NATIONAL UNIVERSITY

RADIOGRAPHIC PATHOLOGY ATLAS

Faculty of RadiographyThird Year

In this ATLAS we're going to discuss the cases we get to deal with as radiologists when makinga urinary system radiograph ,on the aspects of:

1. CNS Radiographic Pathology

2. Respiratory System

3. GIT System

4. CVS Radiographic Pathology

5. Reproductive System

6. Renal System

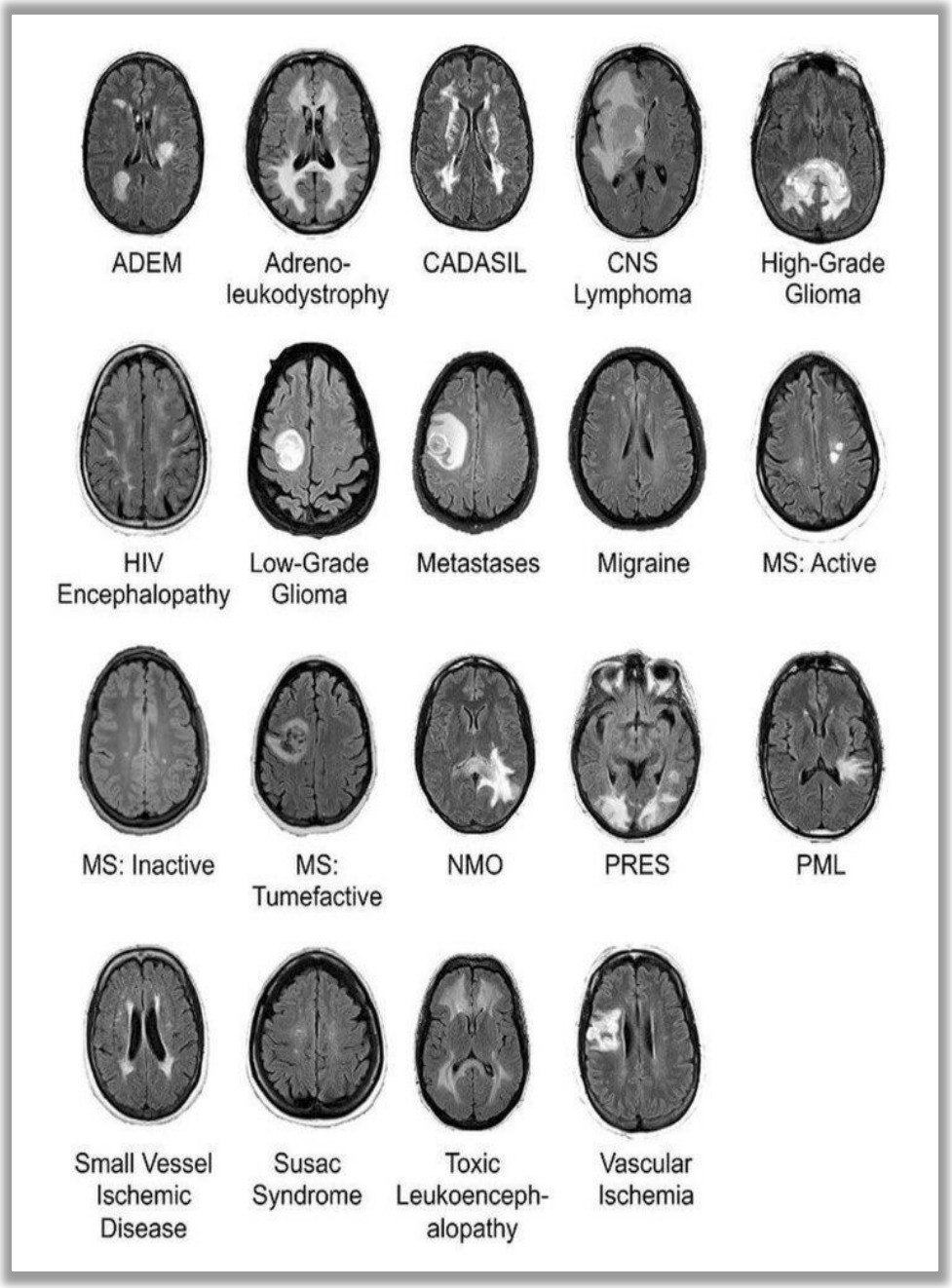
7. Skeletal System

Introduction:

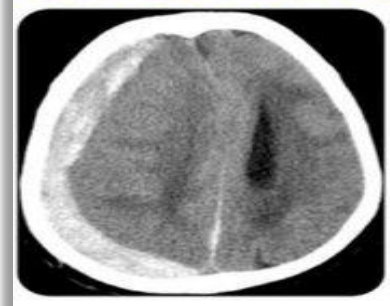
We are students and radio medical imaging, the third years, we have done this book and then to think of your elderly.

This work was done under the patronage and supervision of Prof. Maha Ismail has from us all thanks and appreciation

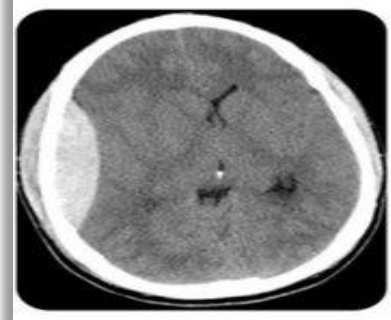
1. CNS Radiographic Pathology



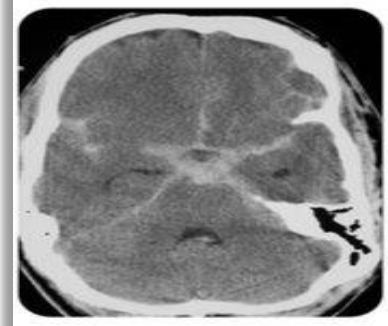
Cerebral Hemorrhages



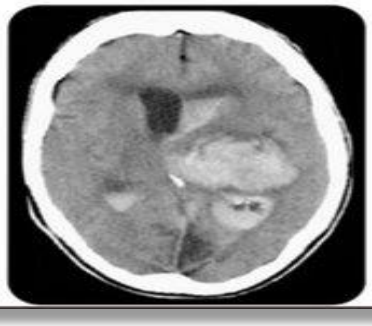
Subdural hematoma
- Crescent-shaped
- Blood collection between dura and arachnoid matter
- Tear in **bridging veins**
- Alcoholics and elderly are prone



Epidural hematoma
- Biconvex (lens) shaped
- Blood between dura and skull
- Tearing of **middle meningeal artery**
- Adolescents and young adults (trauma)



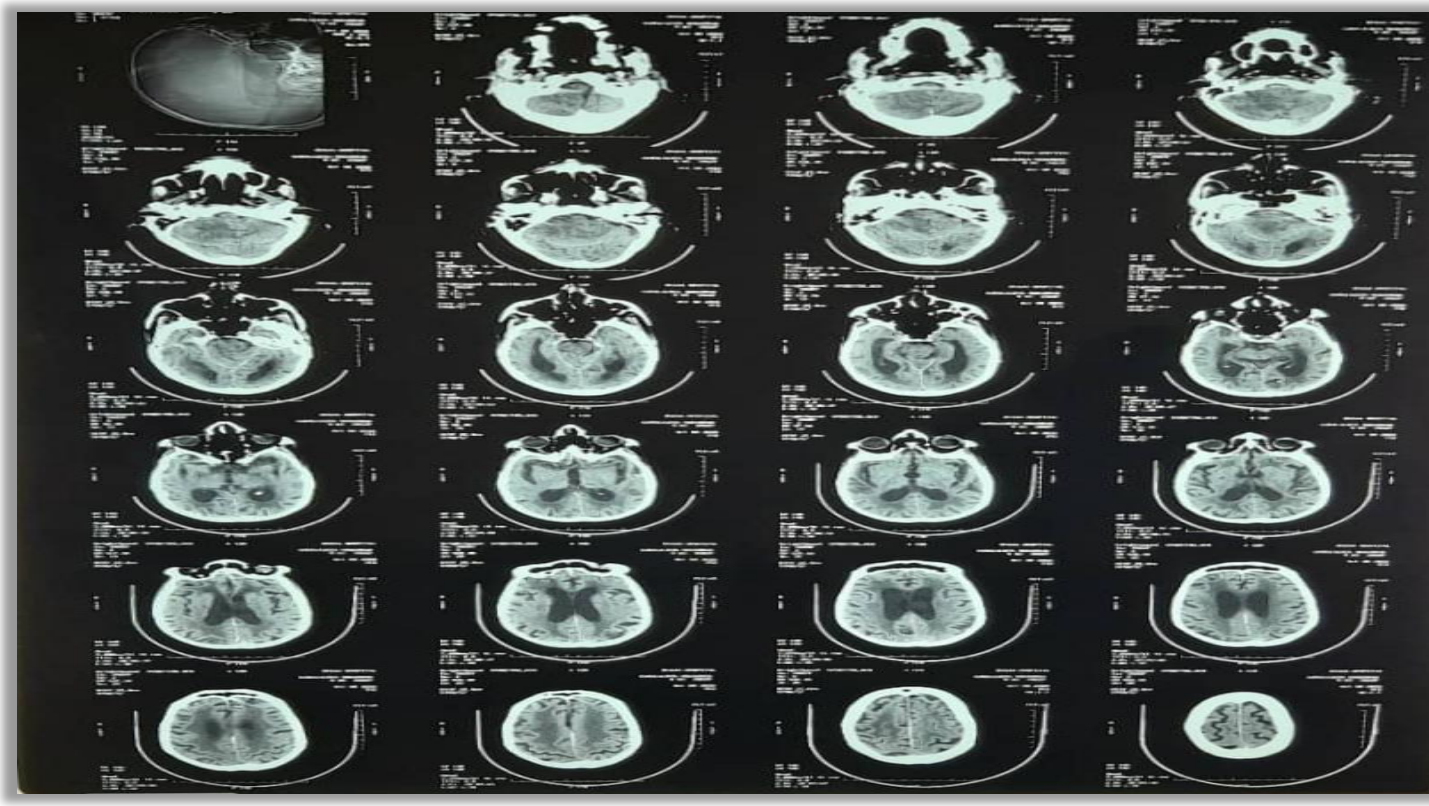
Subarachnoid hemorrhage
- Blood in circle of Willis, cisterns, and fissures
- Rupture of **berry aneurysm**
- Polycystic kidney disease (risk factor)



Intracerebral hemorrhage
- Blood in parenchyma and ventricles
- Hypertensive vasculopathy
- Territory of **penetrator arteries**

Cases of CNS Radiographic Pathology

Dysarthria, TIA



Procedure: CT Brain without contrast

☆Findings:

•Left basal ganglia focal hypodensity no significant mass effect or midline shift detected.

•No intra or extra-axial hemorrhage noted:

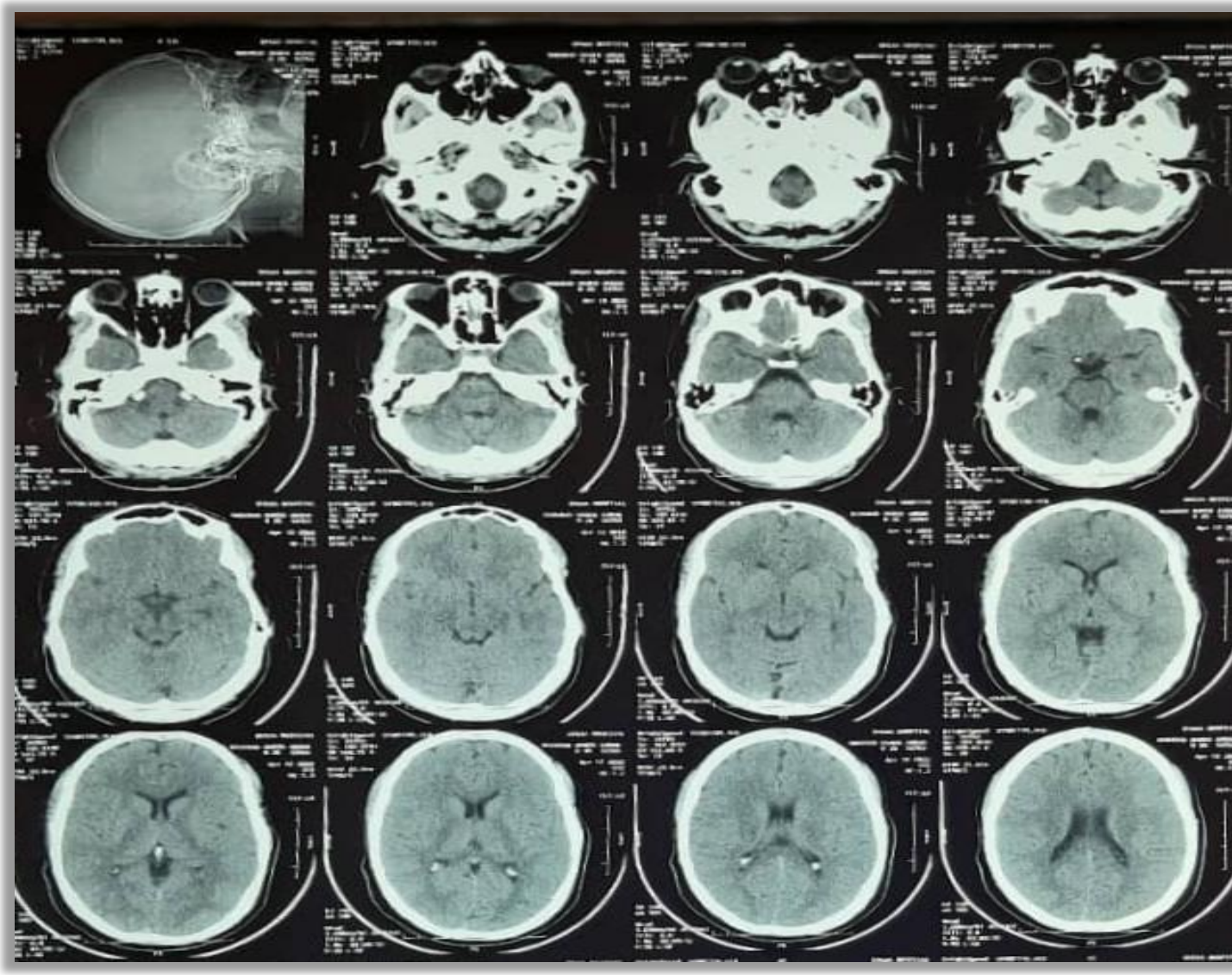
•No SOL

•Unremarkable cerebellum and brain stem.

•Age related brain atrophy

☆**Impression:** Left basal ganglia focal acute infarction as described for clinical correlation

CH: Hx of pontine Hge, dizziness



☆ **Procedure:** CT Brain without contrast.

