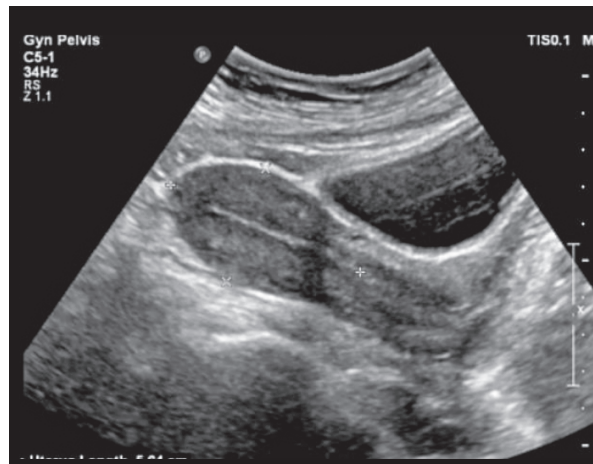


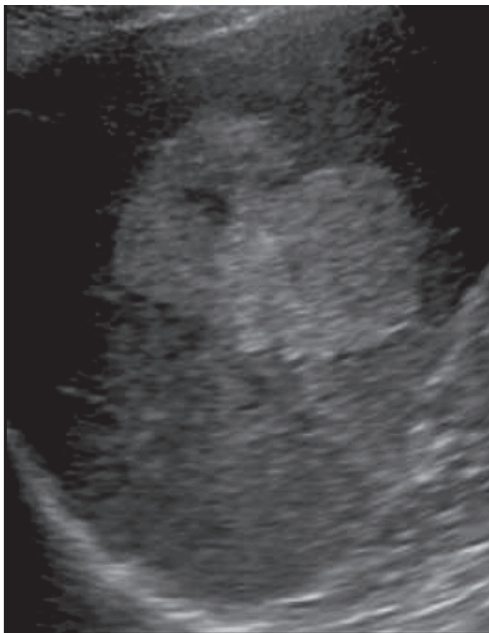
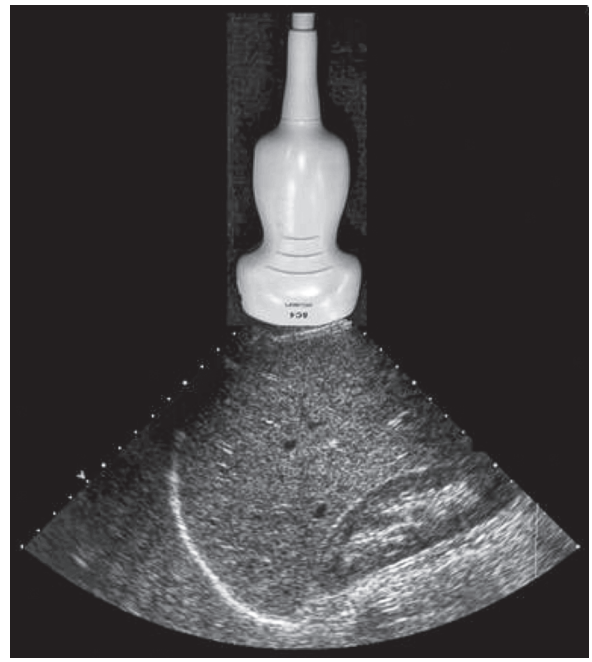
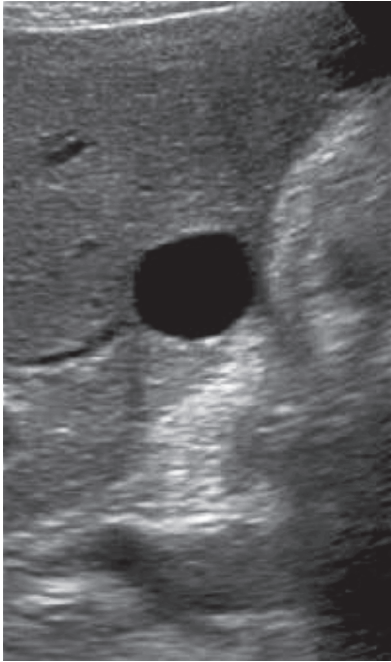




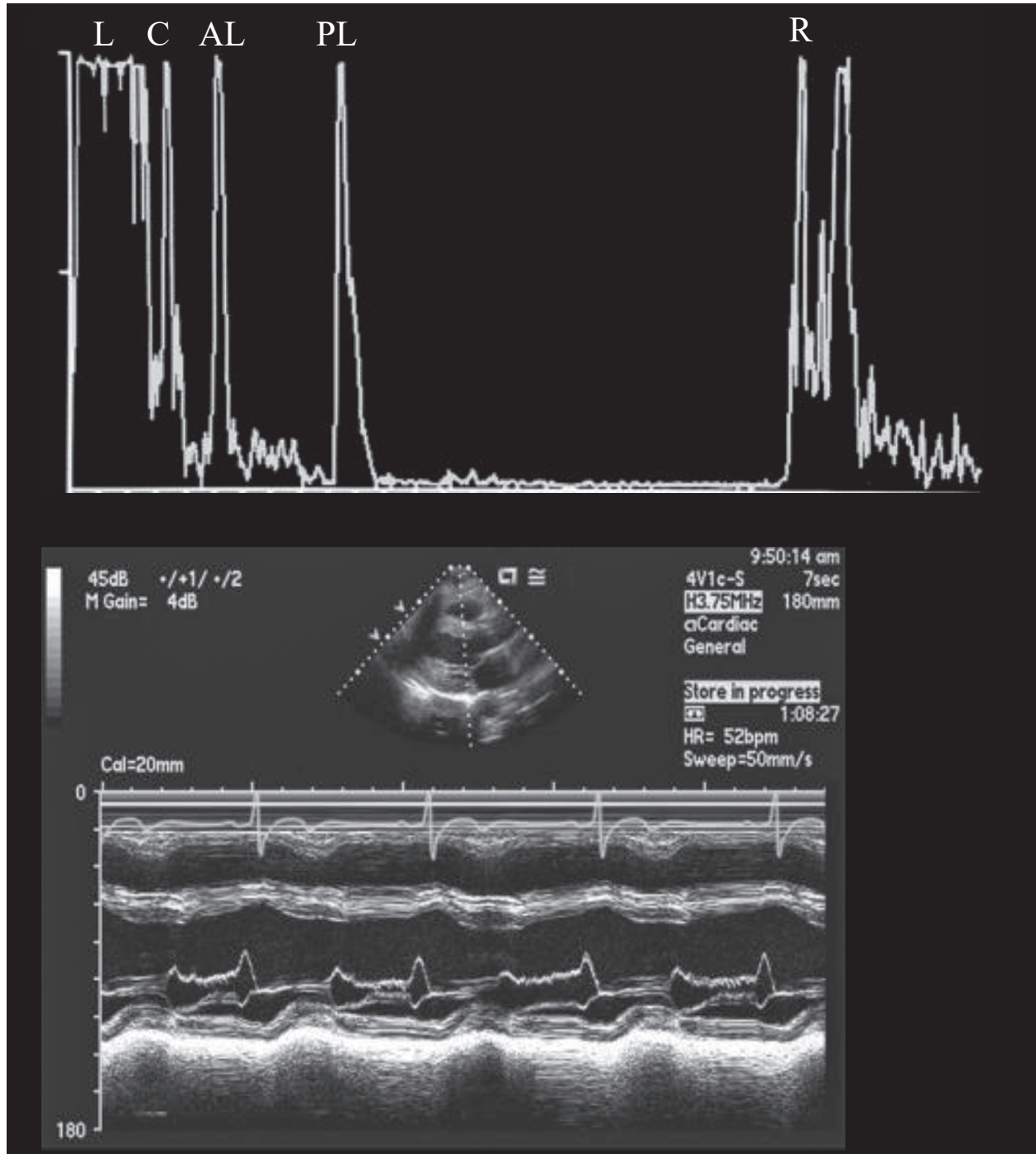


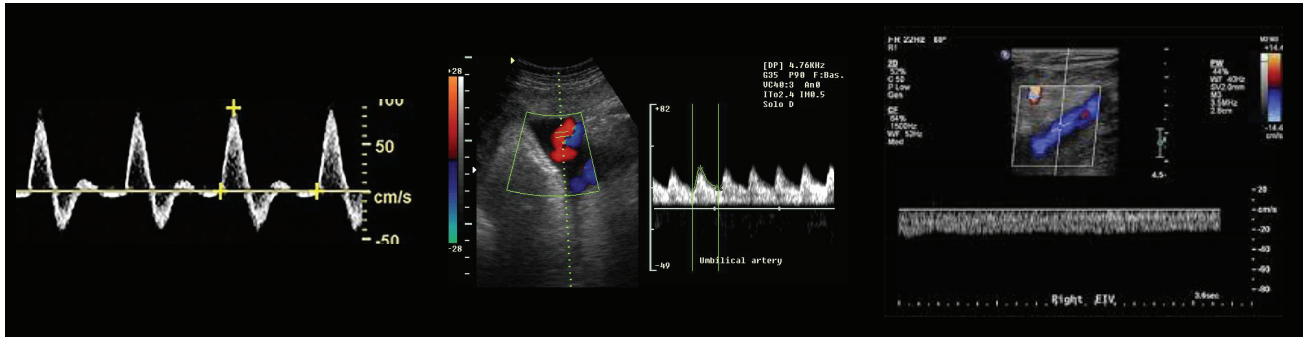


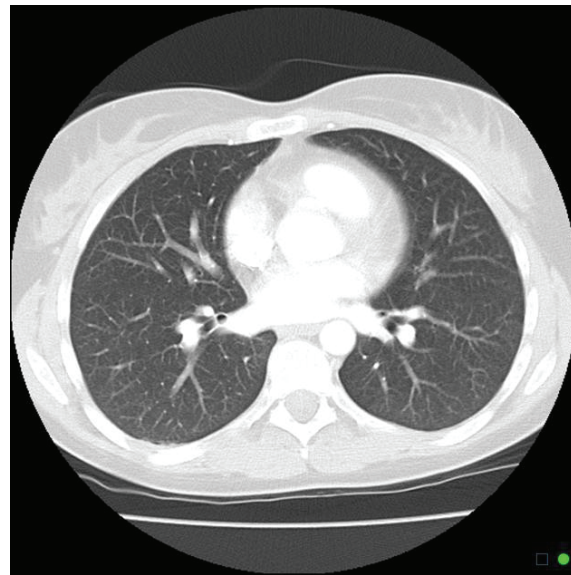
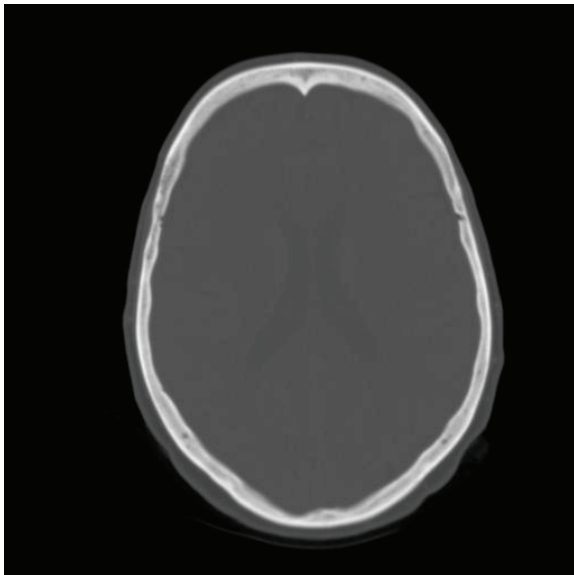
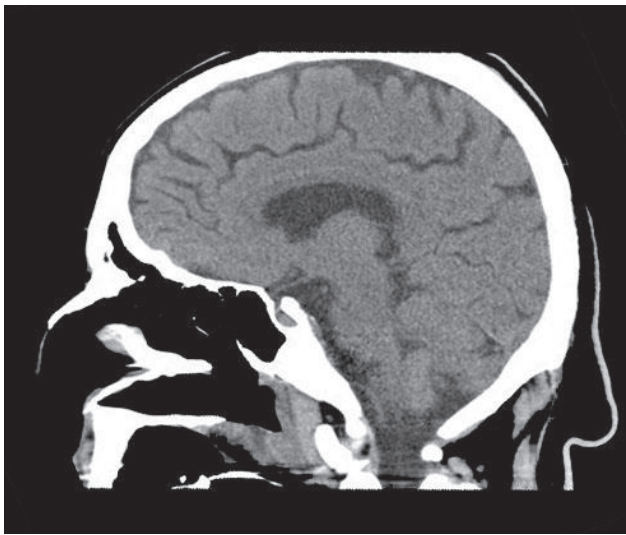
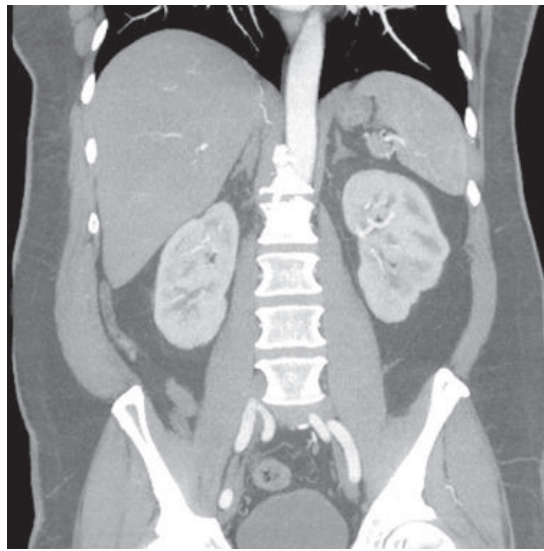