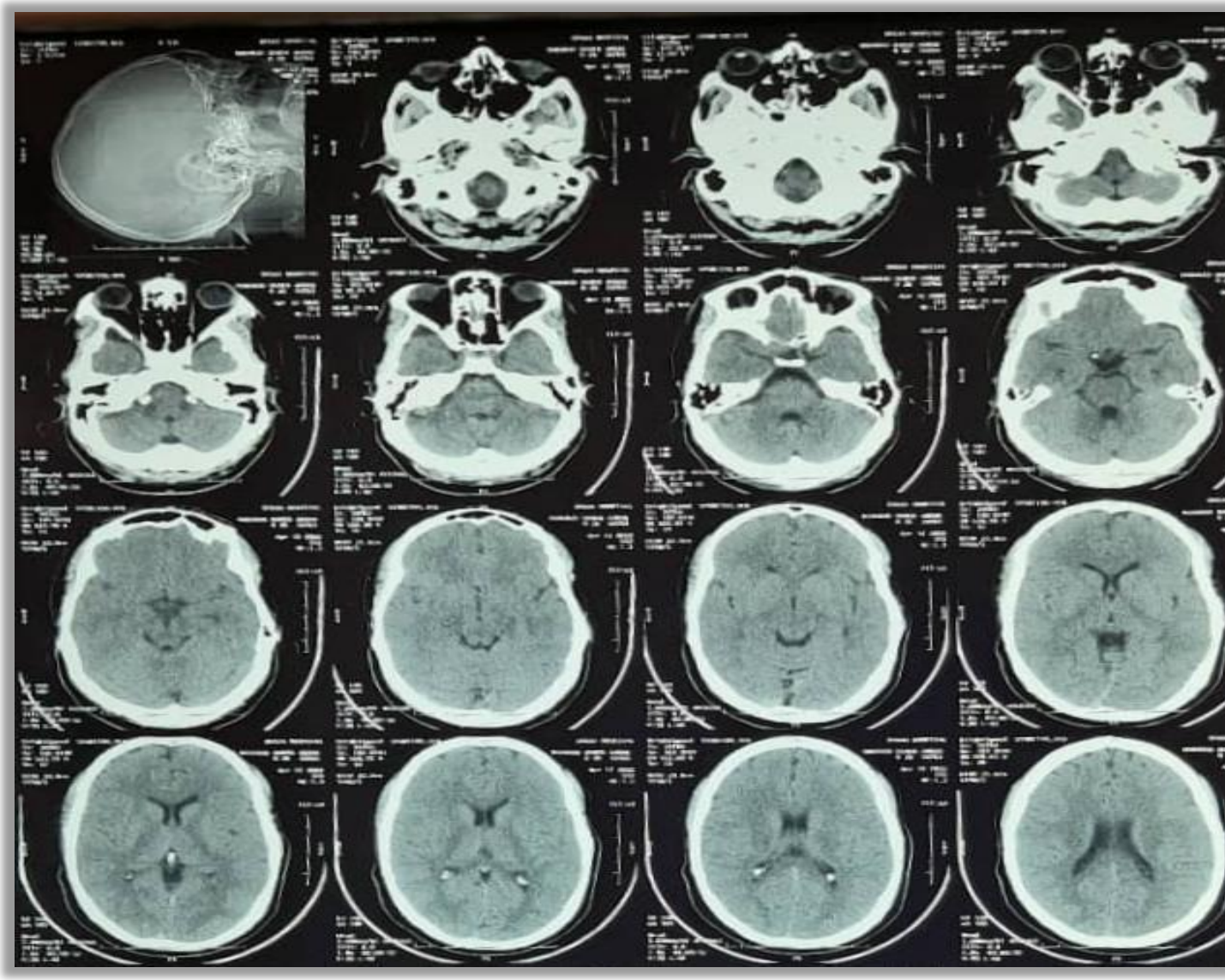
☆Findings:

•Bilateral periventricular hypo density noted suggestive of ischemic small vessels disease.
•No intra or extra axial hemorrhage noted.
•No acute vascular territory infarction noted.
•No SOL or midline shift.
•Unremarkable cerebellum & brainstem.
•Moderate diffuse brain atrophy as evident by dilated ventricular systems and prominent sulci.

☆Impression:

Features suggestive of ischemic small vessels disease, no ICH or sizable infarction as described, for clinical correlation.

C/O trauma



☆ **Procedure:** CT Brain

☆Finding:

•Preserved brain parenchymal appearance with age no lesion seen.

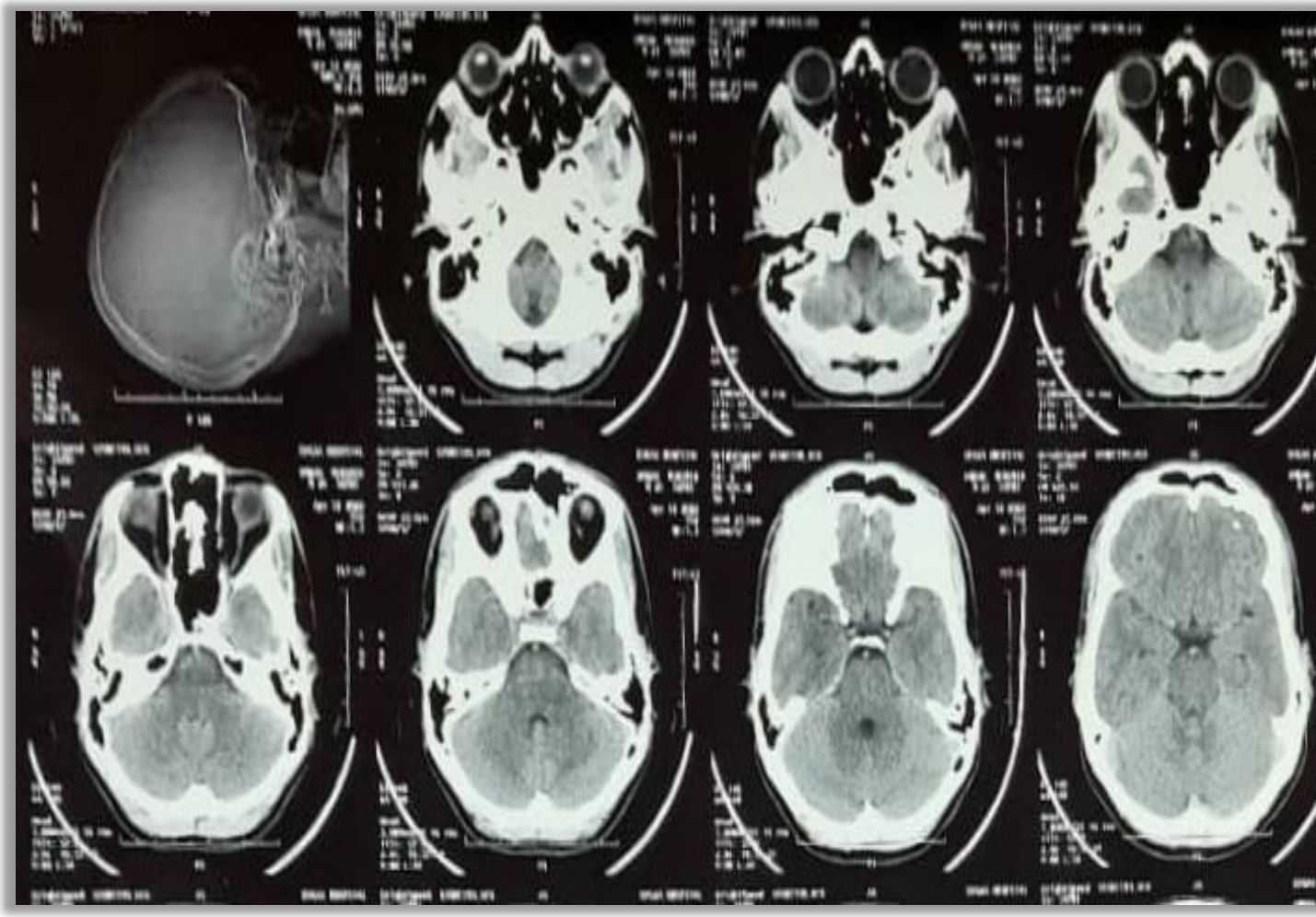
•No haematoma noted.

•Preserved mid line no shift.

•Preserved appearance of the ventricular system.

•No bone fracture noted.

C/O history of trauma 7yrs



Procedure: CT Brain

☆Finding:

•Preserved brain parenchymal appearance with age no lesion seen.

•No haematoma noted.

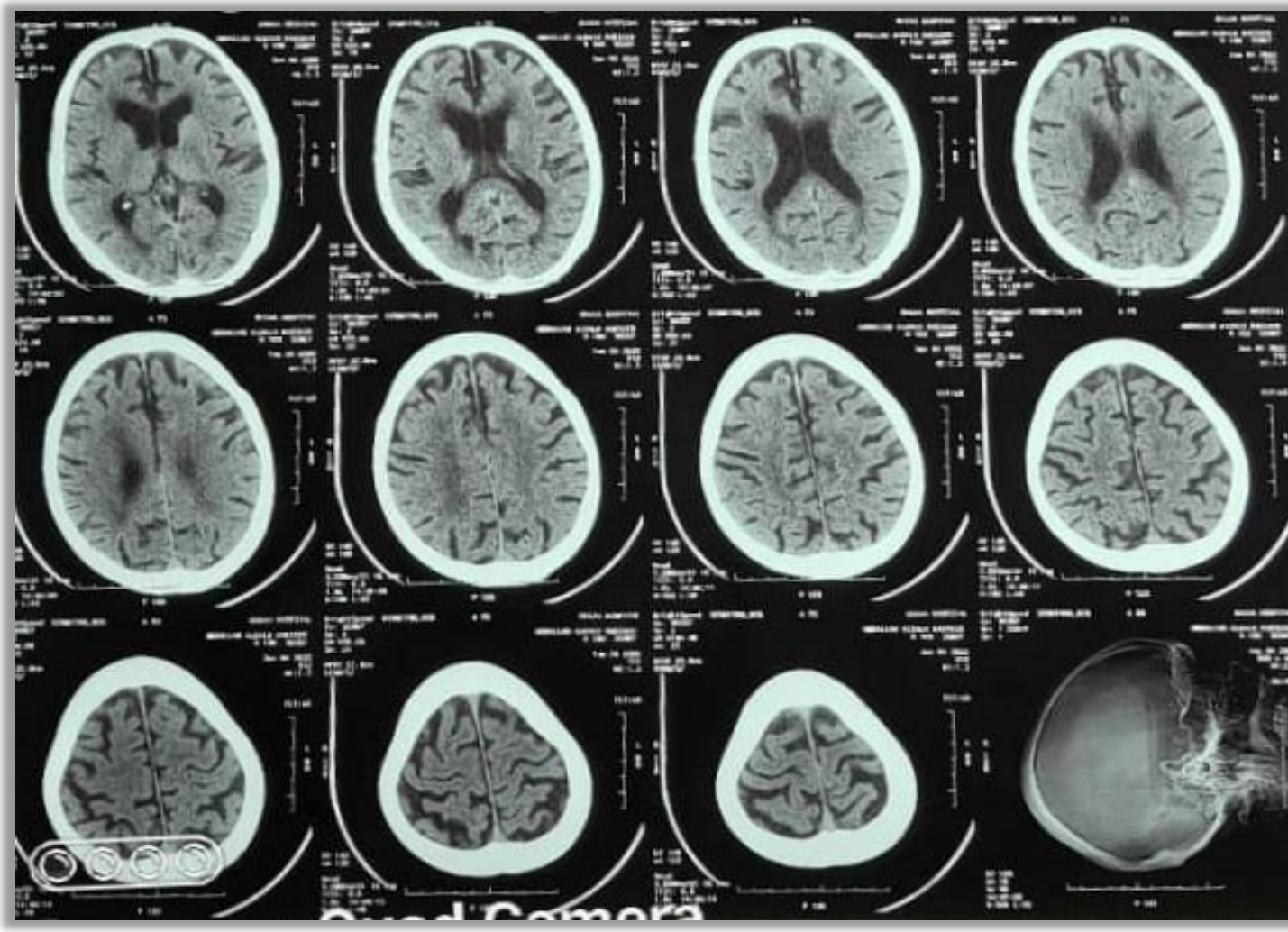
•Preserved mid line no shift.

•Preserved appearance of the ventricular system.

•No bone fracture noted.

•Ethmoid sinusitis noted.

C/O Trauma

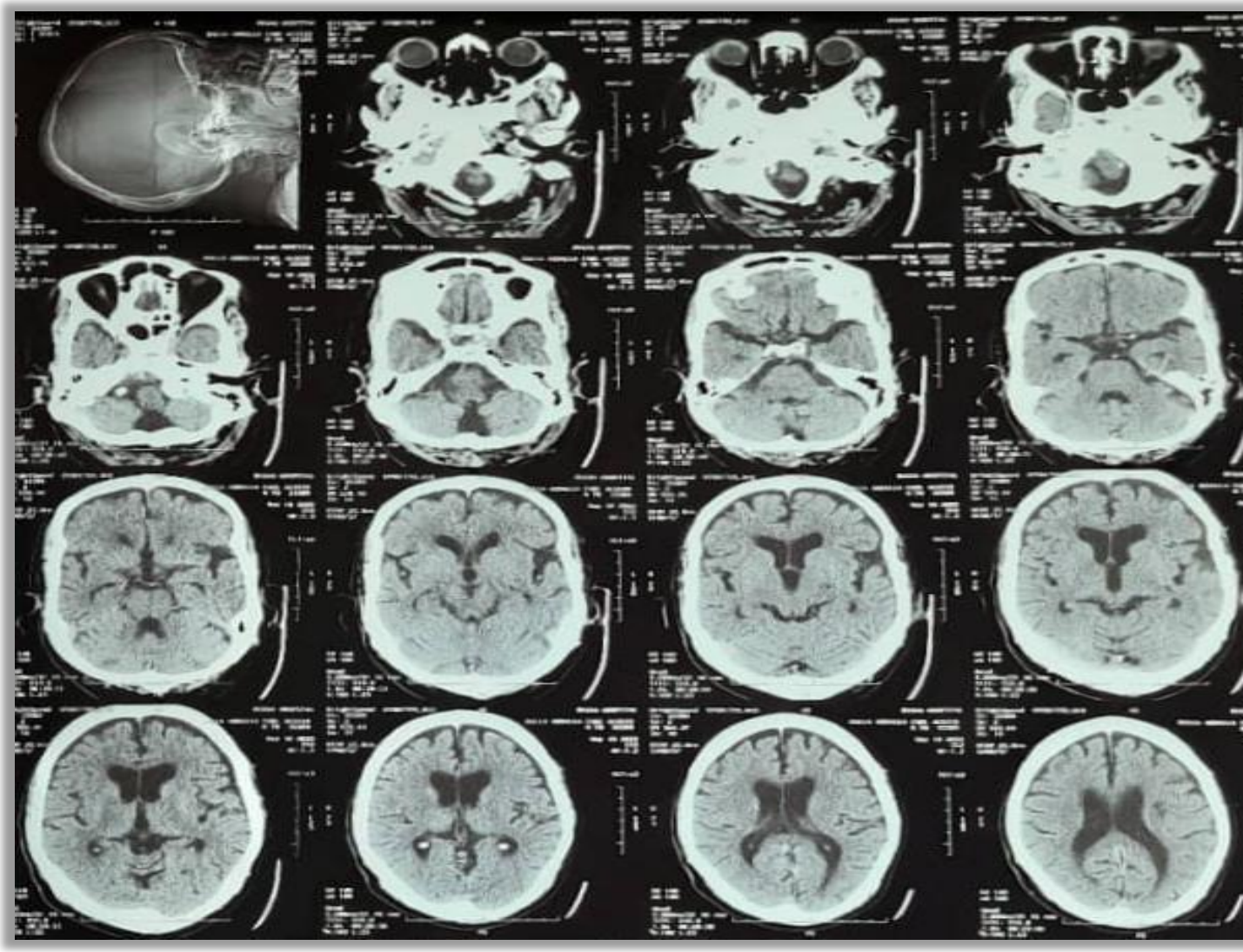


☆ **Procedure:** CT Brain with bone window

☆**Finding:**

•Preserved brain parenchymal appearance with age noted.
•No haematoma noted.
•Preserved mid line no shift.
•Preserved appearance of the ventricular system.
•No bone fracture noted.