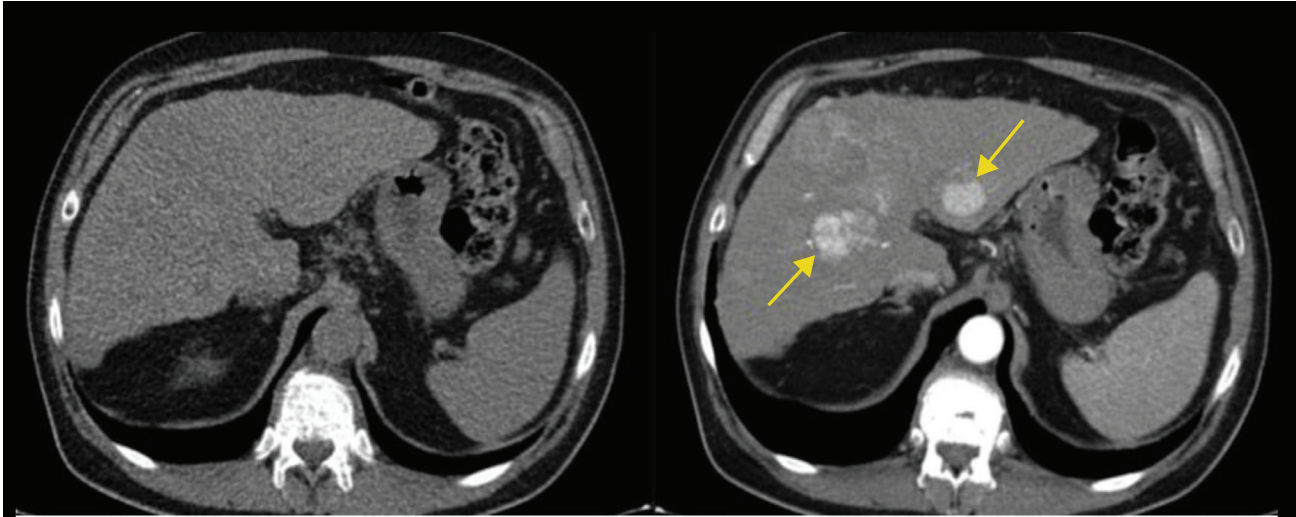














Contraindications of MRI

1. Free lying ferromagnetic foreign body inside the body

└ Fe foreign body inside the eye
 [Chisel & Hammer injury]
 Retained Bullet
 Relative C/I

“Not orthopedic Implant”

2. Cardiac Pacemaker

3. Aneurysmal clips

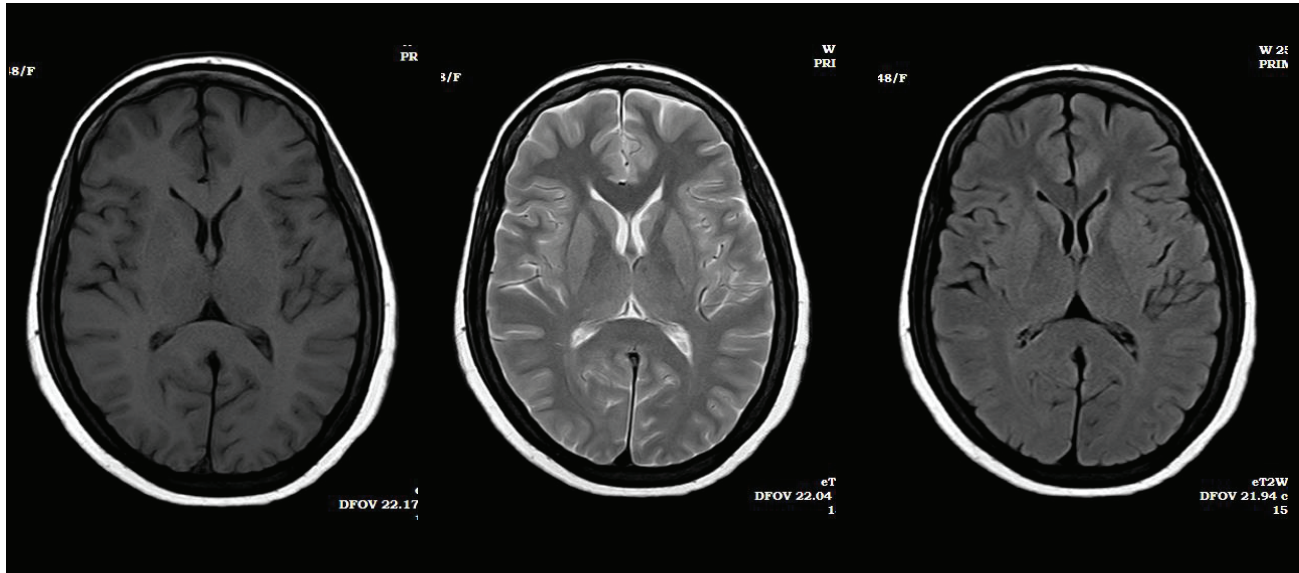
4. Cochlear Implant

5. Metallic Cardiac Valve

6. Any Magnetic Device

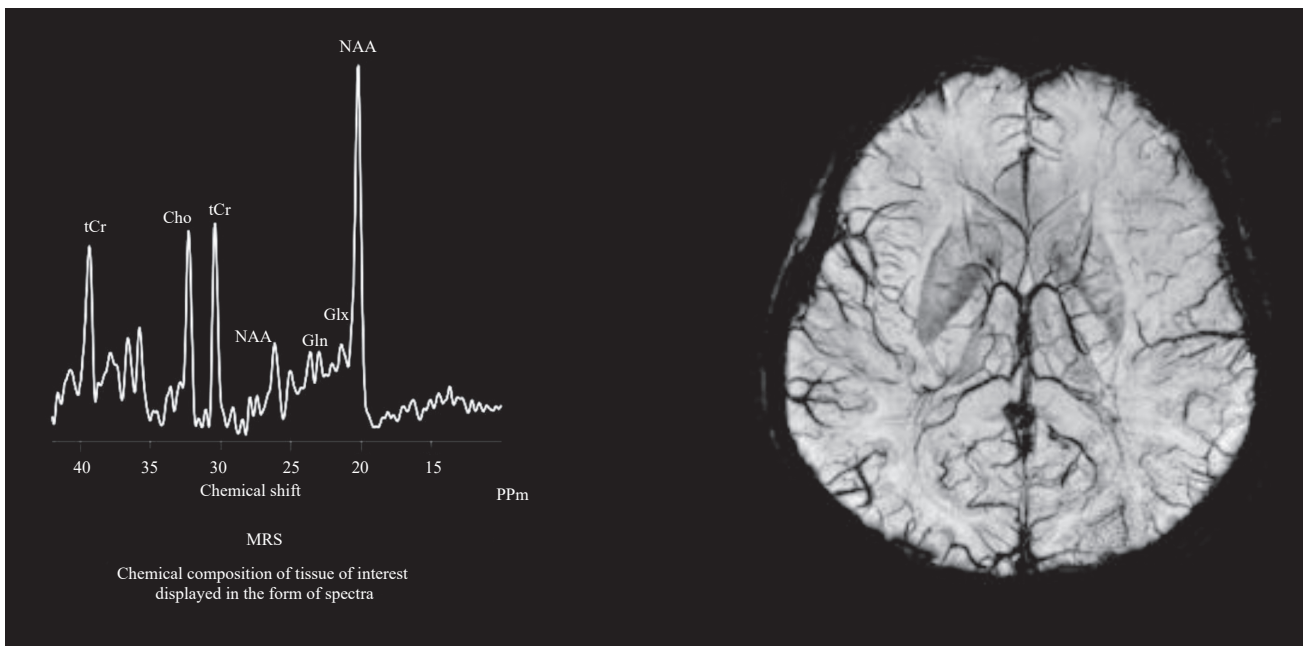
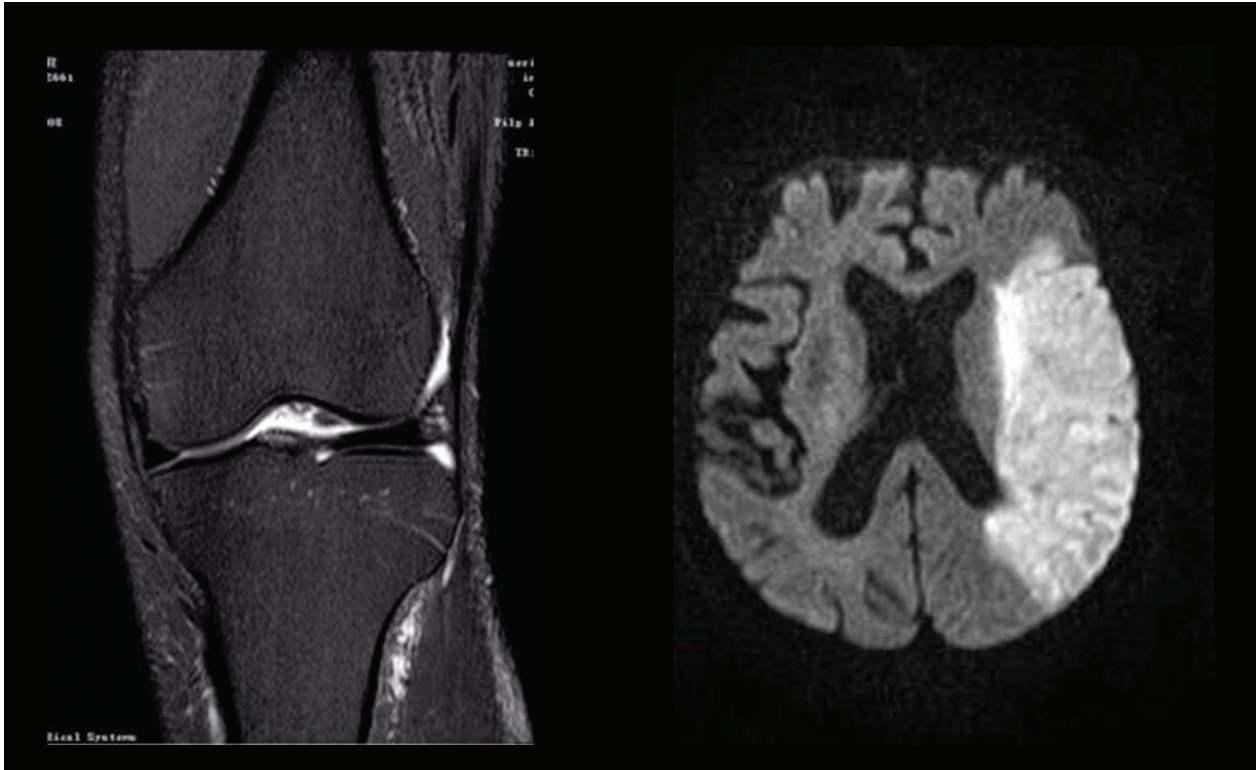
1. Claustrophobia

2. 1st trimester of pregnancy

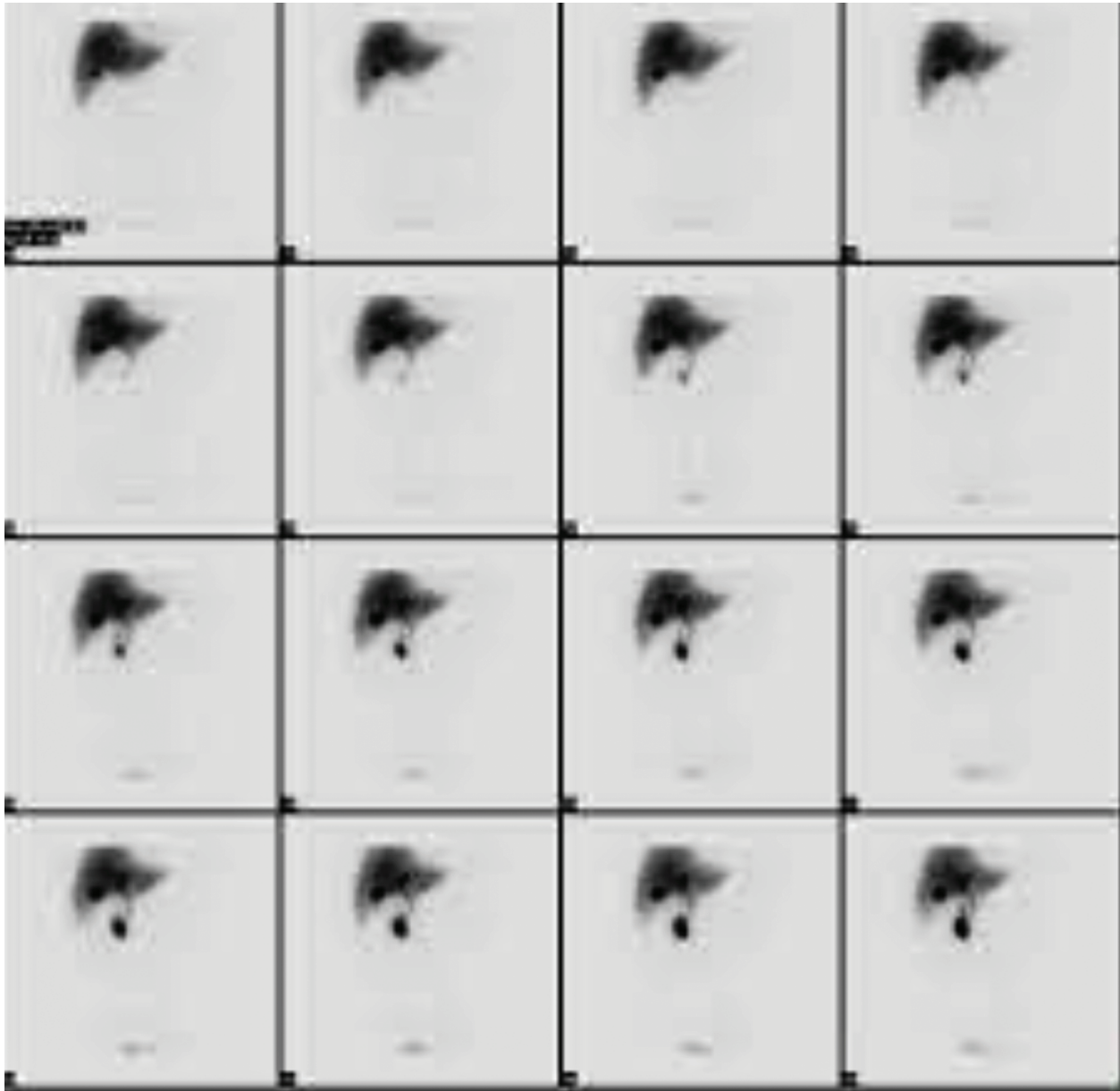


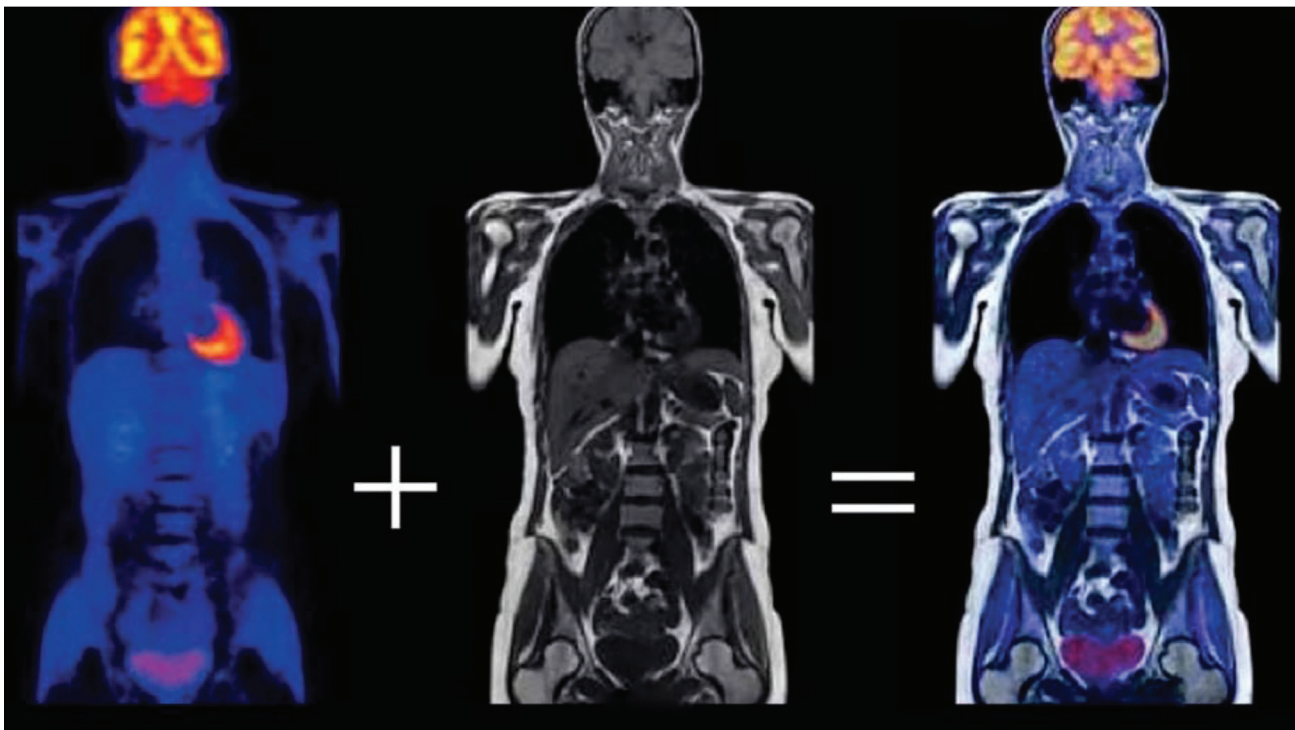
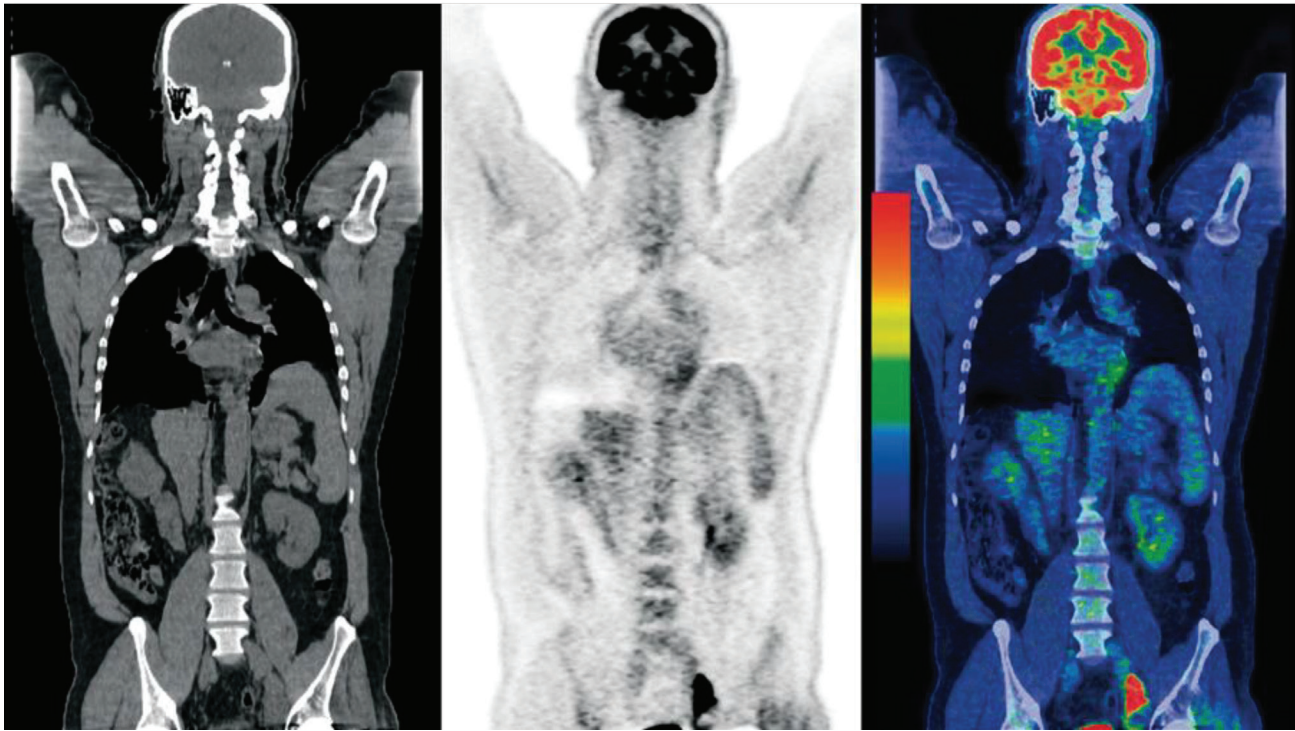
T1, W	T2, W
<i>Depends on longitudinal time</i>	<i>Depends on transverse time</i>
<i>More T₁ relaxation time</i>	<i>More T₂ relaxation time</i>
↓	↓
<i>Image is more black</i>	<i>Image is more white</i>
<i>Anatomy</i>	<i>Pathology</i>
<i>Black on T₁</i>	<i>WW2</i>
<i>Grey - grey</i> <i>White - white</i>	<i>Grey - white</i> <i>White - grey</i>
<i>Pathologies - Hypointense</i>	<i>Pathologies - Hyperintense</i>