CH: Covid-19, high renal profile



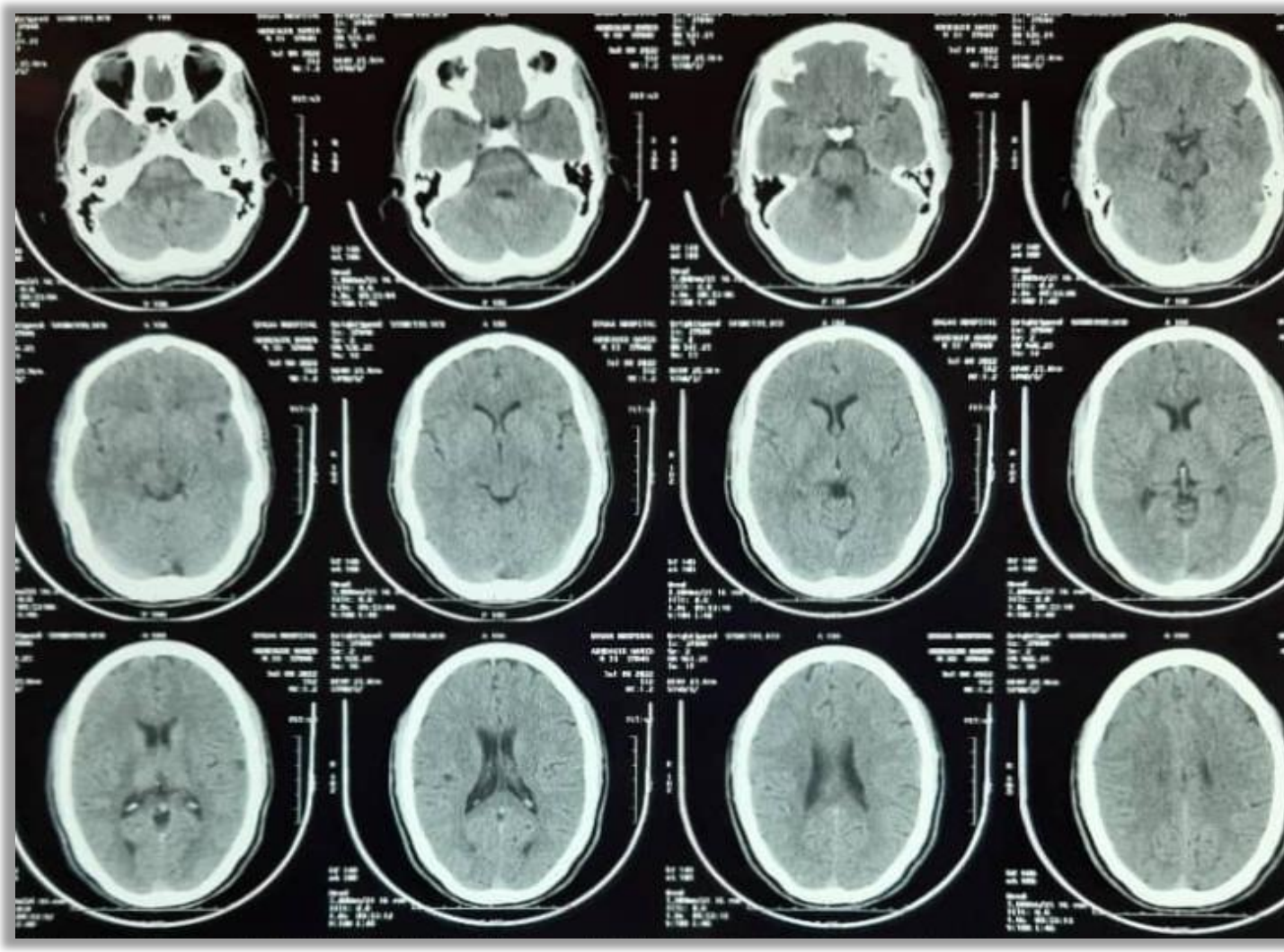
☆ **Procedure:** CT.

☆Findings:

•Right cerebellar focal hypodensity compressing the forth ventricle with mild midline shift to the left side by 5 mm and resultant supratentorial hydrocephalus noticed.
•No intra or extra axial hemorrhage noted.
•No acute vascular territory infarction noted.
•Unremarkable brainstem.
•Moderate diffuse brain atrophy noticed.

☆Impression:

Features suggestive of right cerebellar mass compressing the forth ventricle with obstructive hydrocephalus, due to high renal profil no post contrast images detected, for clinical correlation and further evaluation.



CH: Left side weakness, slurred speech

☆ **Procedure:** CT

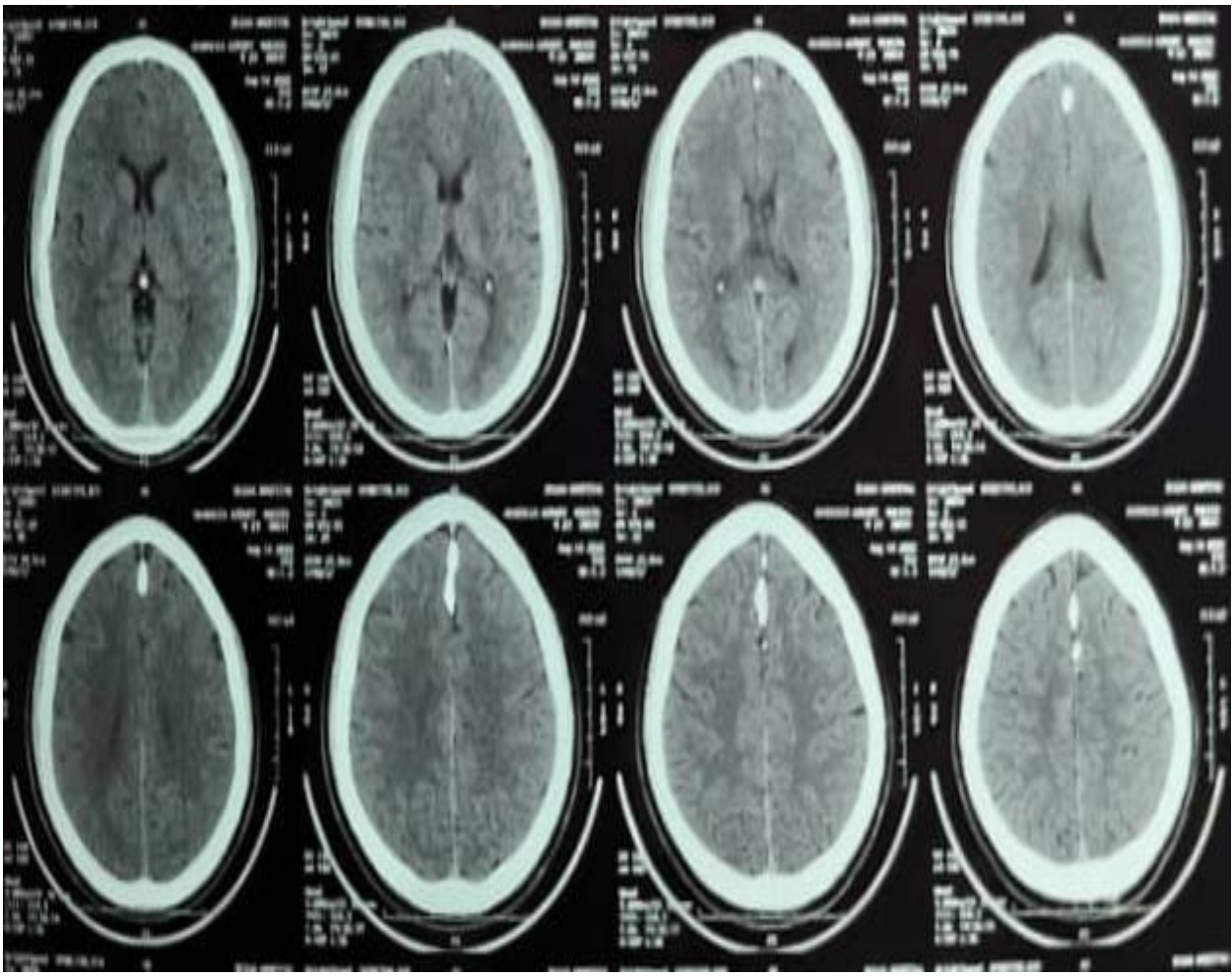
☆**Findings:**

•Right temporo-parietal cortical and subcortical hypodensity with perifocal edema effacing the cortical sulci with mild mass effect upon the anterior horn and body of the right lateral ventricle, normal rest of ventricular system, no midline shift.
•No intra or extra axial hemorrhage.
•No SOL.
•Unremarkable cerebellum & brainstem
•Of note: features of mild sinusitis.
•Rest unremarkable.

☆Impression:

Right temporo-parietal acute infarction at MCA territories as described.

C/O \Trauma



☆ **Procedure:** CT Brain.

☆**Findings:**

•Preserved brain parenchymal appearance with age no

lesion seen.

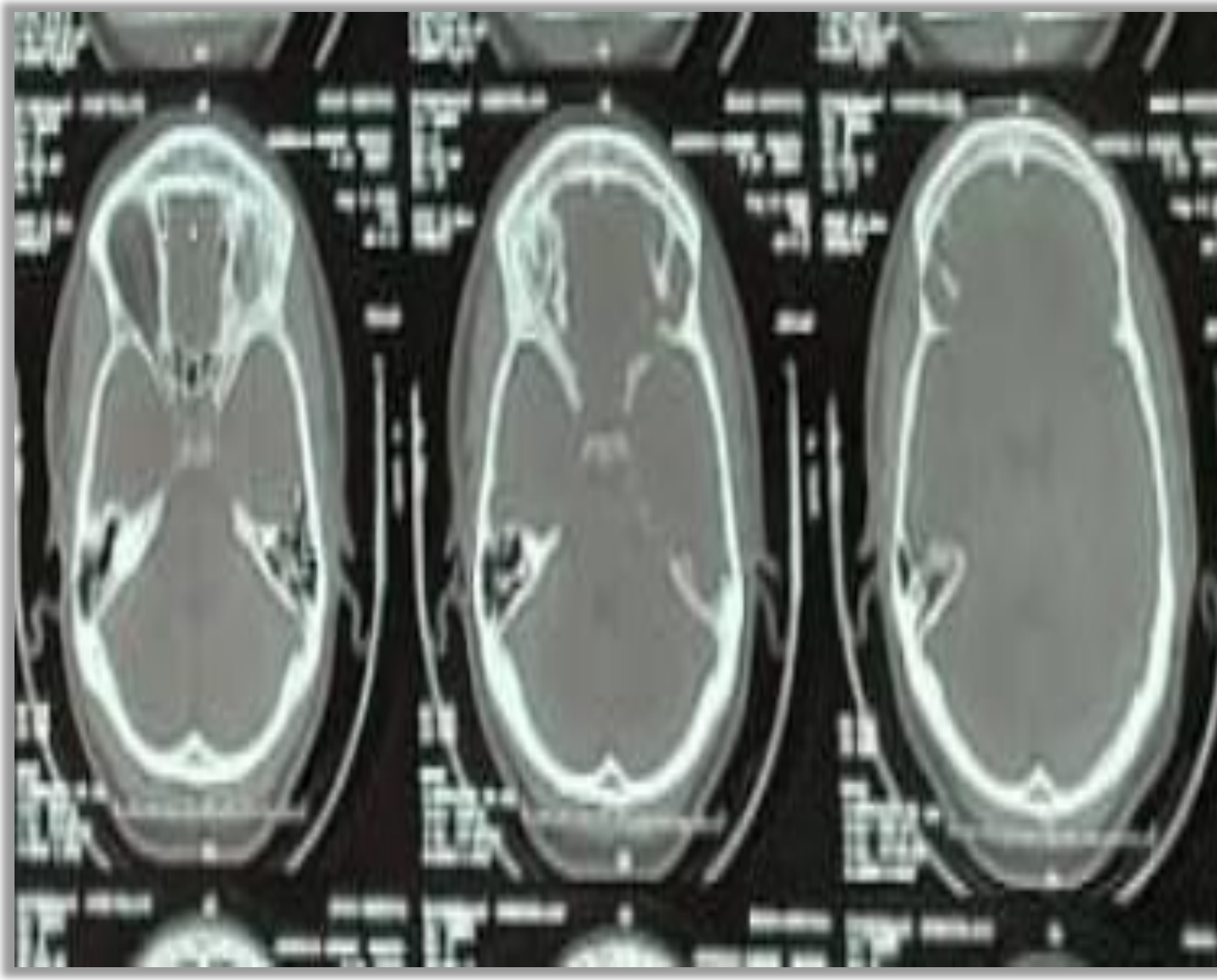
•No haematoma noted.

•Preserved mid line no shift.

•Preserved appearance of the ventricular system.

•No bone fracture noted.

☆**Impression:** Regard her illness .. No parenchymal lesion seen no heamatoma as well no detectable bone



fracture.