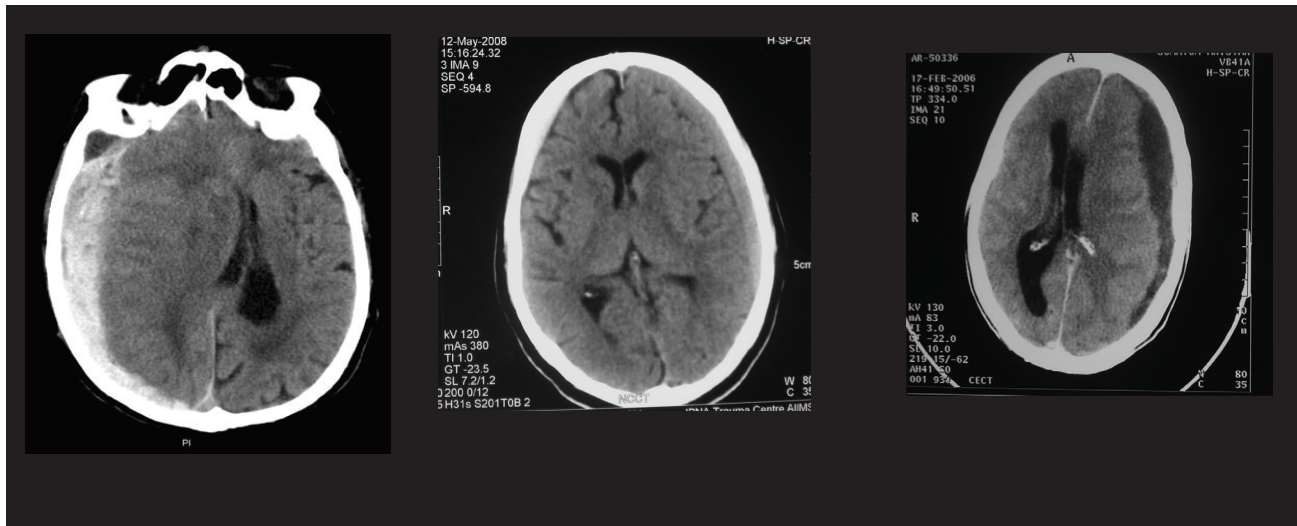
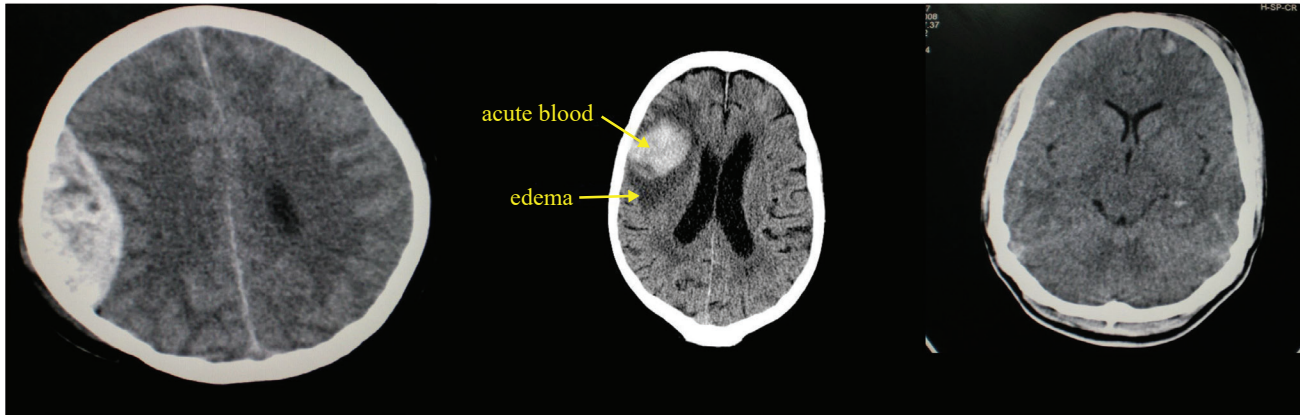
Hyperintense on T1	Hypointense on T1 and T2
<ul style="list-style-type: none"> • Fat • Subacute blood products • Proteinaceous substances • Melanin • Paramagnetic substances (Gadolinium) 	<ul style="list-style-type: none"> • Cortical bone • Air • Flowing blood in a vessel (Signal void) • Calculi / Ca⁺⁺ • Ligaments, Tendons • Dense fibrous tissues • Hemosiderin (Chronic blood hematoma)

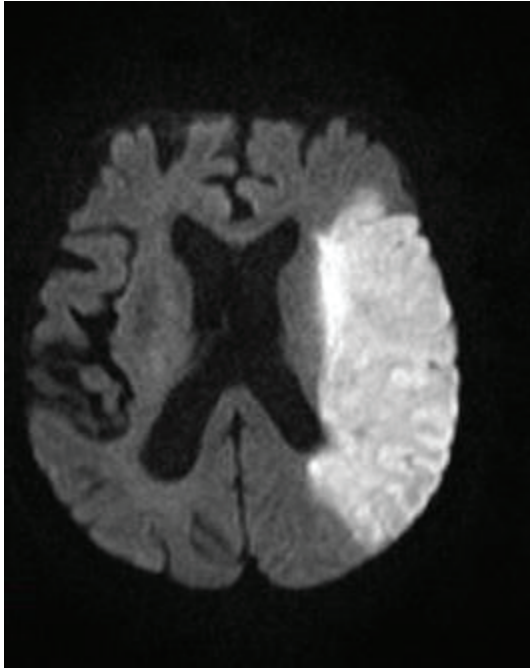


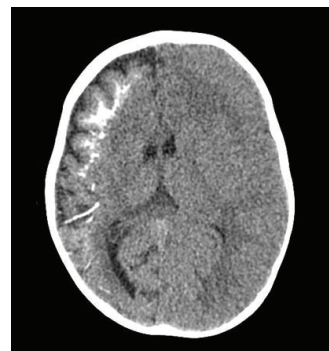
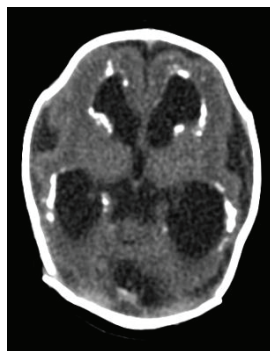
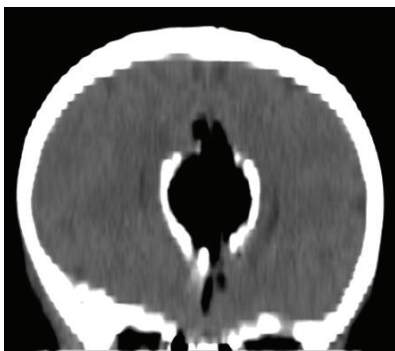
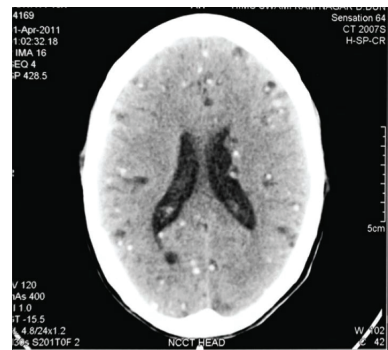
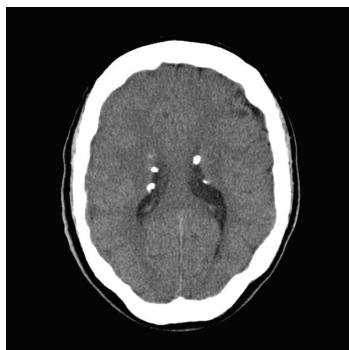
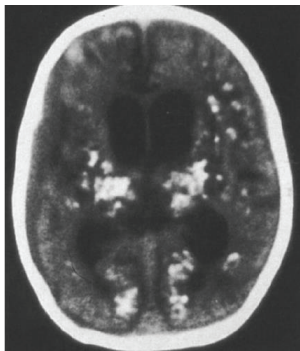
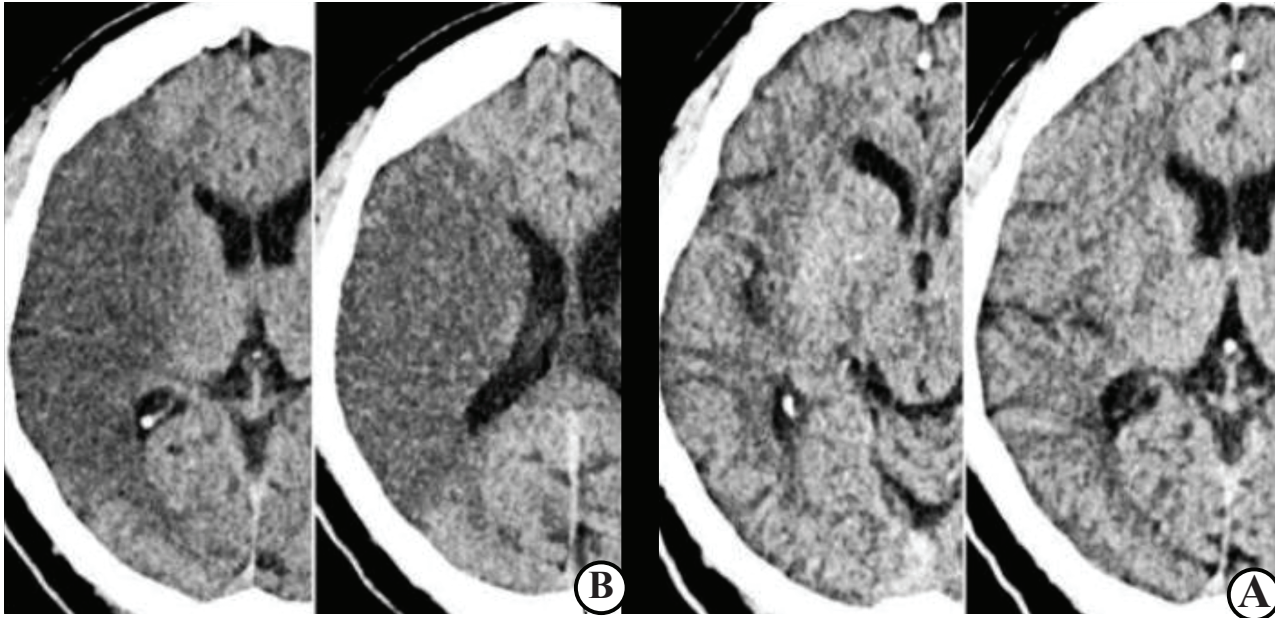


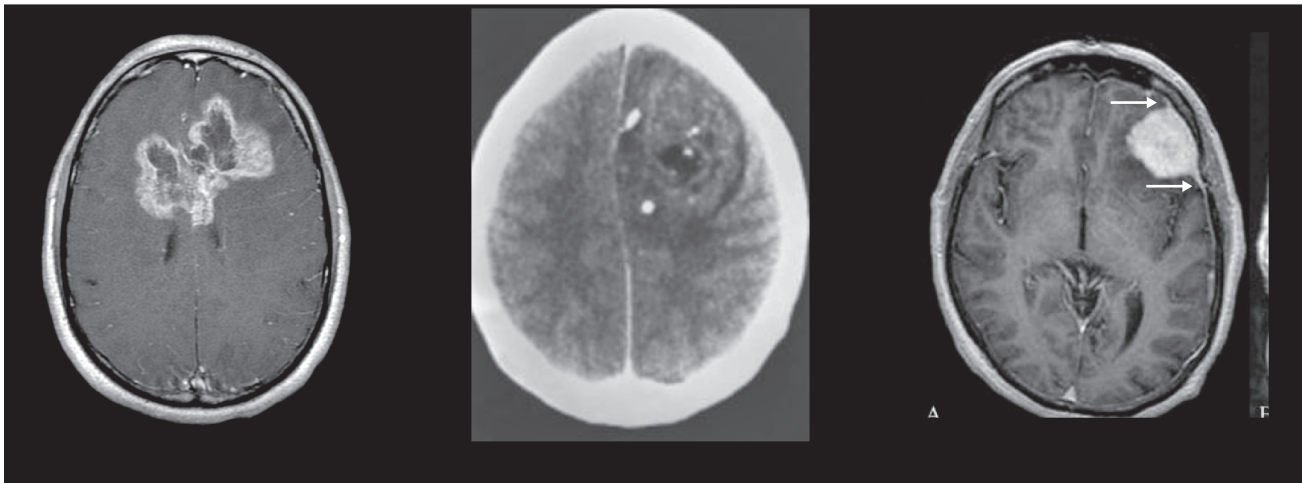


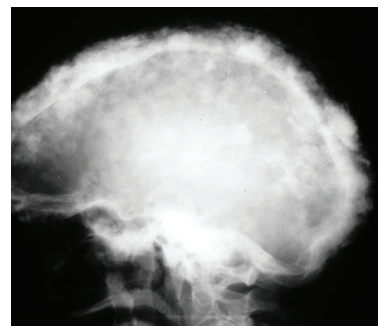
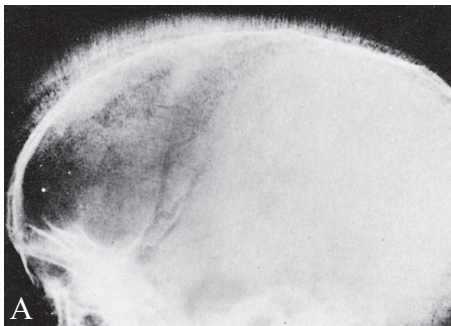
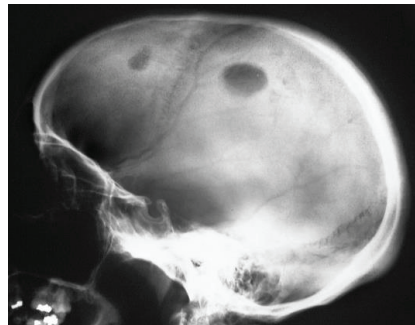
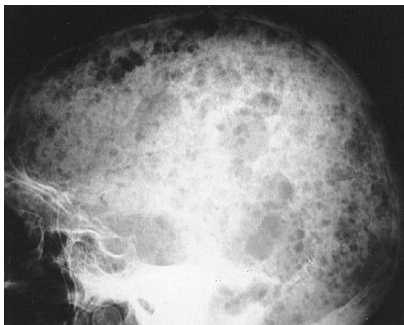
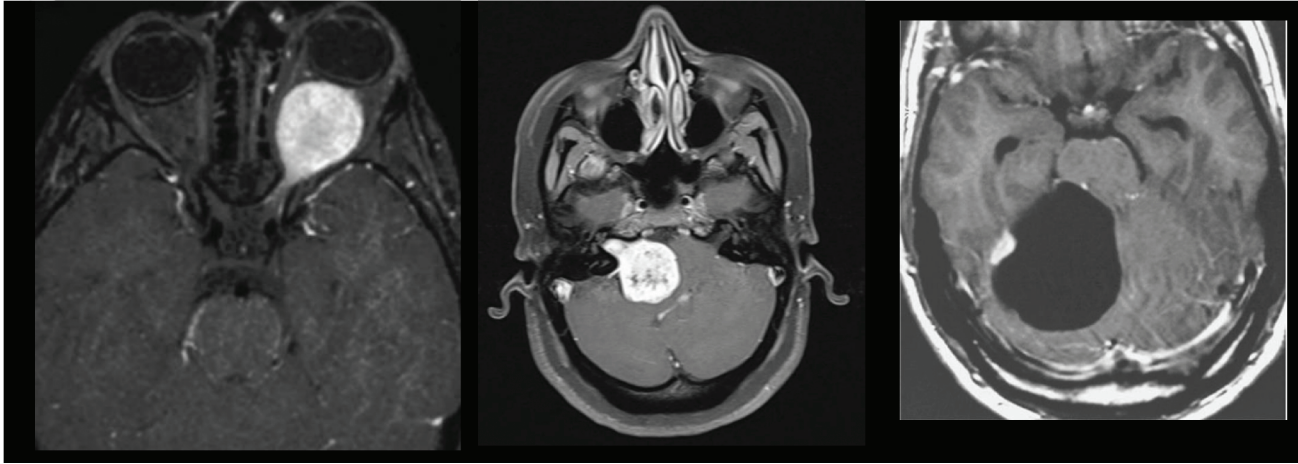