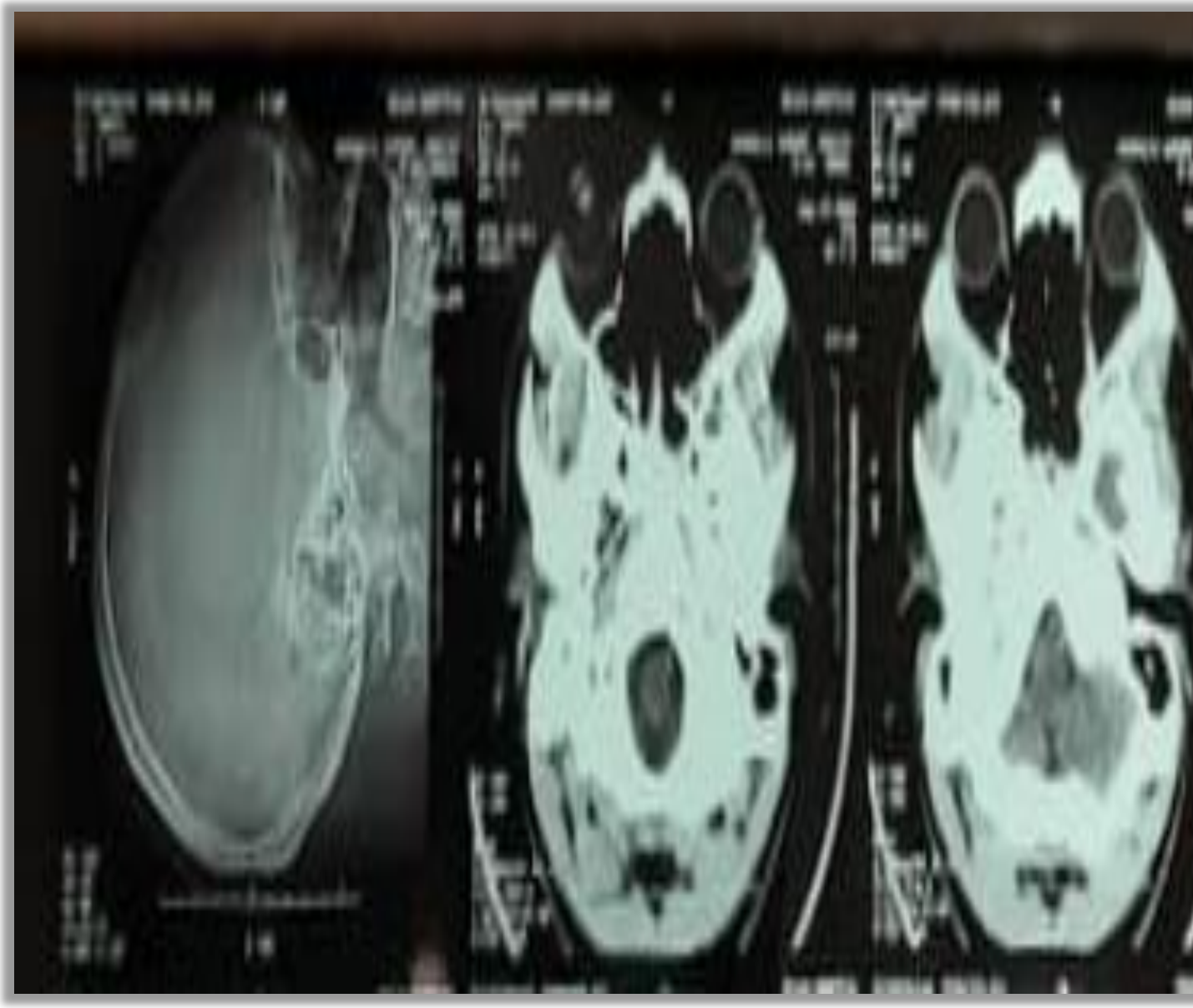
C/O Rt. sided weakness

☆ **Procedure:** CT Brain.

☆Finding:

•Preserved brain parenchymal appearance with age no lesion seen.
•No haematoma noted.
•Preserved mid line no shift.
•Preserved appearance of the ventricular system.
•No bone fracture noted.
•No detectable abnormality.

CH:Dysarthria



Procedure: MRI

☆Findings:

•Bilateral focal brain stem acute lacunar infarctions noticed.

•No intra or extra axial hemorrhage noted.

•No SOL, mass effect or midline shift.

•Preserved G/W differentiation.

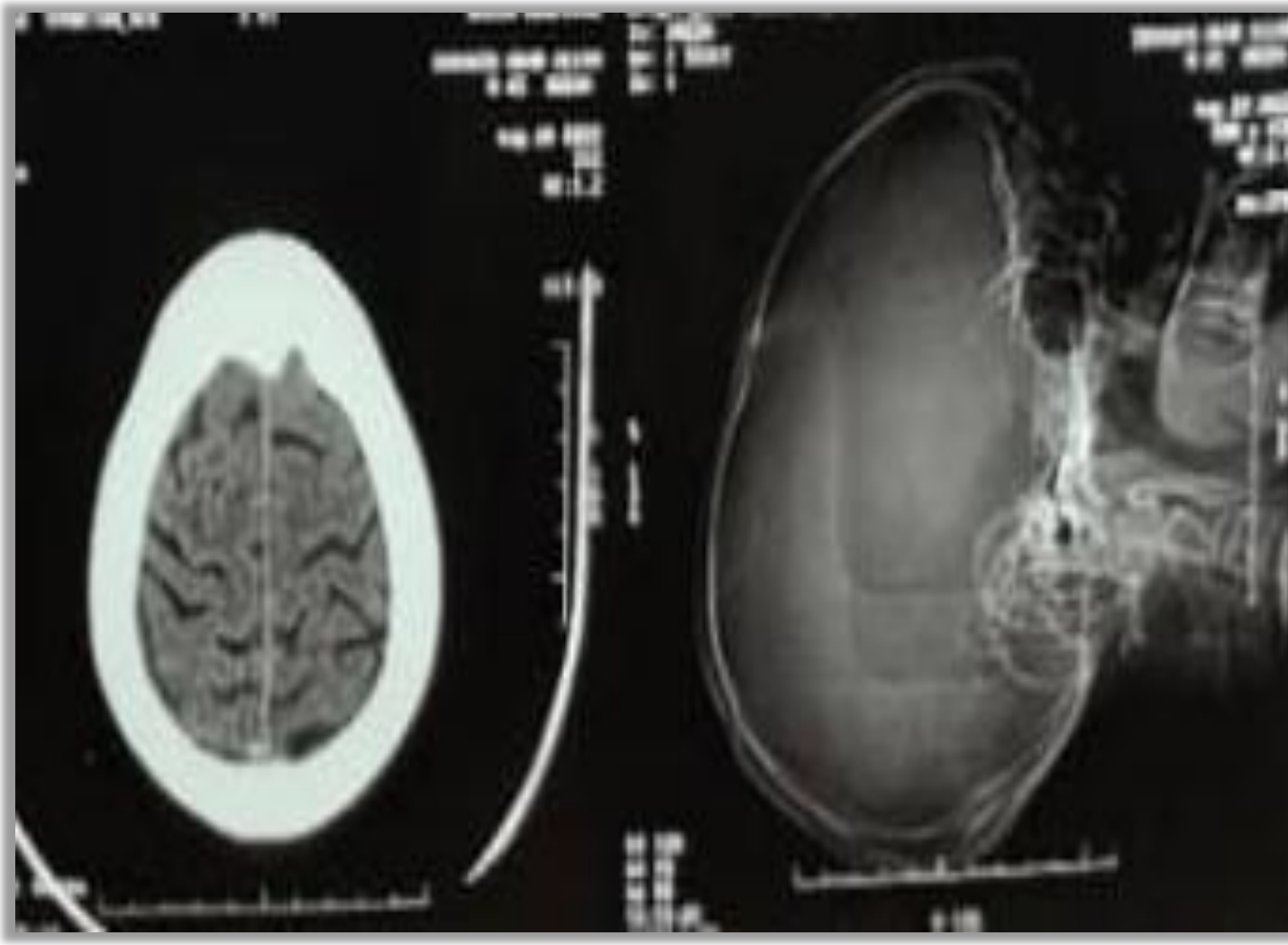
•Unremarkable cerebellum & brainstem.

•Mild diffuse brain atrophy noticed.

☆Impression:

Bilateral focal brain stem acute lacunar infarctions as describe.

CH: Head Injury, PH of SDH



Procedure: MRI

☆Findings:

•Normal brain parenchyma, no intra or extra axial hemorrhage noted.

•No acute vascular territory infarction.

•No SOL, mass effect of midline shift.

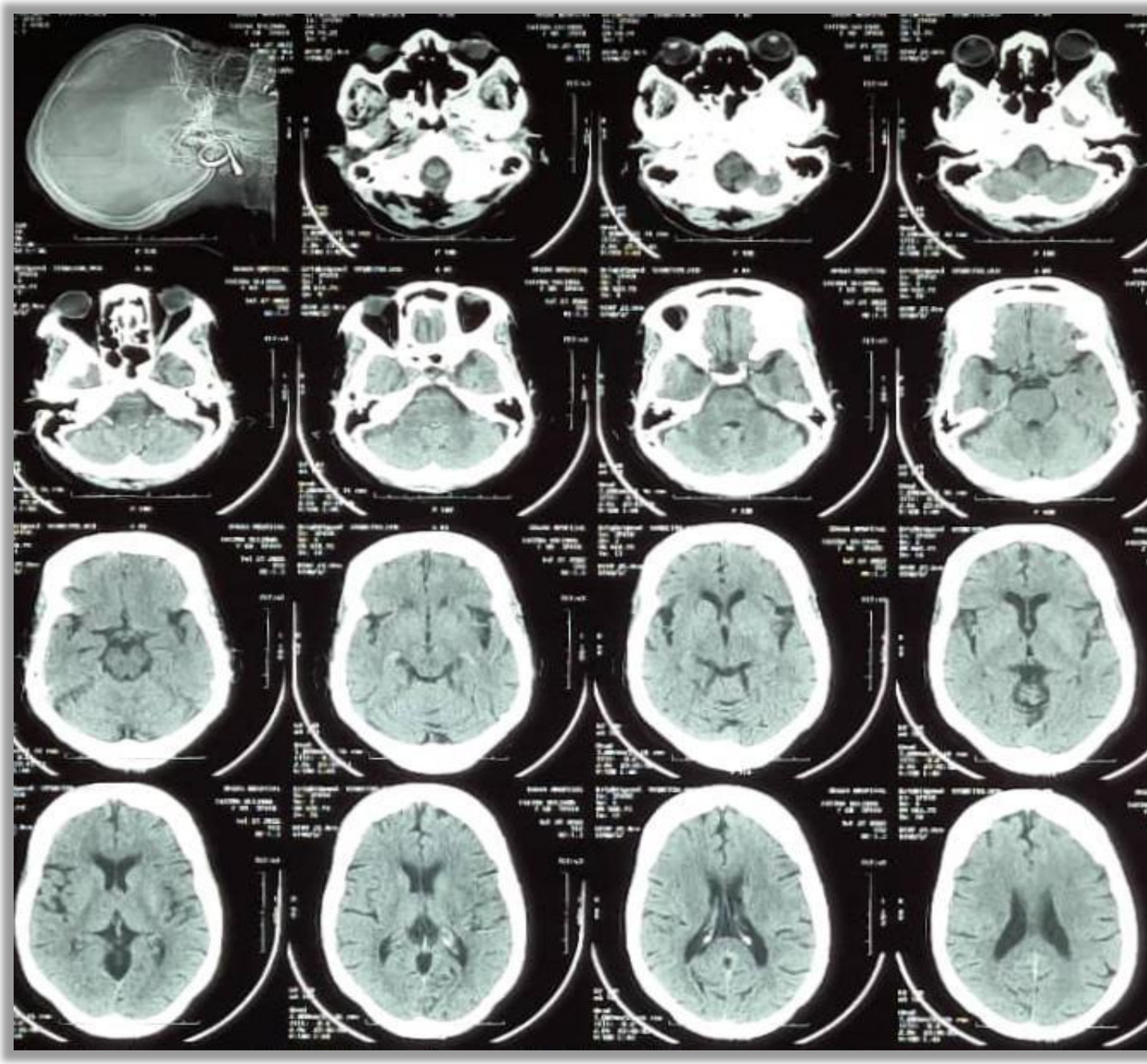
•Unremarkable cerebellum & brainstem.

•Mild diffuse brain atrophy as evidence by dilated ventricular system and prominent sulci.

☆Impression:

Unremarkable study.

CH: Head trauma



Procedure: CT Brain with bone window.

☆Findings:

○No skull bone fracture detected.

•Normal brain parenchyma, no intra axial or extra-axial hemorrhage.

•No SOL, mass effect or midline shift.

•No infarction.

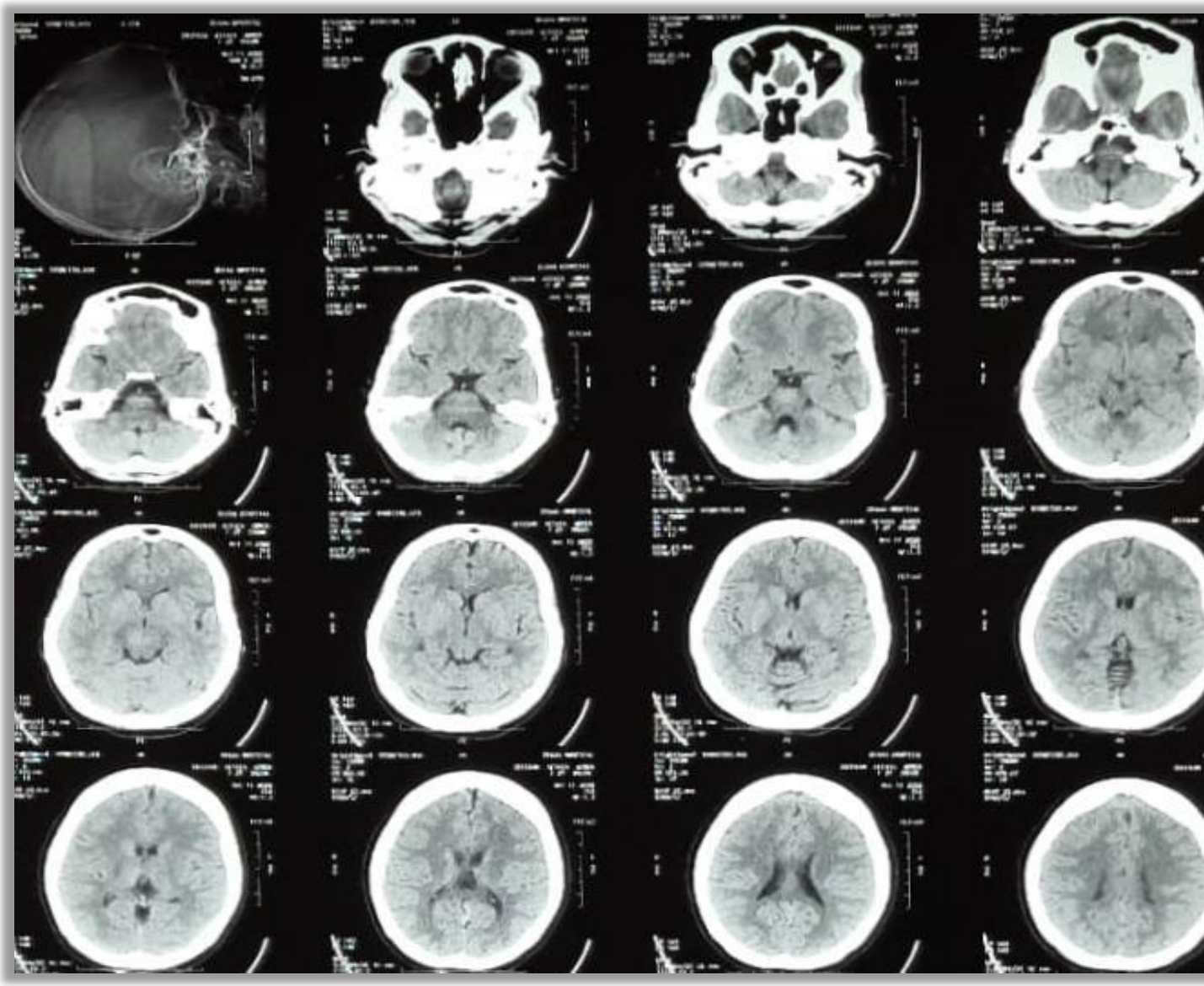
•Unremarkable cerebellum and brainstem.

•Free imaged parts of P N Ss.

☆Impression:

Unremarkable study.

C/O loss of consciousness



Procedure: CT Brain

☆Finding:

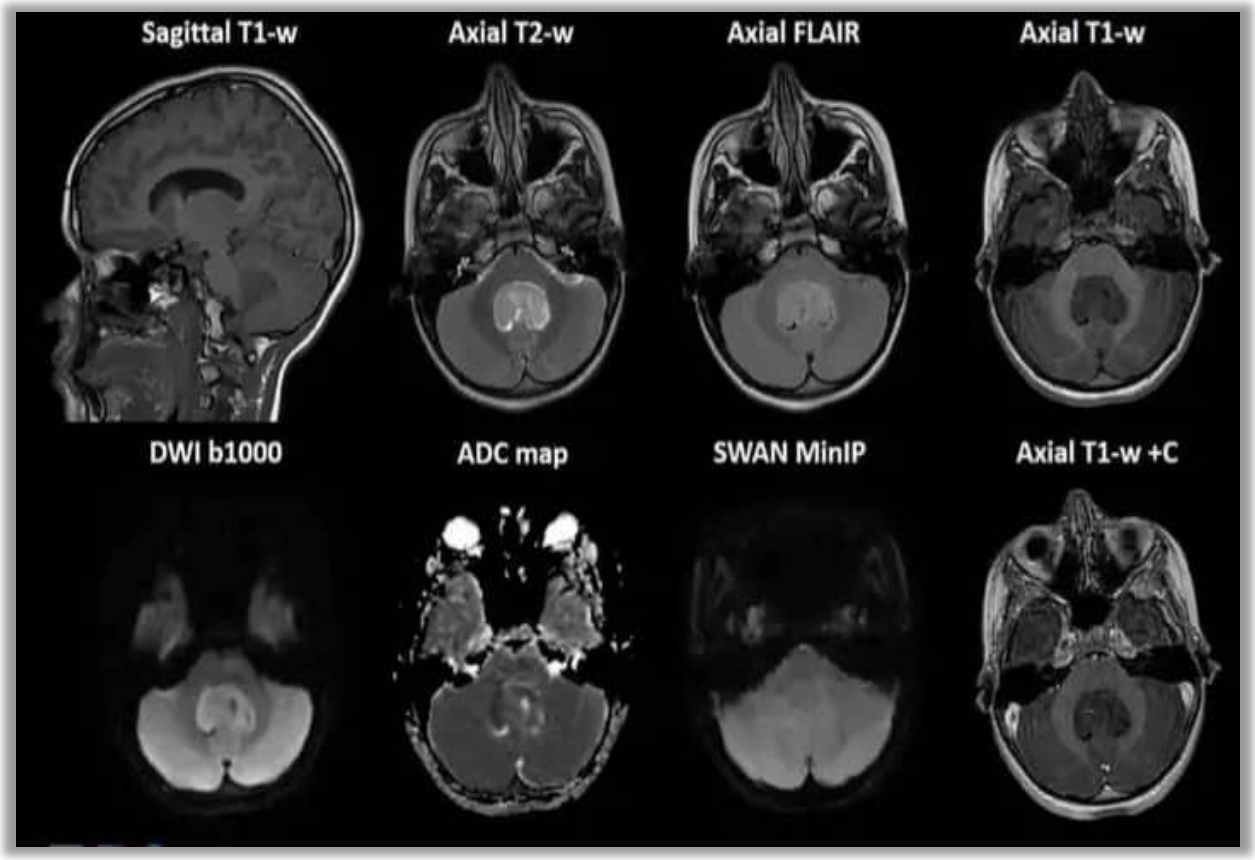
•Preserved brain parenchymal appearance with age no lesion seen.

•No haematoma noted.

•Preserved mid line no shift.

•Preserved appearance of the ventricular system.

•No bone fracture noted.



3 years old a paediatric patient with medulloblastoma.

☆**Procedure:** MRI T1-weighted, T2-weighted, and FLAIR.

☆**Finding:**

•Medulloblastomas are hypointense to grey matter on T1-weighted imaging with heterogeneous gadolinium enhancement in 90%.

•They are generally iso- to hyperintense to grey matter on T2-weighted imaging and commonly appear heterogeneous due to cyst formation, calcification and necrosis.

•Diffusion-weighted imaging shows restricted diffusion and medulloblastomas are hyperintense to surrounding brain on fluid-attenuated inversion recovery (FLAIR)

sequences

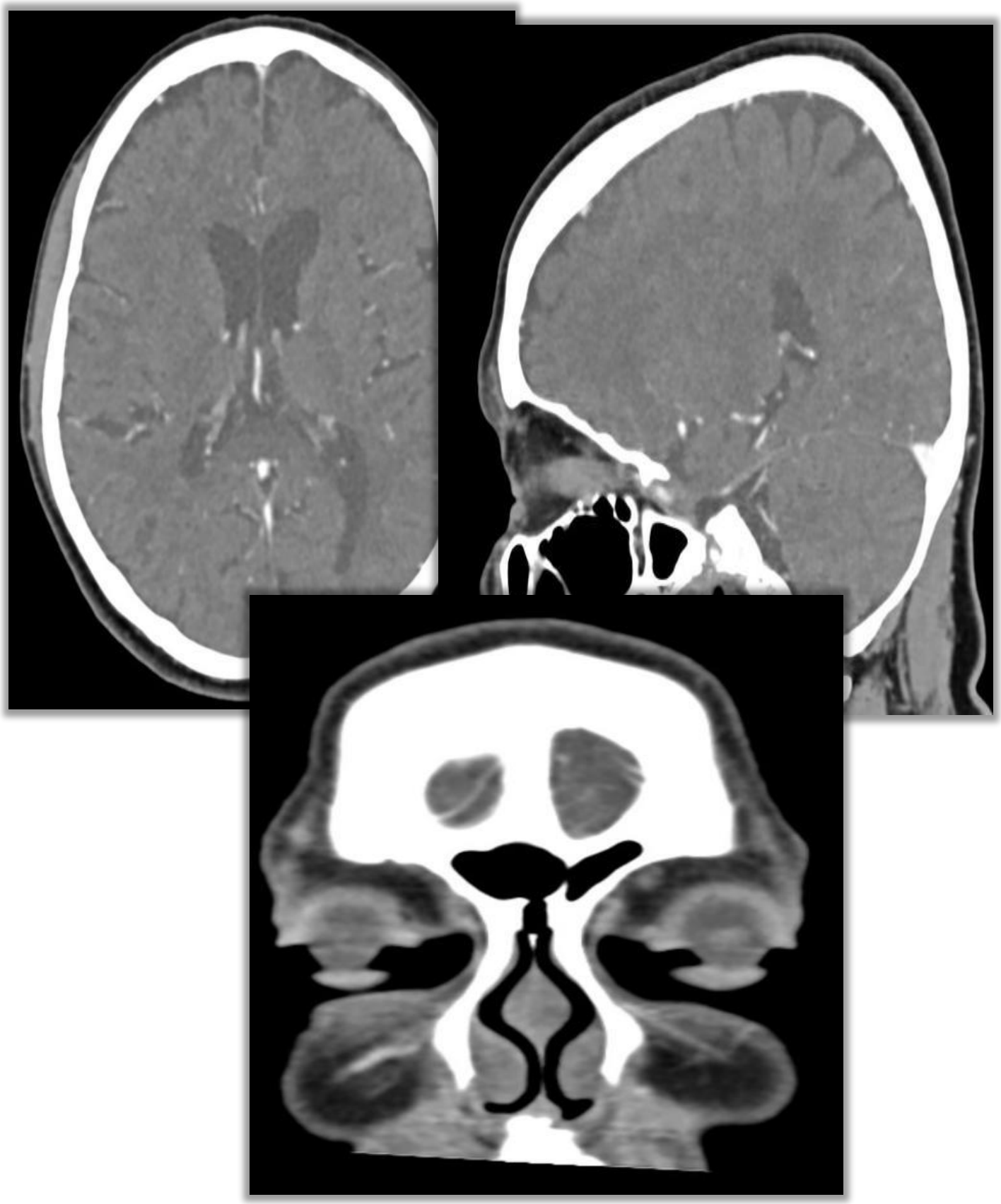
.

55 years old male with Bilateral cerebral infraction

☆**Procedure:** CT non contrast

☆**Finding:**

•Divergent gaze, dizziness, nausea and vomiting. Exclude stroke.



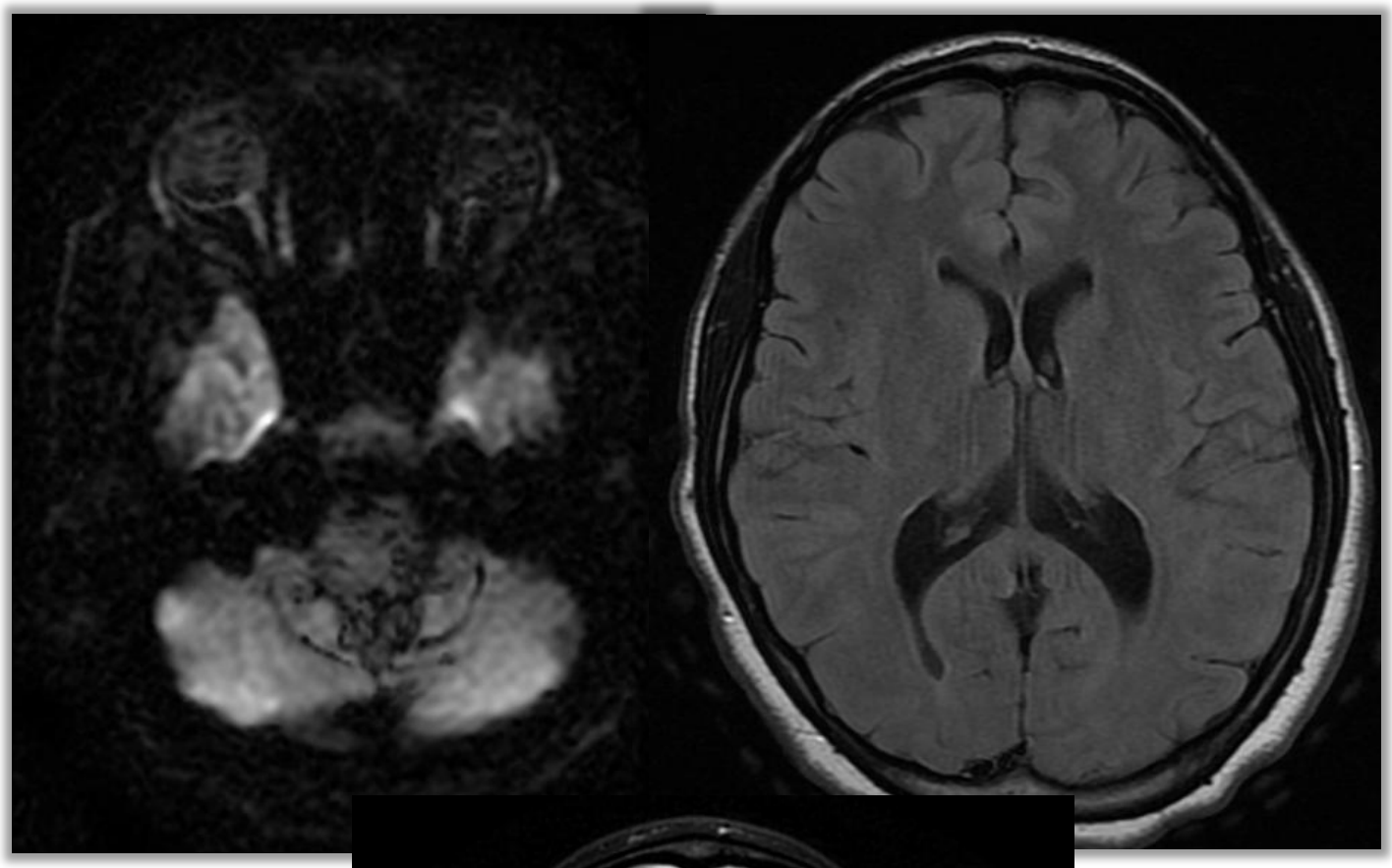
50 years old female with recurrent left eye blurring of vision

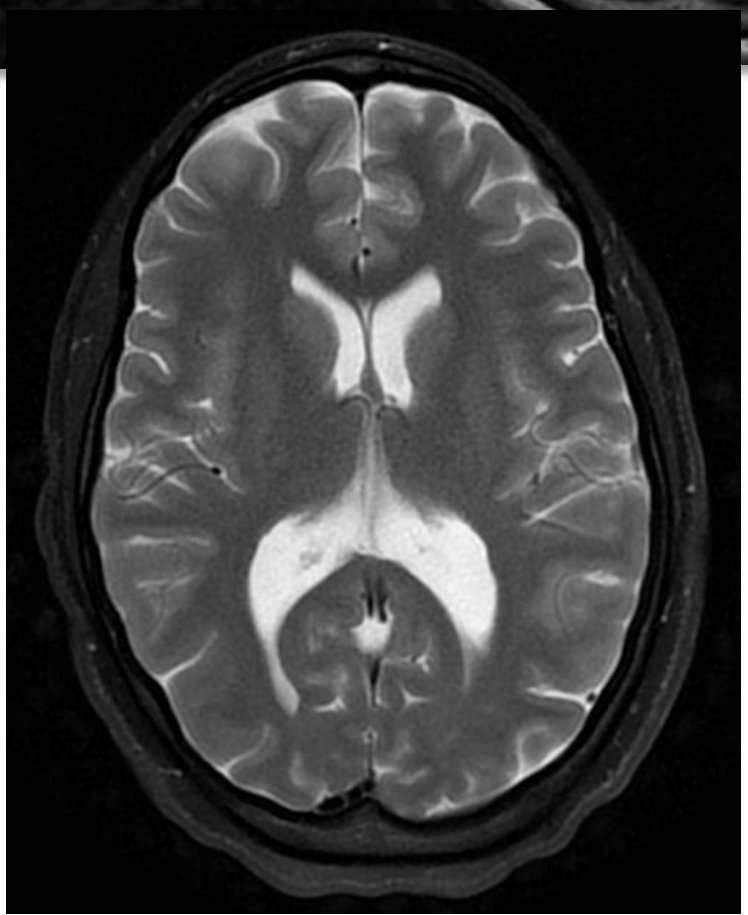
☆**Procedure:** CT

☆**Finding:**

•Enlarged left optic nerve comparing to the right side with perioptic fat streakiness.