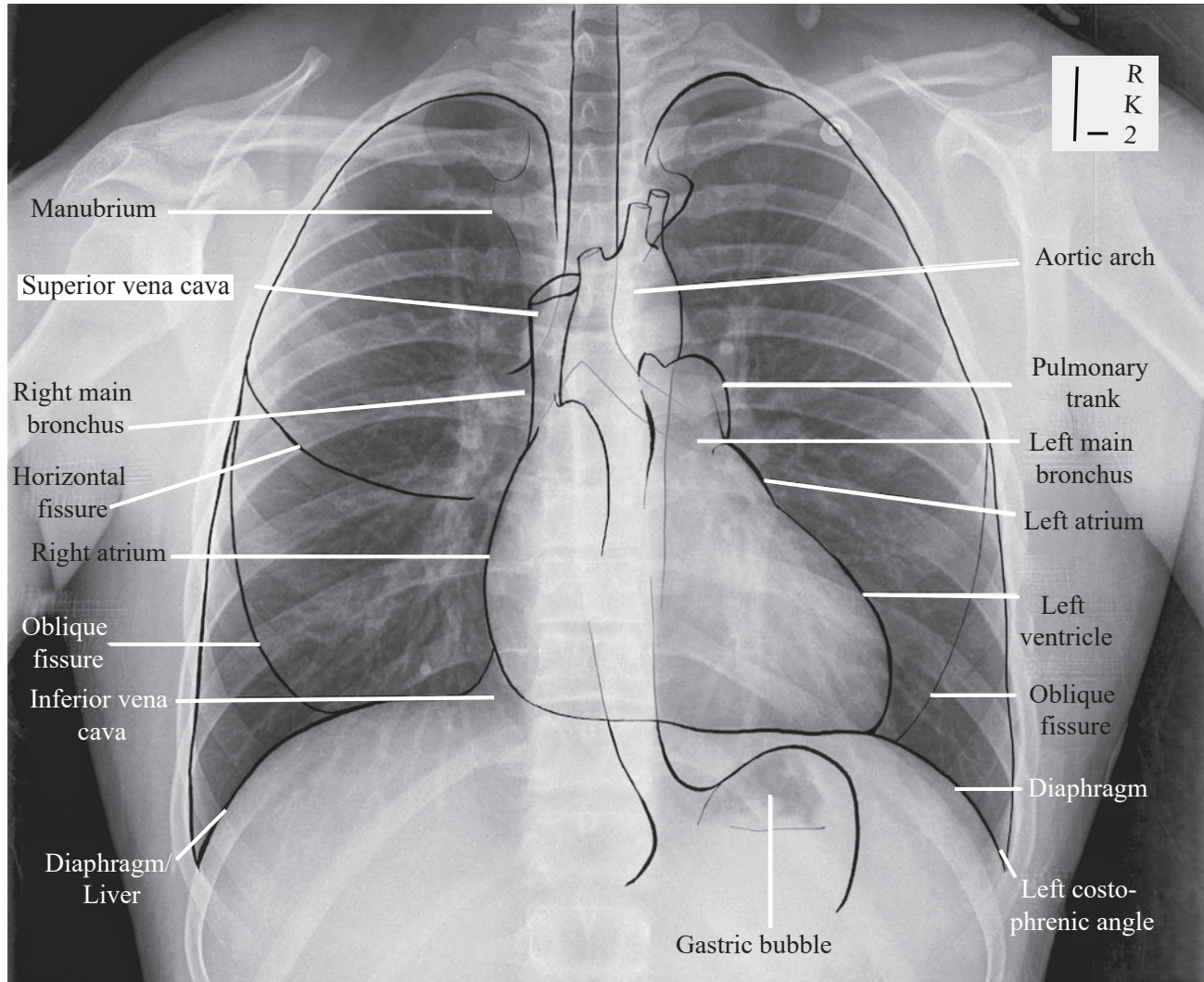


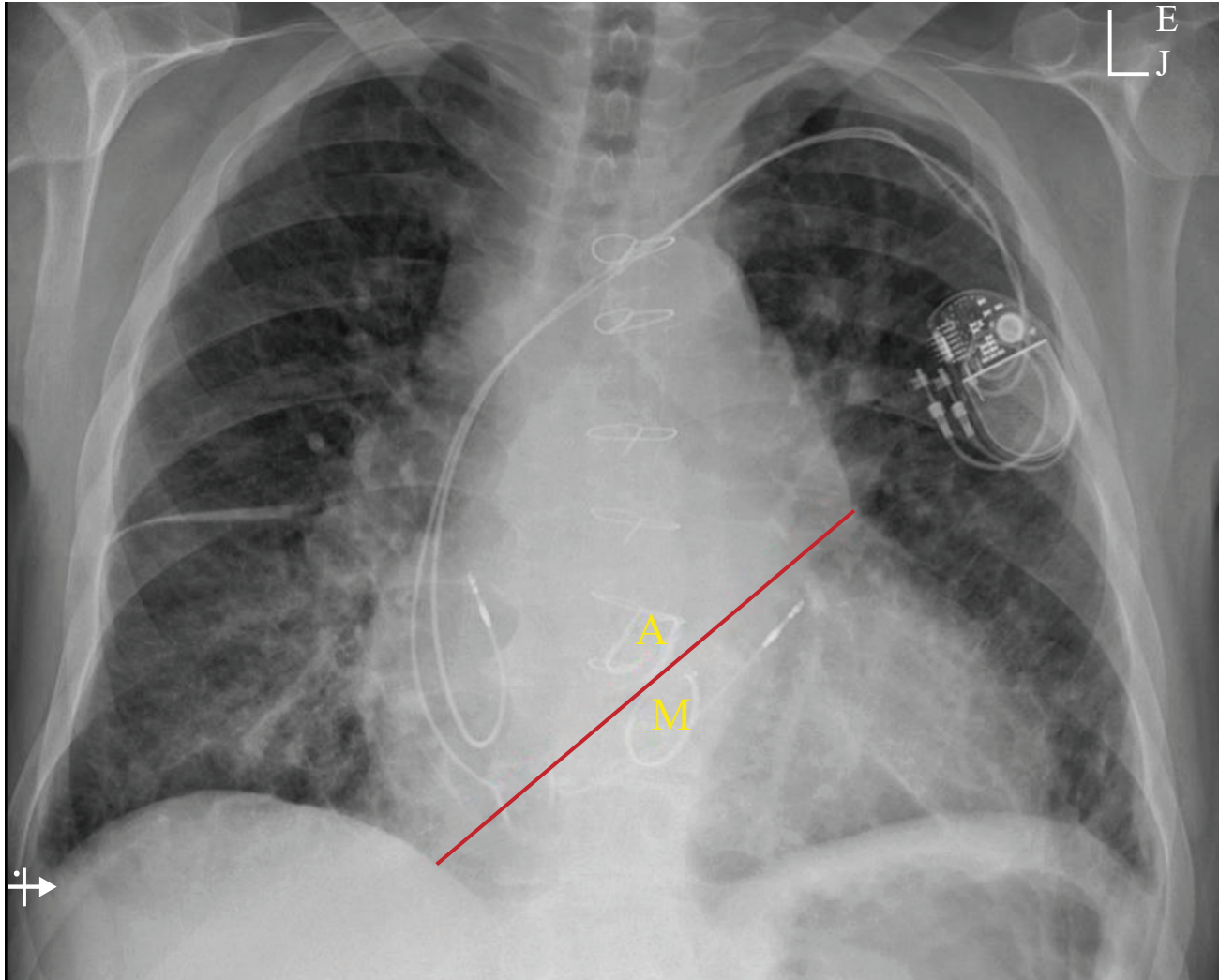


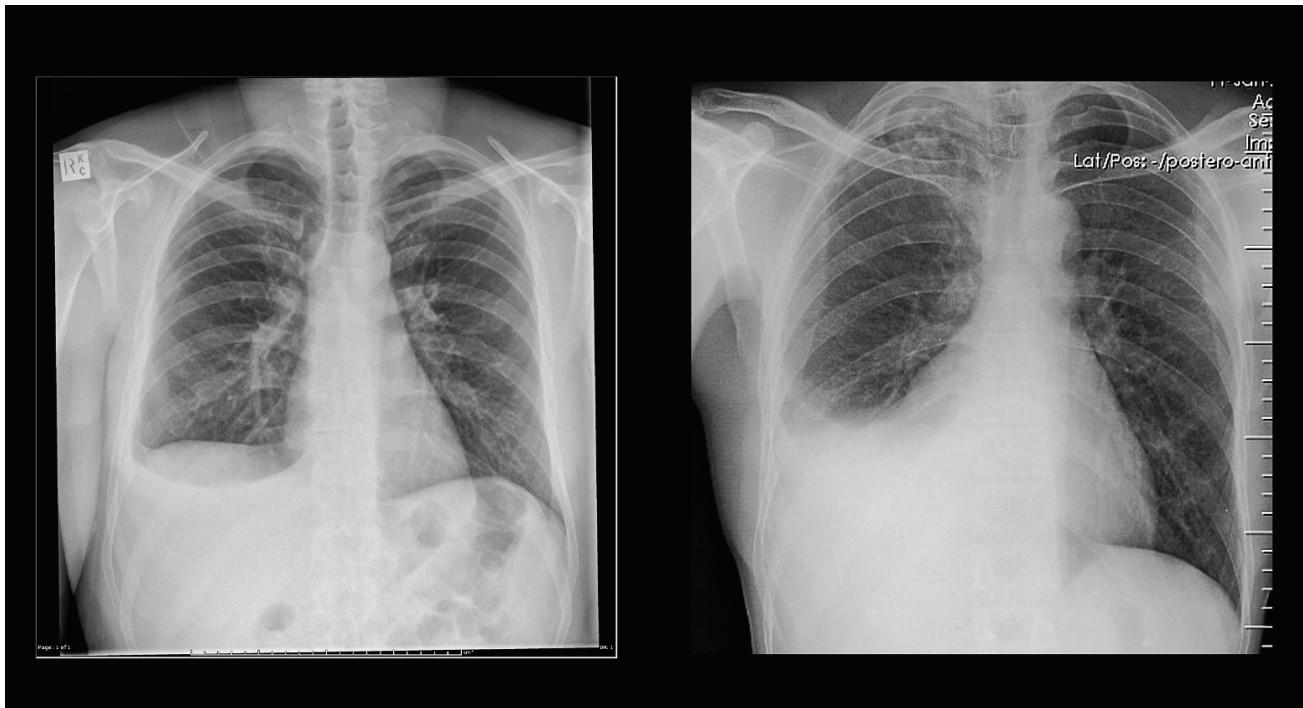


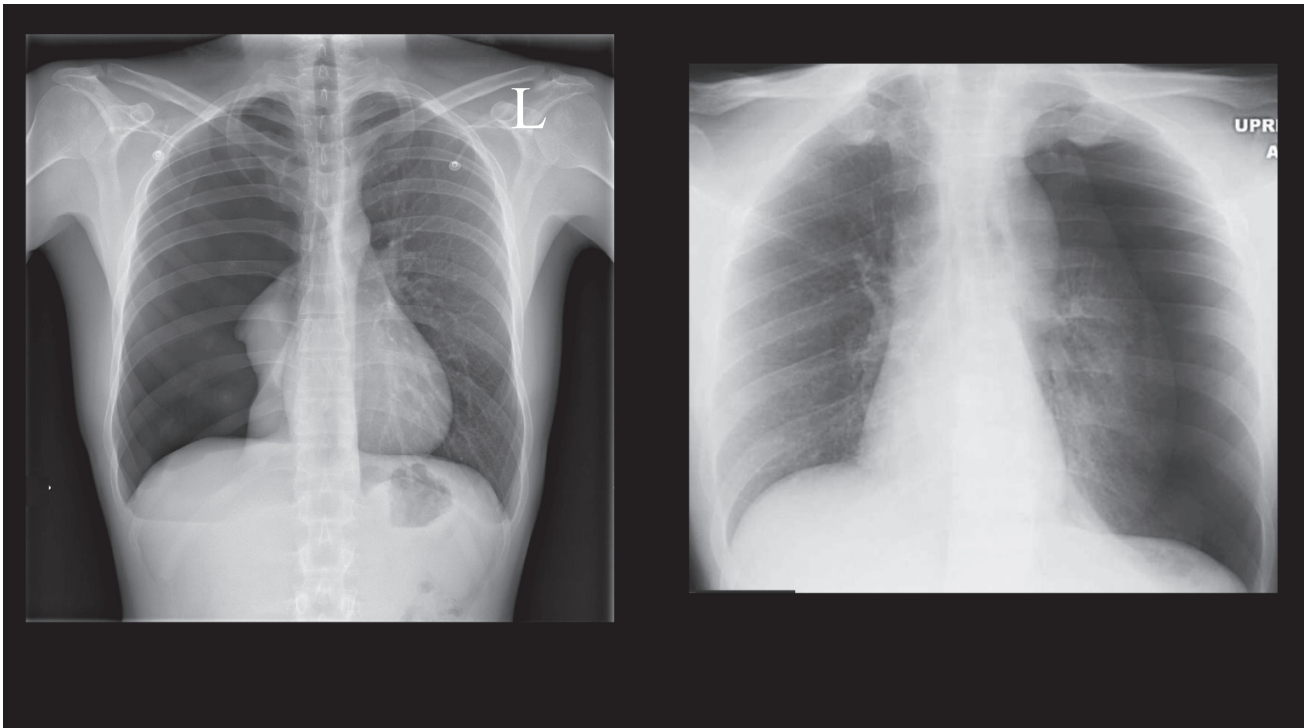
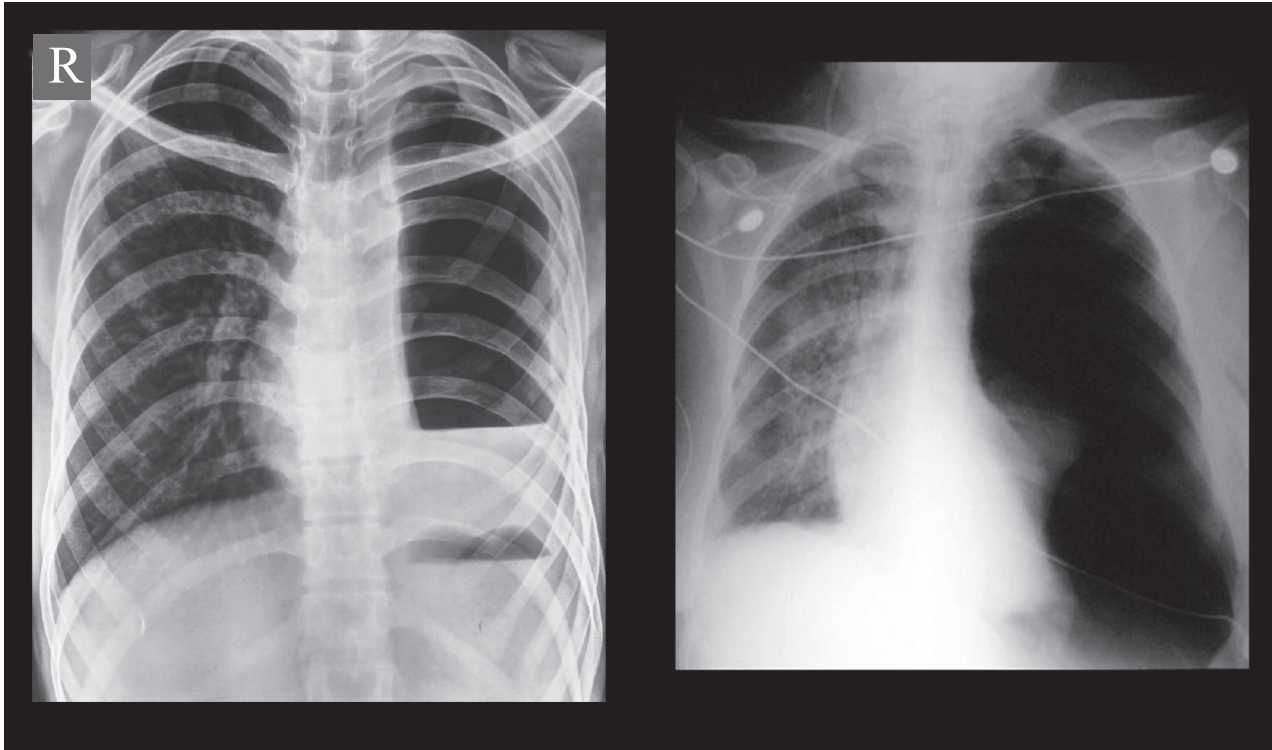


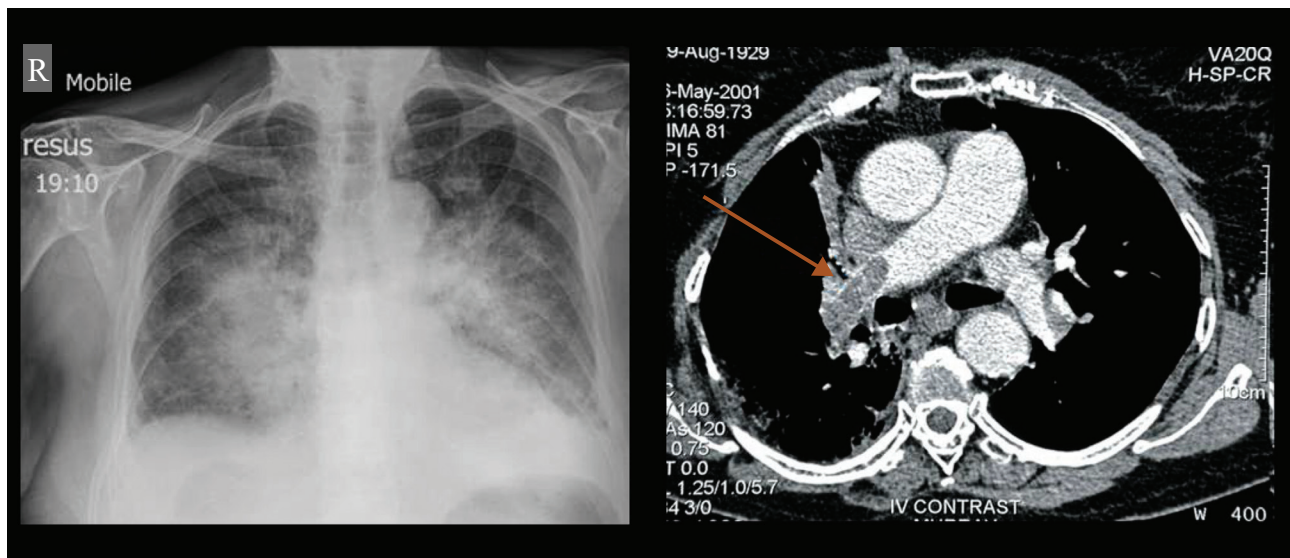
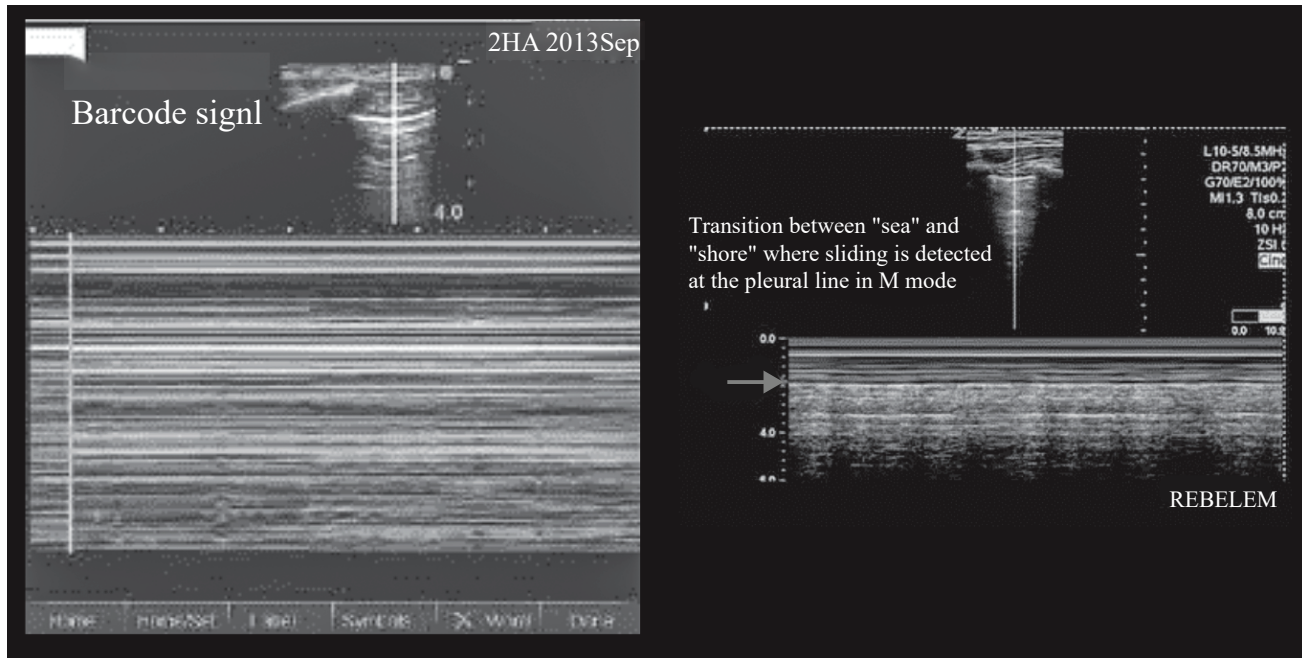