•No enlargement of superior ophthalmic vein or extraocular muscles.



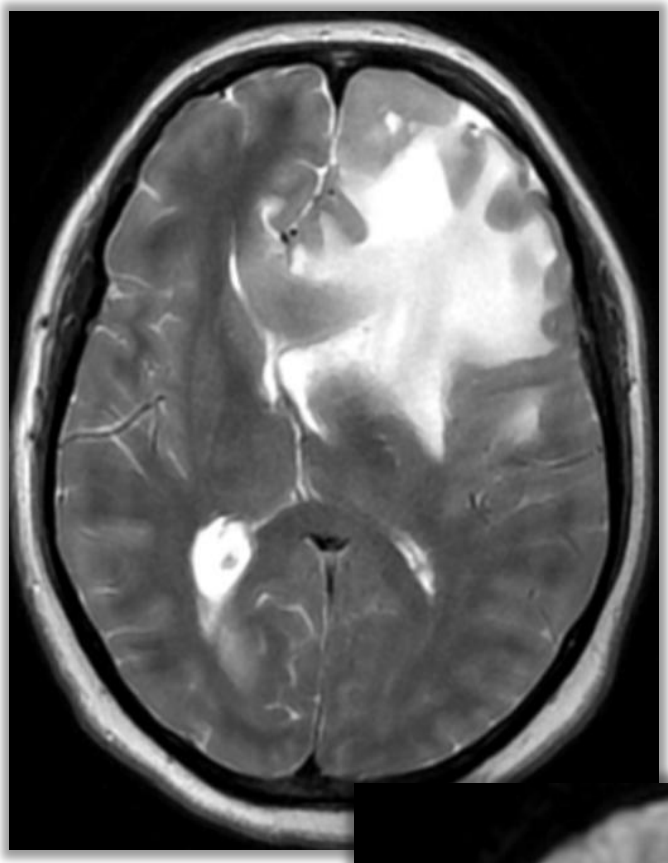


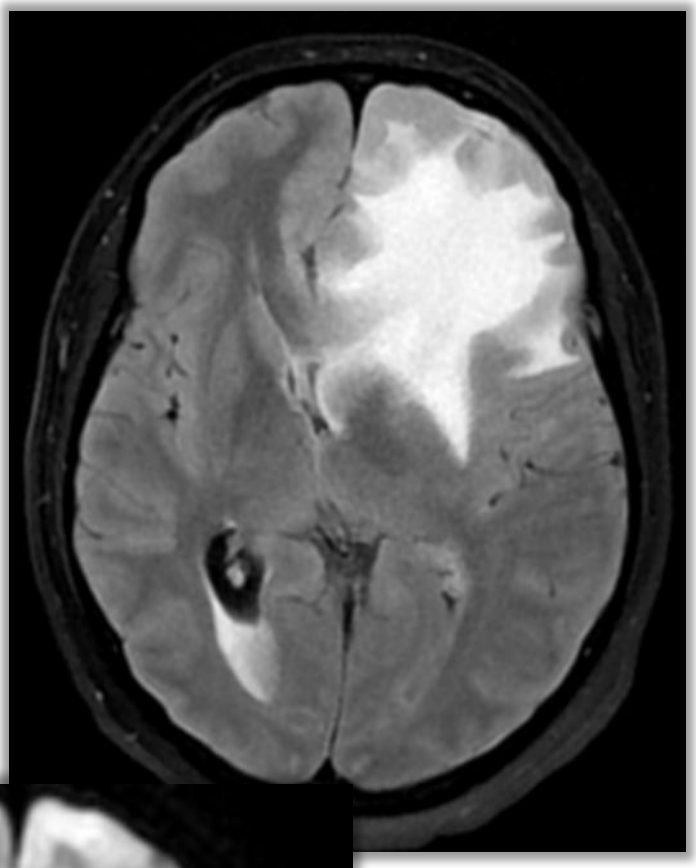
20 years old Female with Chronic headaches, bilateral upper limb weakness and paresthesia, and persistent vertigo.

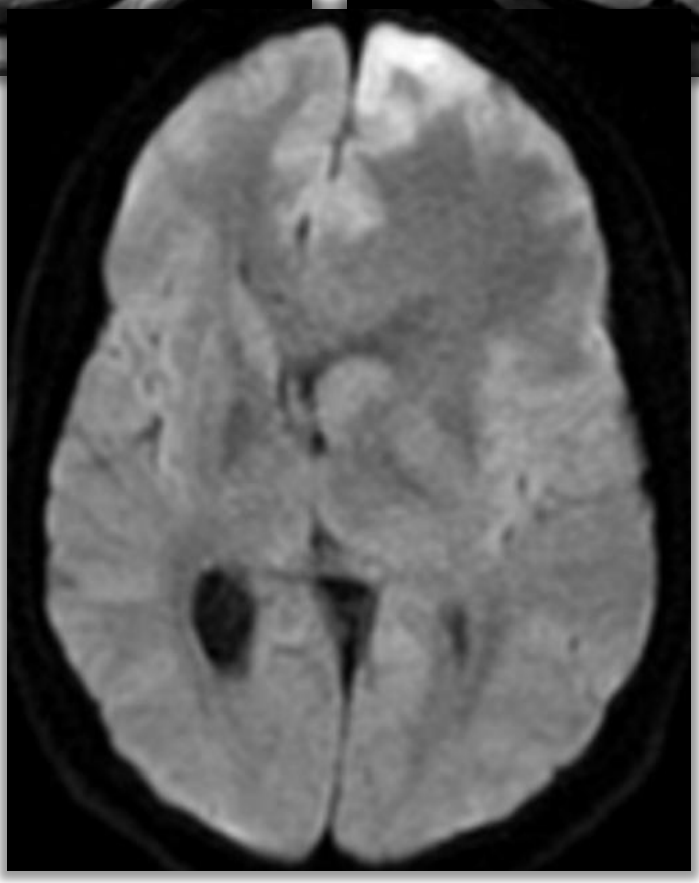
☆**Procedure:** MRI

☆**Finding:**

•There is a cerebellar tonsillar herniation of approximately 10.4 mm and associated herniation of the medulla oblongata.
•There is associated hydrosyringomyelia of the cervical cord.





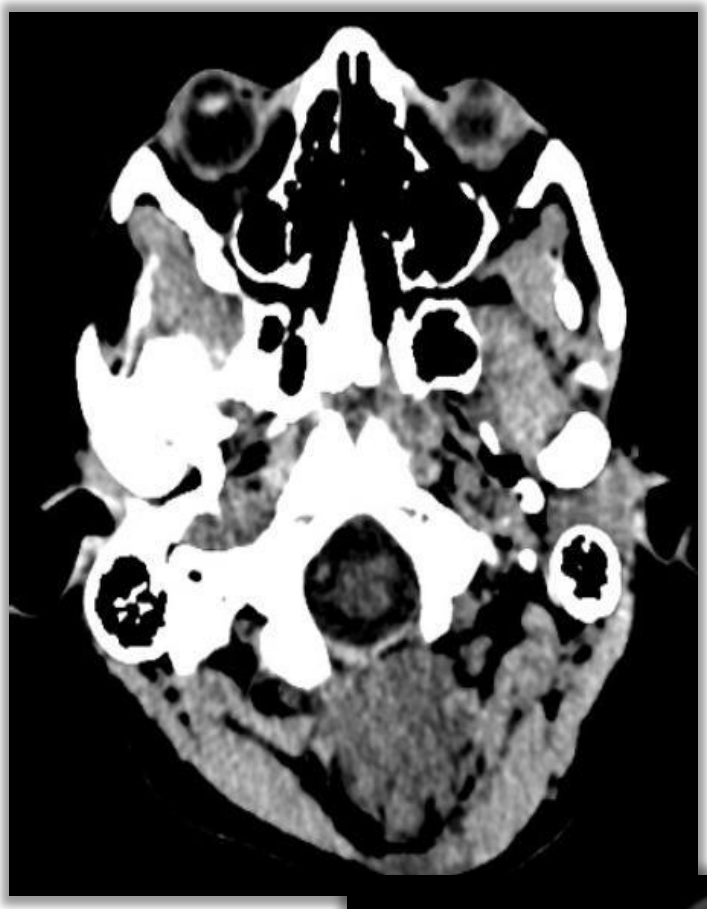


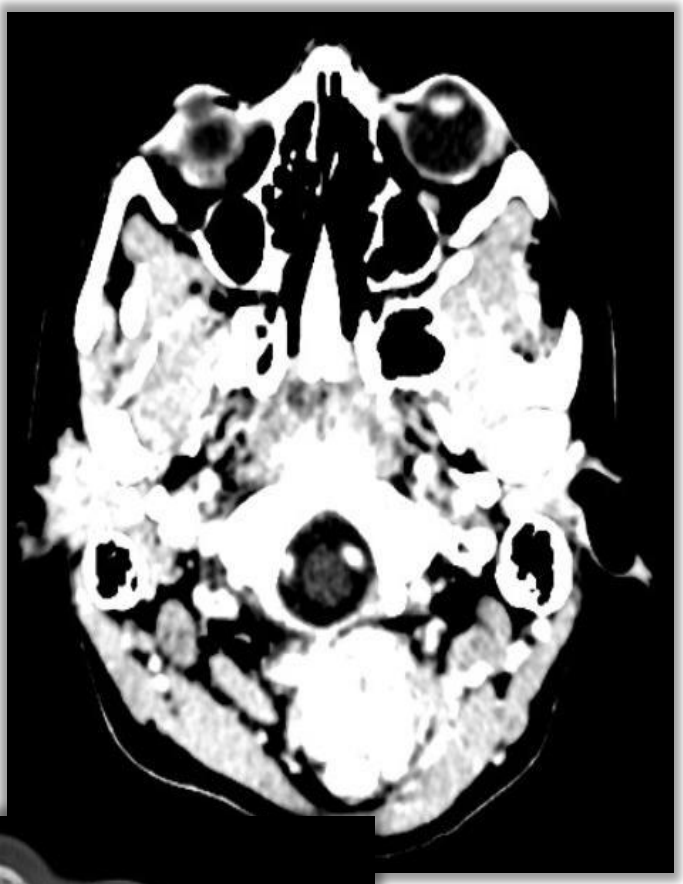
45 years old Female with Convulsions and personality changes.

☆**Procedure:** MRI

☆**Finding:**

•The lesion demonstrates strikingly low diffusion and vivid homogeneous contrast enhancement fairly typical of lymphoma.
•Other etiologies (e.g. oligodendroglioma or metastasis) are less likely.



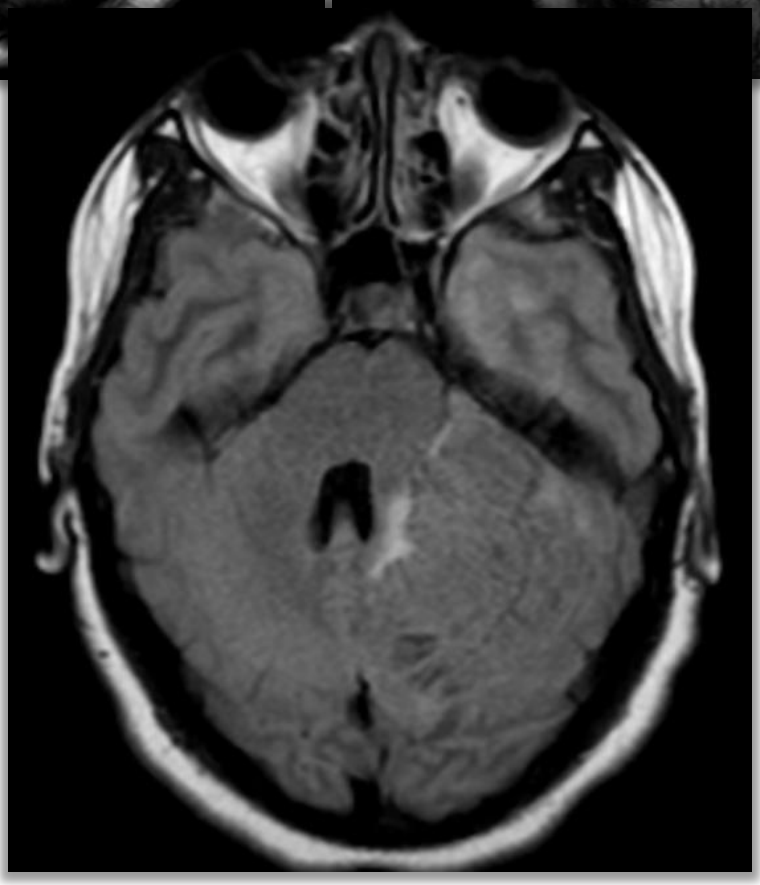


25 years old female with Left posterior cervical mass noted a few months prior, felt to be slowly increasing in size. Mild functional impairment but no significant pain. On physical exam, firm palpable mass without a palpable thrill or warmth.

☆**Procedure:** CT Axial non-contrast.

☆**Finding:**

•Highly vascularized mass in upper portion of the left cervical paravertebral muscles with mild bony remodeling of the left occipital bone suggesting a slowly evolving lesion.



16 years old female with Progressive headache of 4 years duration.

☆**Procedure:** MRI Axial T2, Coronal T2, Axial FLAIR.

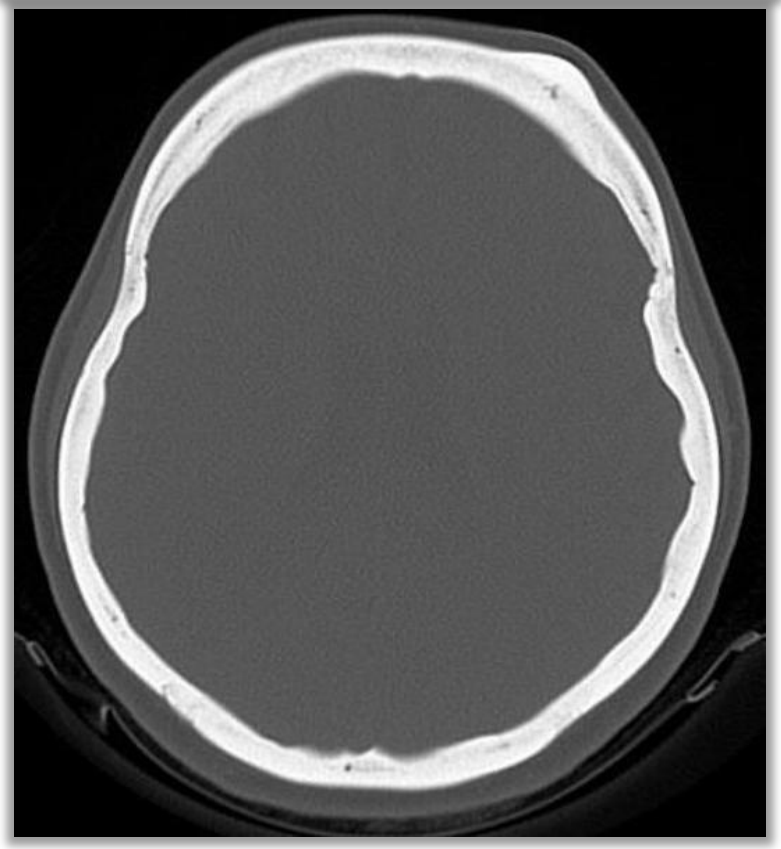
☆**Finding:**

•Multisequence MRI of the brain showed a heterogeneous lesion replacing the left cerebellar hemisphere and causing mass effect with resultant obstructive hydrocephalus.

•The lesion is hyperintense on the T2 weighted images and demonstrates the typical striated folial pattern, also described as the tigroid / tiger striped appearance.

•The hyperintense stripes suppress on FLAIR.

•This case shows a dysplastic cerebellar gangliocytoma



35 years old woman with Lump on the head. Stable for over 10 years.

☆**Procedure:** CT Axial non-contrast, Axial bone window.

☆**Finding:**

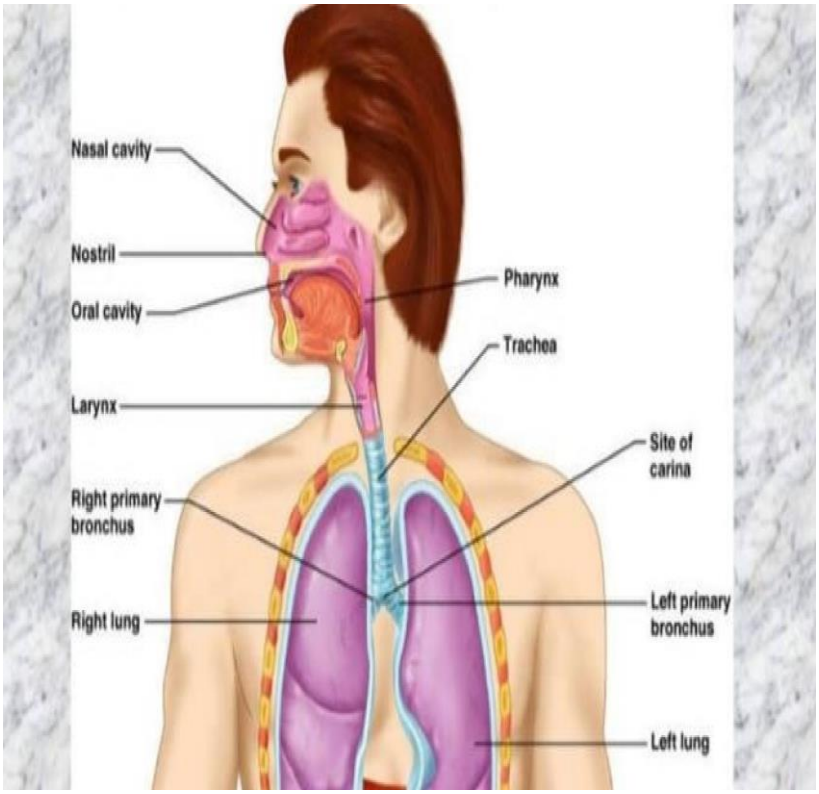
•Non-contrast CT demonstrates a densely ossified well-defined exophytic lesion that projects from the outer table of the left frontal bone.

•This case shows a skull osteoma.

2. Respiratory System

Asthma	
Emphysema	
Bronchitis	
Cistic fiparosis	
. Breathlessness	
Left pleural effusion	
Calcified pleural	
Presentation Shortness	
Pulmonary embolism	
The names of the students who organized the res	*earch*
Thanks	

Respiratory system



P

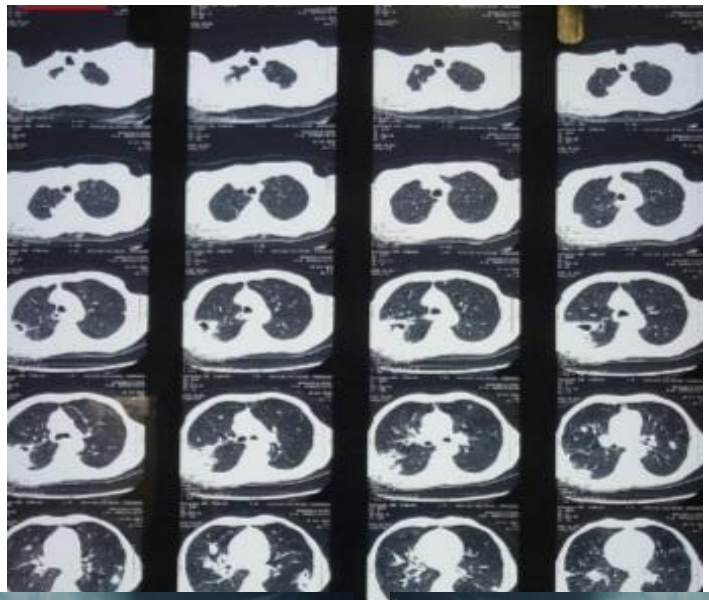
neumonia

years old . From the first 3 day of illness the fever was cough (at , ° 39-38up to first dry , from the second day wet) . Received
symptomatic treatment . On th day , left - sided 7the purulent otitis appeared

Pneumonia yr old male 60 A patient c / o Cough Breathlessness

Because of the increase in cough , shortness of breath and intoxication turned to our hospital . According to the roentgenogram bilateral pneumonia , left - sided pleurisy . On the second day of the disease , pleural drainage is established . There is no th day of 4antibiotic effect on the . hospitalization

carcinoma of lung year 65 patient age of male admitted with history of anorexia , weight loss and cough with sputum ,



carcinoma of lung

CT chest with contrast shows cardiomegally with left ventricular aneurysm with mural thrombus inside it . There is hyperechoic spiculated mass lesion in posterior segment of left lower lung lobe . also there are scattered nodules on the left lower lobe and right lower lobe of the lung . ddx

pneumothorax ys 17 male

presented with It . sided chest pain

.. alveolar carcinoma

Pneumothorax Male yo , with chief 54 , complain dyspneu and slightly pain in his chest

. suddenly

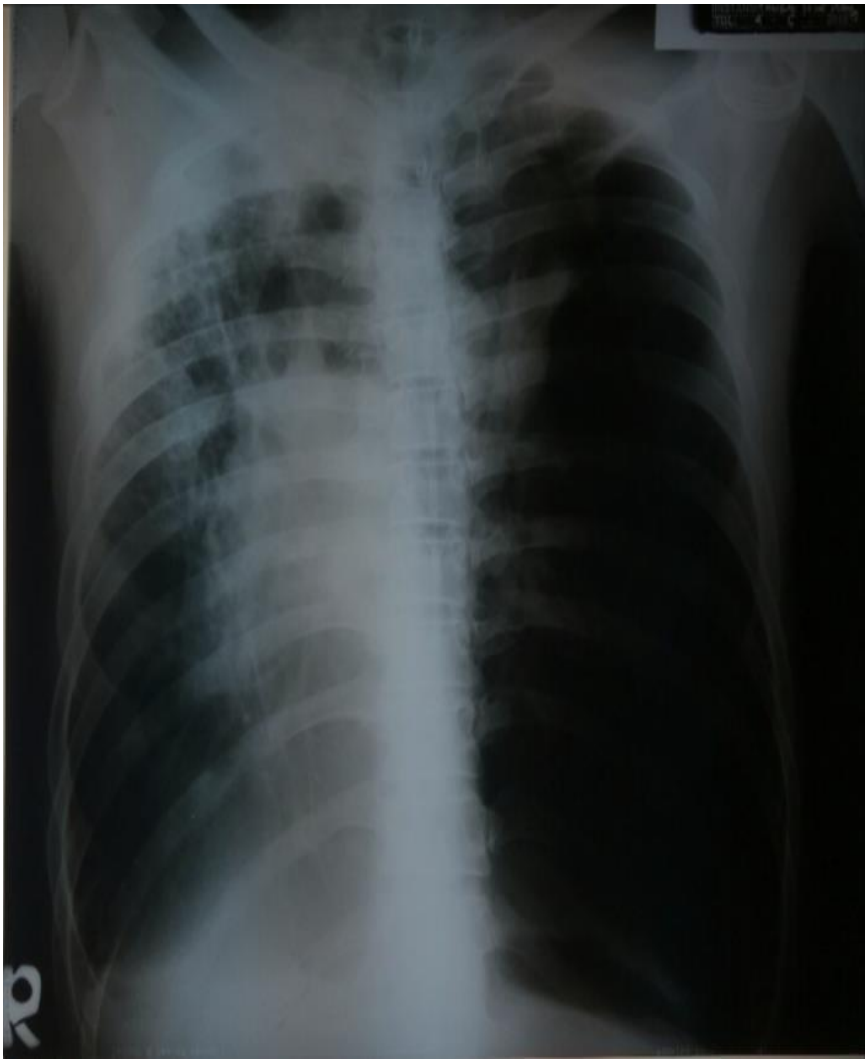
Pleura

72 Malignant pleural effusion year old female with past medical history of estrogen positive left breast ca managed by total mastectomy & adjuvant hormonal

t
h
e

Pleura

rapy (tamoxifin years) & the disease 5 for years 12 was relapse free for months ago2

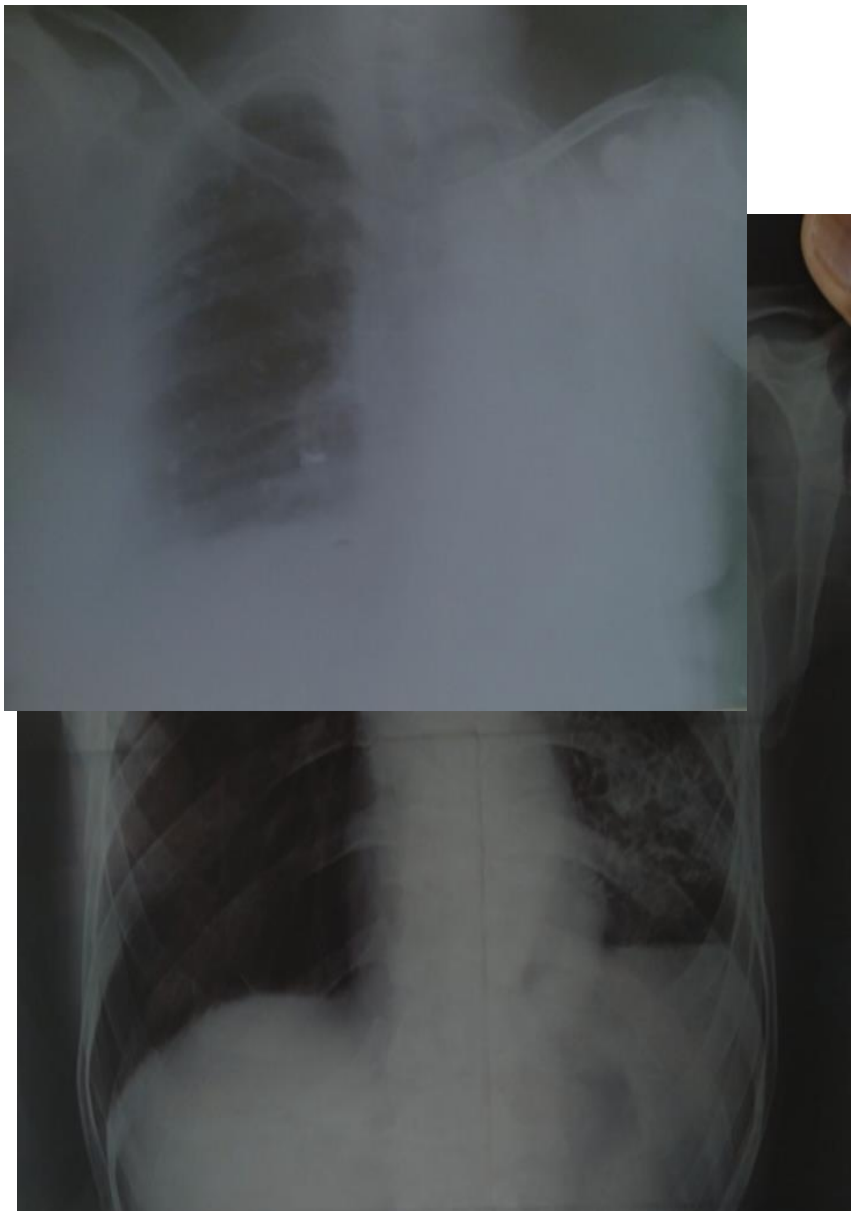


pleural effusion Left , with pneumothorax pt with dry
N ,15,200 cough , TC mm first 90 RSE , tnecrep.91 hr , CBNAAT mtb not deceted

the patient developed progressive dyspnea , chest x - ray showed massive left pleural effusion pleuroscope with biopsy reveal strongly positive HER metastatic lesions , talc pleurodesis was days 20 done on the same session x_ray after the procedure