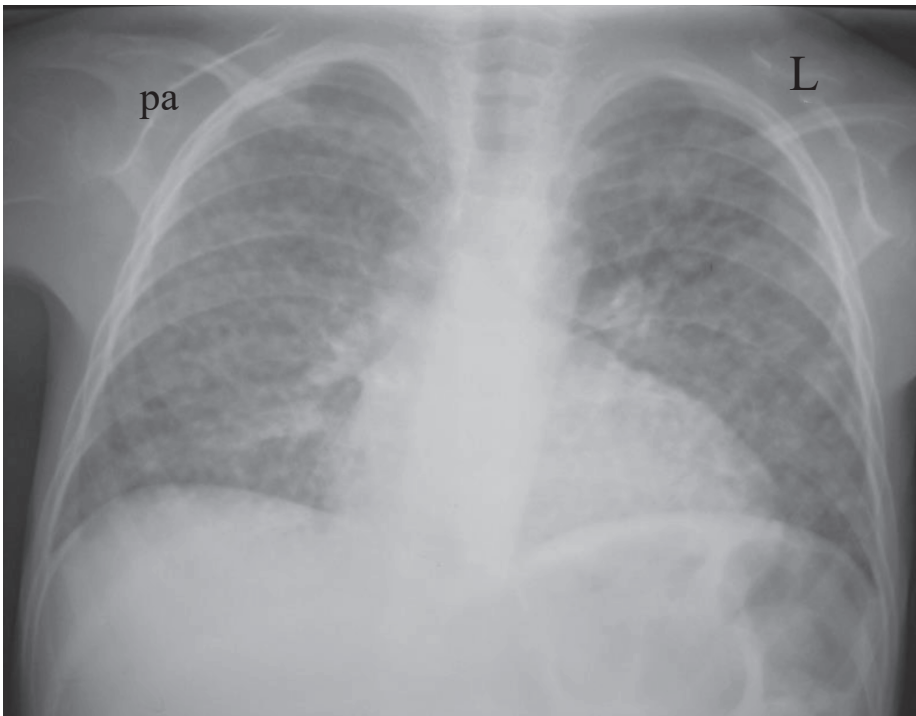
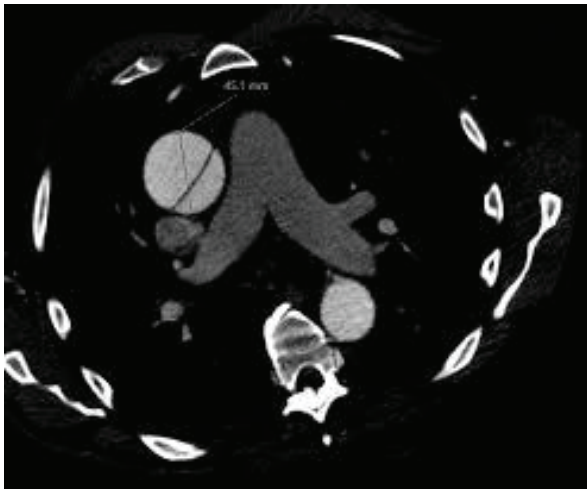
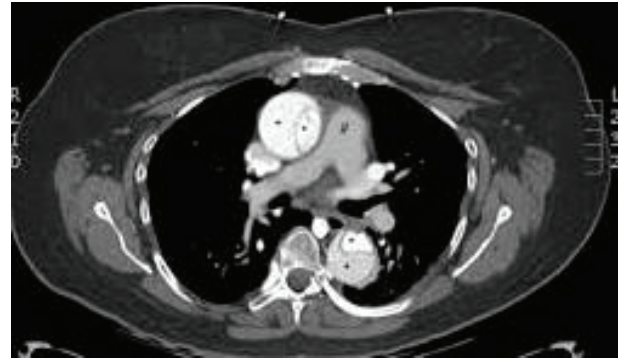
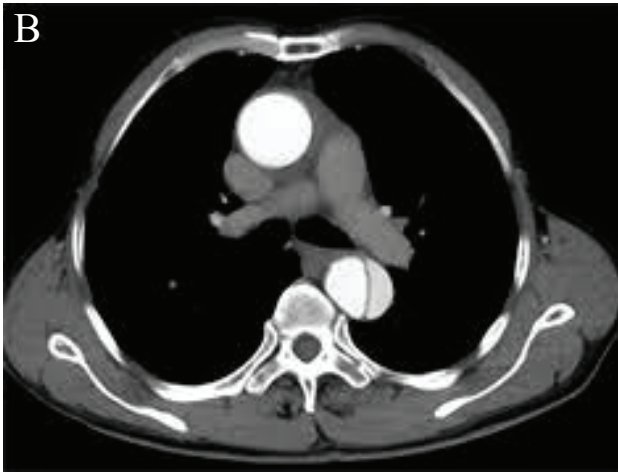


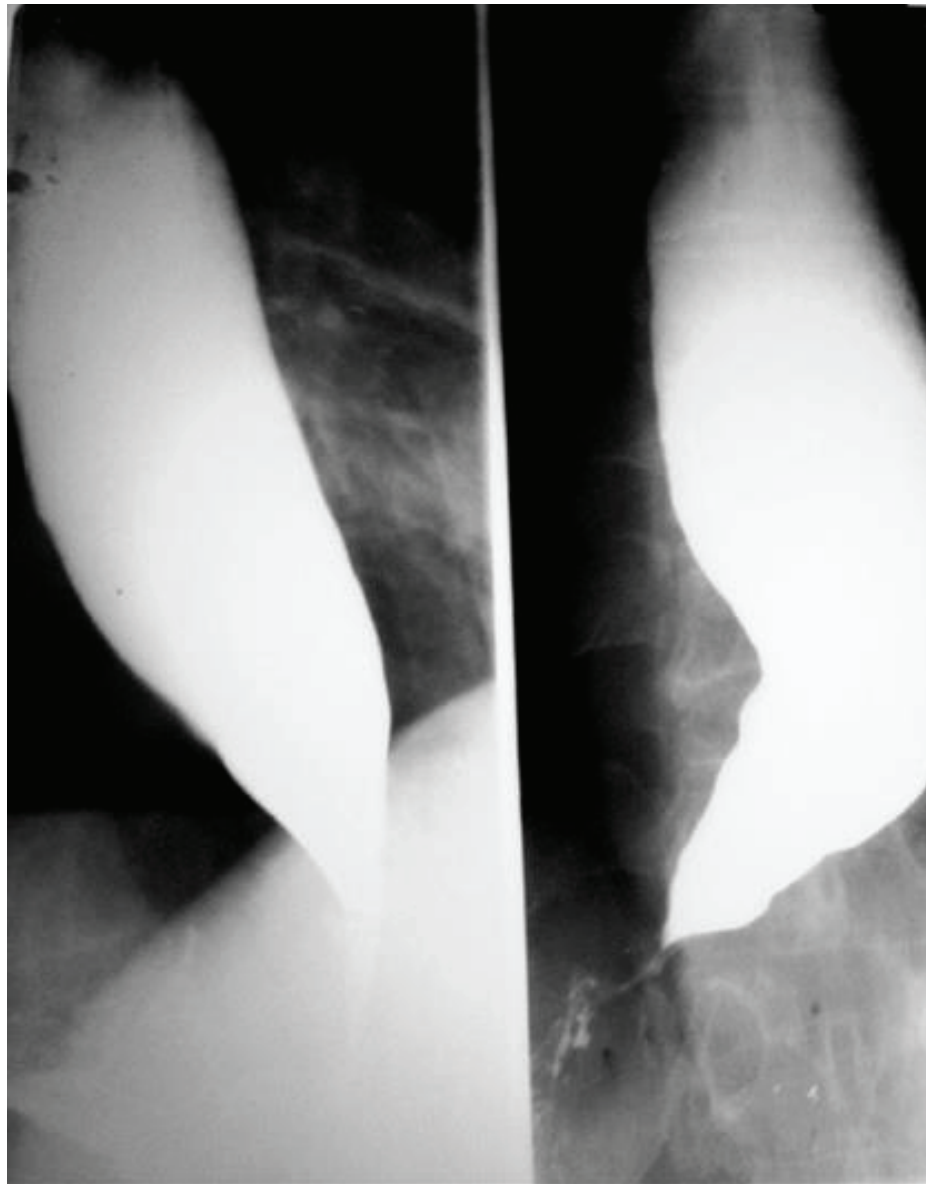


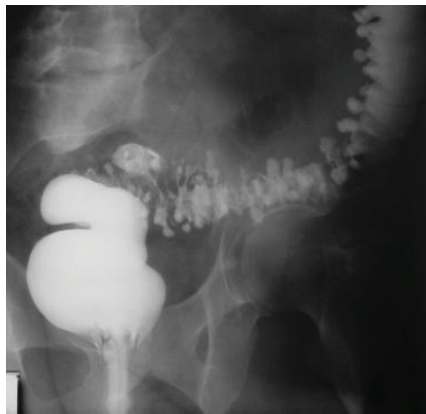
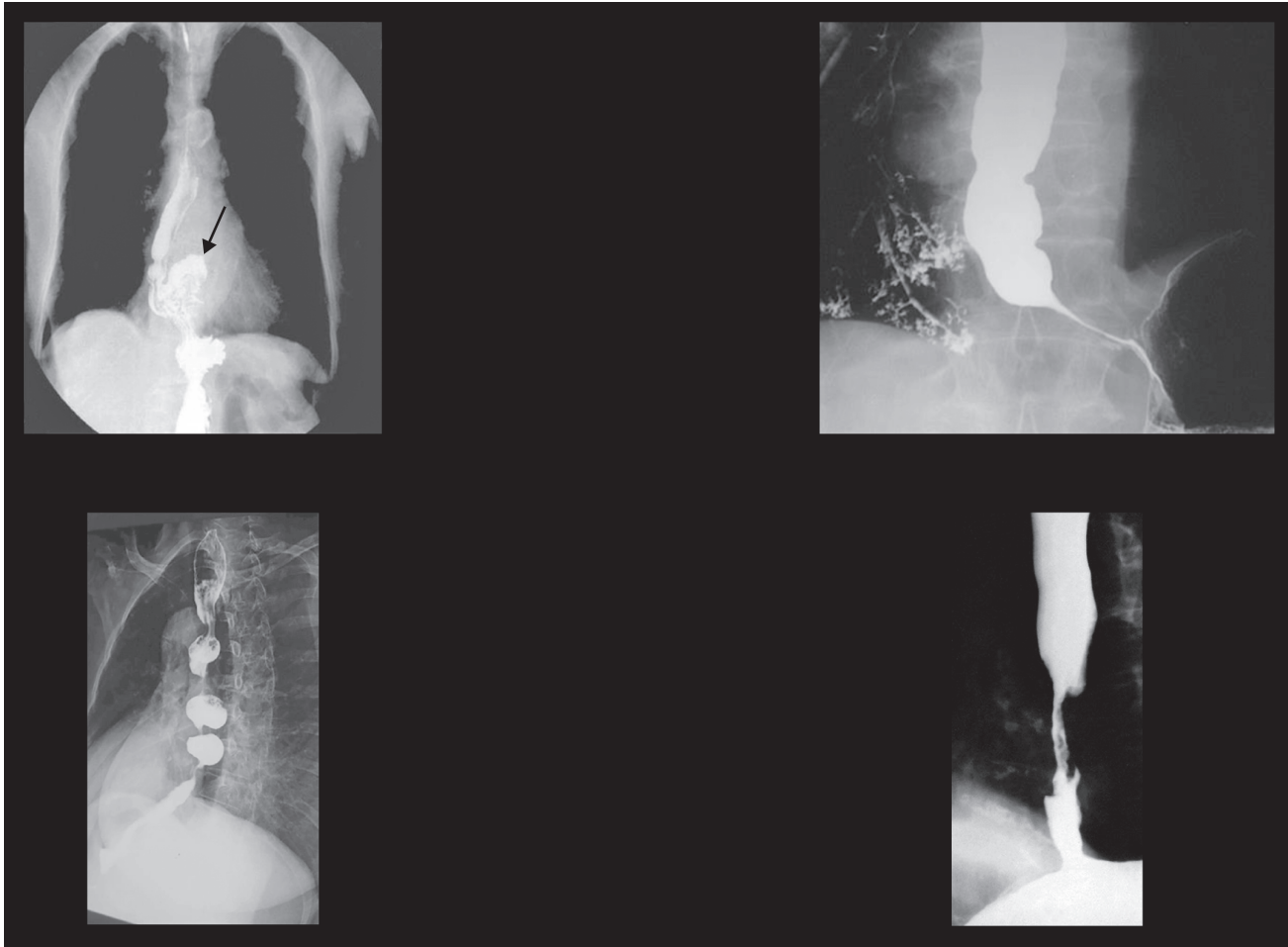


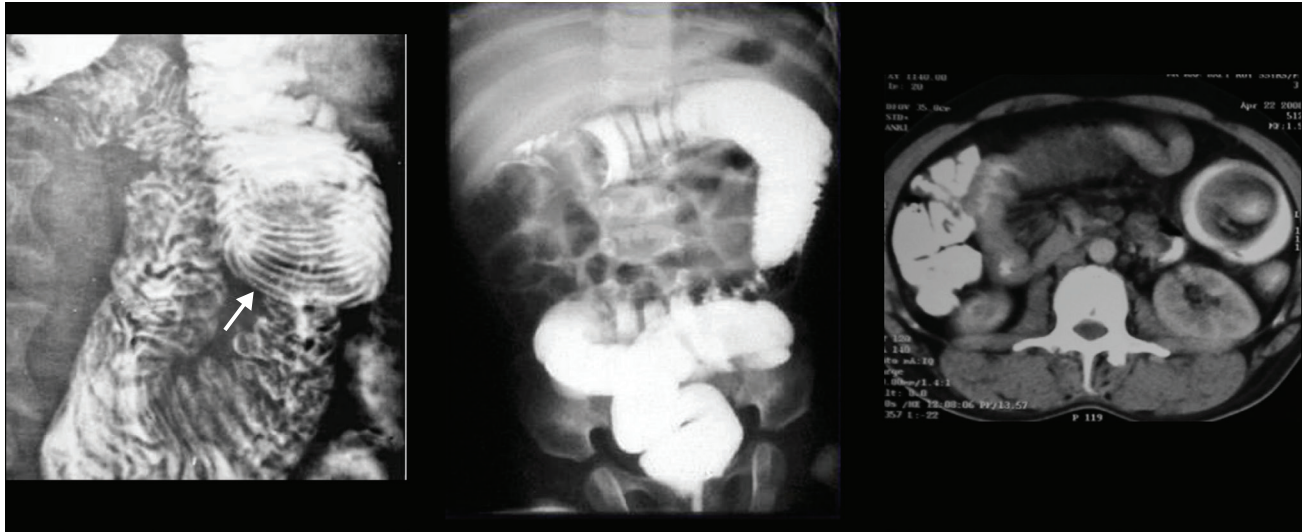


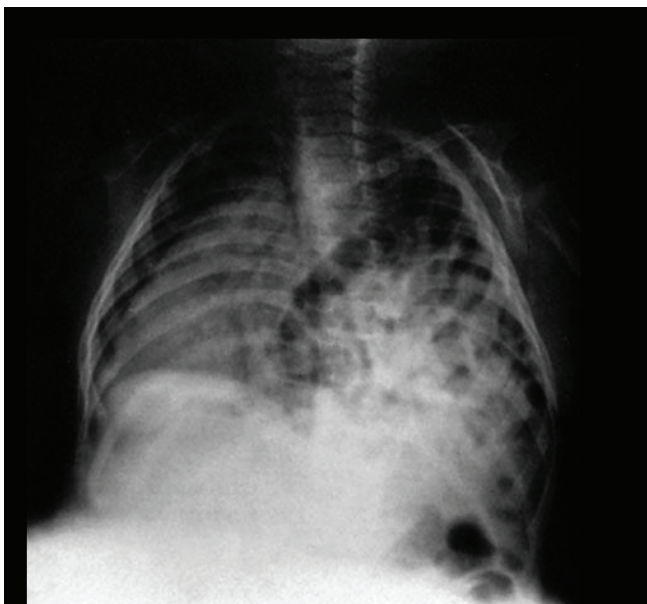






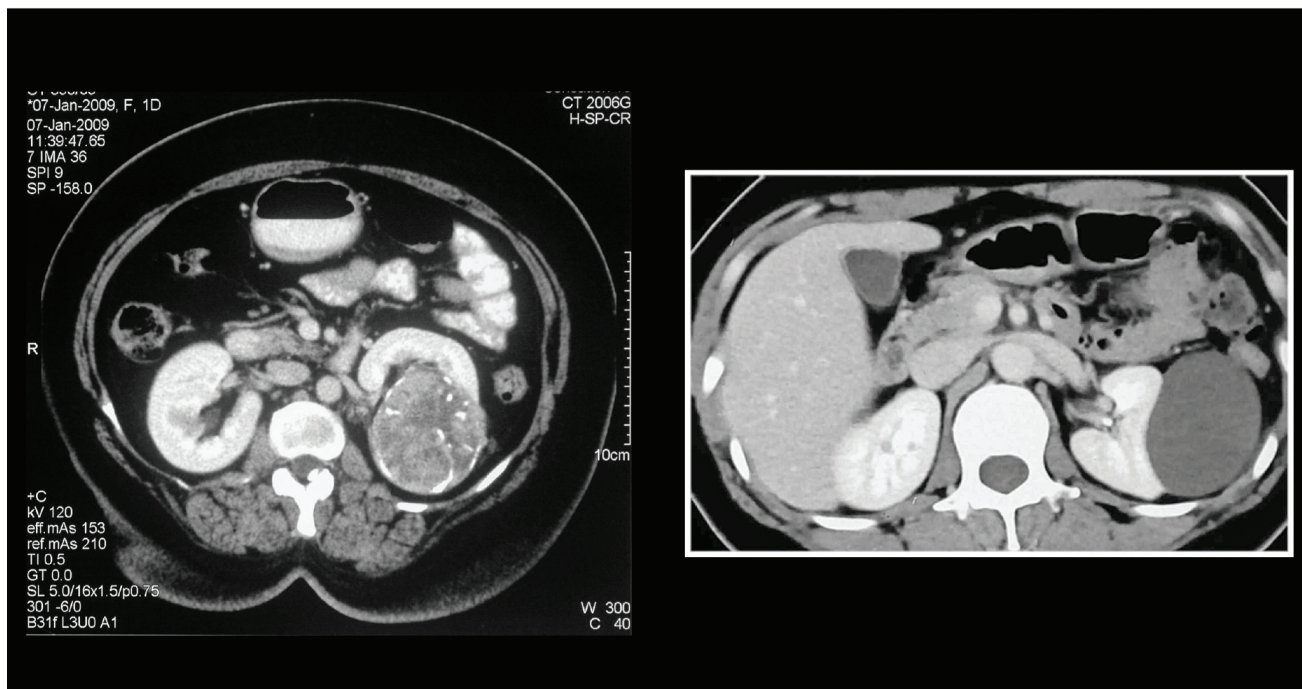
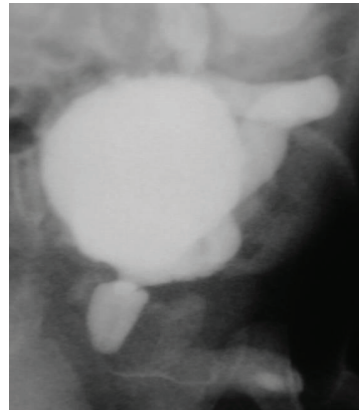
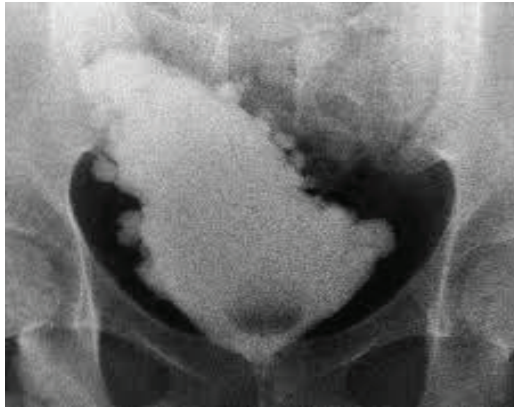














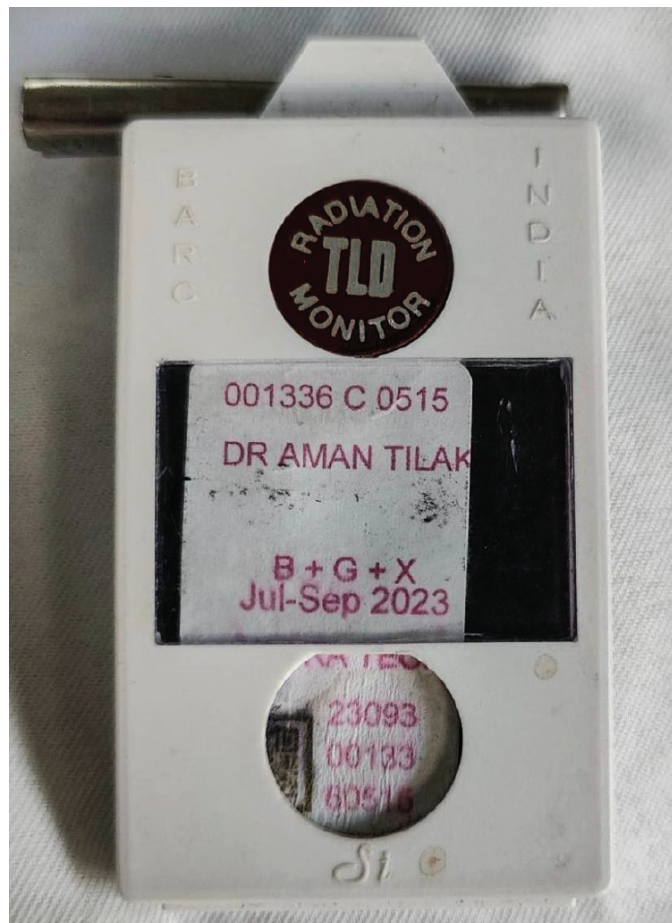
Diagnostic procedure	Dose (msv)
• Chest (single PA film)	0.02
• Mammography	0.2-0.8
• IVU	2.5
• Barium Enema	7
• CT Chest	8
• CT Head	2.3
• CT Abdomen	10
• Bone scan	4

Category	Dose Limit (mSv)
• Patient	50 mSv/Yr
• Occupational worker	100 mSv/5 Yr
• Pregnant patient	5 mSv/term
• Pregnant occupational worker	2 mSv/declared term
• General public	1 mSv/ Yr

<i>Dose</i>	<i>Conventional Unit</i>	<i>SI Unit</i>
<i>Exposure Dose</i>	<i>ROENTGEN (R)</i>	<i>Coulombs/ Kgs</i>
<i>Absorbed Dose</i>	<i>RAD</i>	<i>GRAY</i>
<i>Equivalent Dose</i>	<i>Rem</i>	<i>Sievert</i>
<i>Effective Dose</i>		<i>Sievert</i>
<i>Radio activity</i>	<i>Curie</i>	<i>Becquerel</i>

Dose Limitations

<i>Part of the Body</i>	<i>Occupational Exposure</i>	<i>Public Exposure</i>
<i>Whole body (Effective dose)</i>	<i>20 mSv/year averaged over 5 consecutive years</i>	<i>1 mSv/y</i>
<i>Lens of eyes (Equivalent dose)</i>	<i>150 mSv in a year</i>	<i>15 mSv/y</i>
<i>Skin (Equivalent dose)</i>	<i>500 mSv in a year</i>	<i>50 mSy</i>
<i>Extremities (Hands and Feet) Equivalent dose</i>	<i>500 mSv in a year</i>	<i>—</i>



MRI Contrast Agent.

HIGH OSMOLAR CONTRAST MEDIA	LOW OSMOLAR CONTRAST MEDIA	NIM	ISO-OSMOLAR CONTRAST MEDIA
E.g.: i) Urograffin's ii) Gastrograffin iii) Diatrizoate	i) Ioxaglate	i) Iohexol (omnipaque) ii) Iopamidol	i) Iodixanol (VISIPAQUE)

- Dianosil
 - Conray
- } **OBSOLETE**



Radiosensitivity

	Most	Least
Stage of cell cycle	G2M	S
Organ	Ovary, testis	Vagina > bone > CNS
Tissue	Bone marrow	Nervous tissue
Cell type	Undifferentiated , well nourished, divide quickly and are highly metabolically active	Quiescent
Blood cell	Lymphocyte	Platelet

Radiosensitivity of Tumors

Highly Sensitive	Least Radiosensitive
Wilms	Hepatoma
Ewings	Osteosarcoma
Lymphoma	Melanoma
Myeloma	Pancreatic Carcinoma
Seminoma	
WELMS	HOMP

Half- life

Isotope	Half Life
Tc99	6 hours
I-123	13 hours
I-125	60 days
I-131	8 days
I-132	2.3 hours
P32	14 days
Co60	5.2 years
Ir-192	74 days



NOTES