Haemothorax

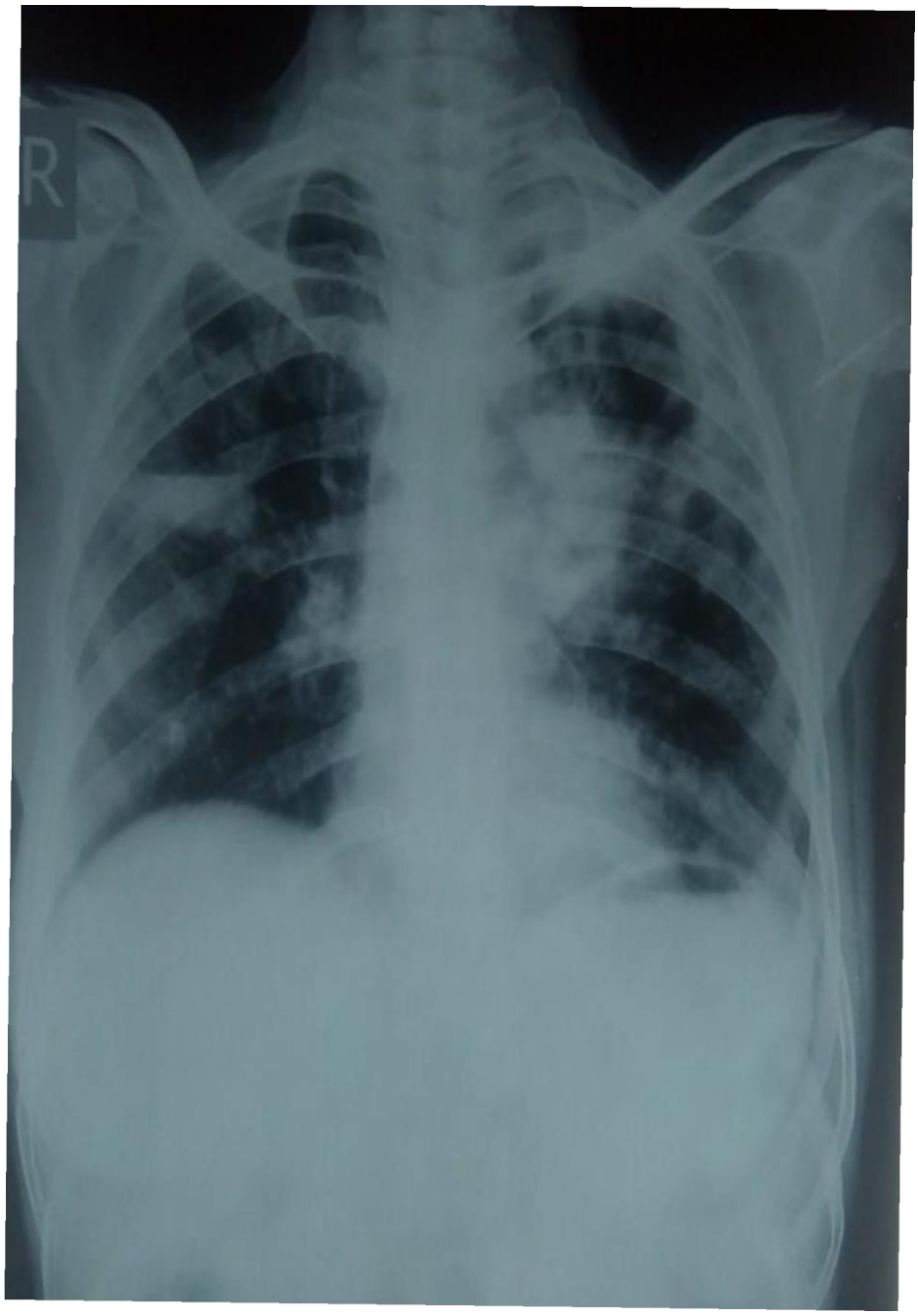
Female patient aged about years , ho hit by bike on 40 road side and fell down , complains of chest pain , sob , pain on laying left side



Granulom

Years 67 Male patient Segmental collapse of right upper lobe with pulling of trachea.

Multiple old calcified granuloma S / O old, Heald tuberculosis



Apscess

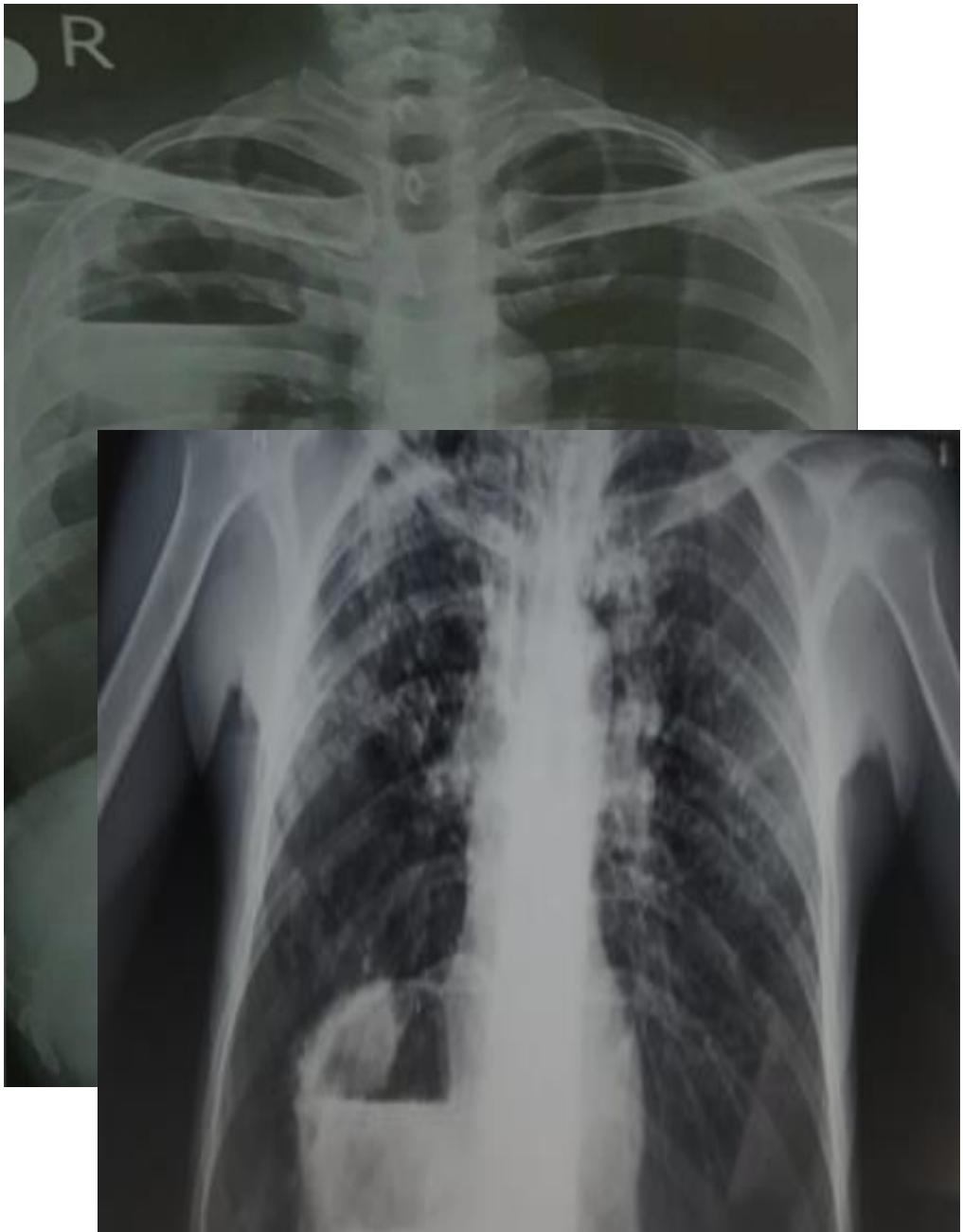
yr old 16 patch in the lung

pt presented with fever since days , high 15 grade.developed breathlessness since days..no past history of 2

similar complaints , ni past history of kochs , smoke exposure , allergic problems

. an xray was taken in EMS

In this chest X - ray we can see a cavity with air fluid level in right lung abscesses



Tuberculosis

yrs 30Patient M /

came with complaint of breathlessness , weight loss , bleed from mouth during cough and having mild

2 cough from last months . So here is X . RAY chest images

Tuberculosis

yrs 30Patient M /

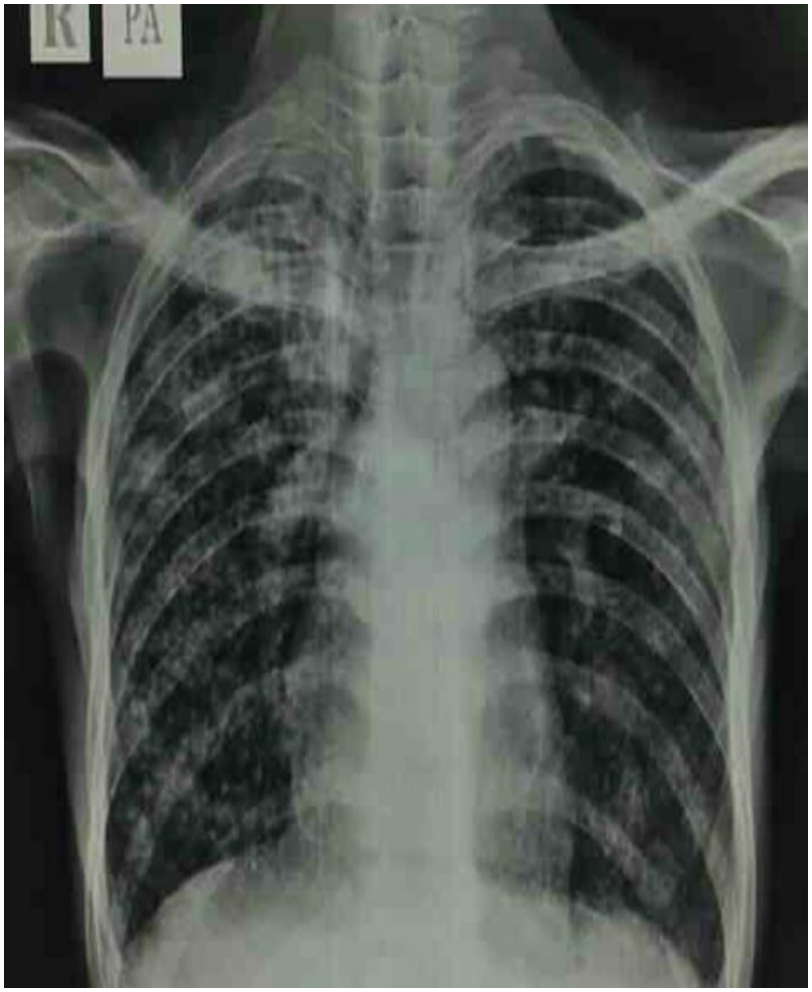
came with complaint of breathlessness , weight loss , bleed from mouth during cough and having mild 2 cough from last months . So here is X . RAY chest images

Tuberculosis

year old female , k / c / 68 A o HIV infection , presented with complaints of fatigue .

Miliari

yo male presents with 30 months 2 chronic cough for
. Noted low grade fever , night sweats , weight loss and occasional blood
6 streaked sputum . He is a pack - year smoker and methamphetamine drug use
Her chest radiograph demonstrated diffuse small nodules consistent with a miliary pattern ; sputum was negative for AFB . CECT of the abdomen & pelvis was performed for further
. evaluation



Miliari

Chest CT Breathless as main complain

Central pulmonary ĊA

with necrosis , partial

amputation of left

bronchi ,

hypoventilation distal

of it , small pleural

effusion left side ,

round hyperdense

segment in 2 zones /

in right / 10 left and

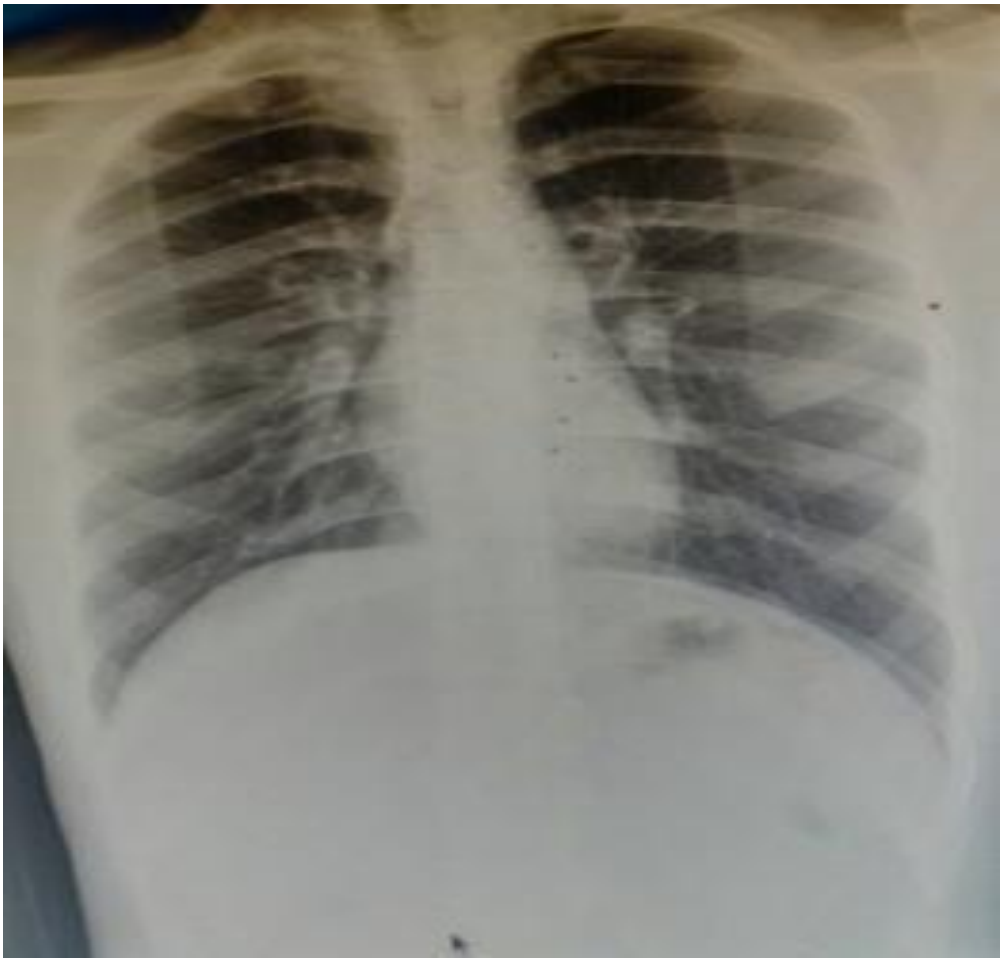
. probably mets

In the given images , the main pulmonary artery is hypoplastic (? Muscular atresia) . With the limited sections available , it appears that the case would
dna thgiR .1fall under Somerville Classification type eht dna detcennoc era seiretra yranomlup tfel
- " S na yb deniatniam si wolf doolb yranomlup rojaM oN . (ADP) susoiretrA sutcuD tnetaP depahs era (SACPAM seiretrA laretalloC yranomluP - otroA . elbisiv

Pulmonary

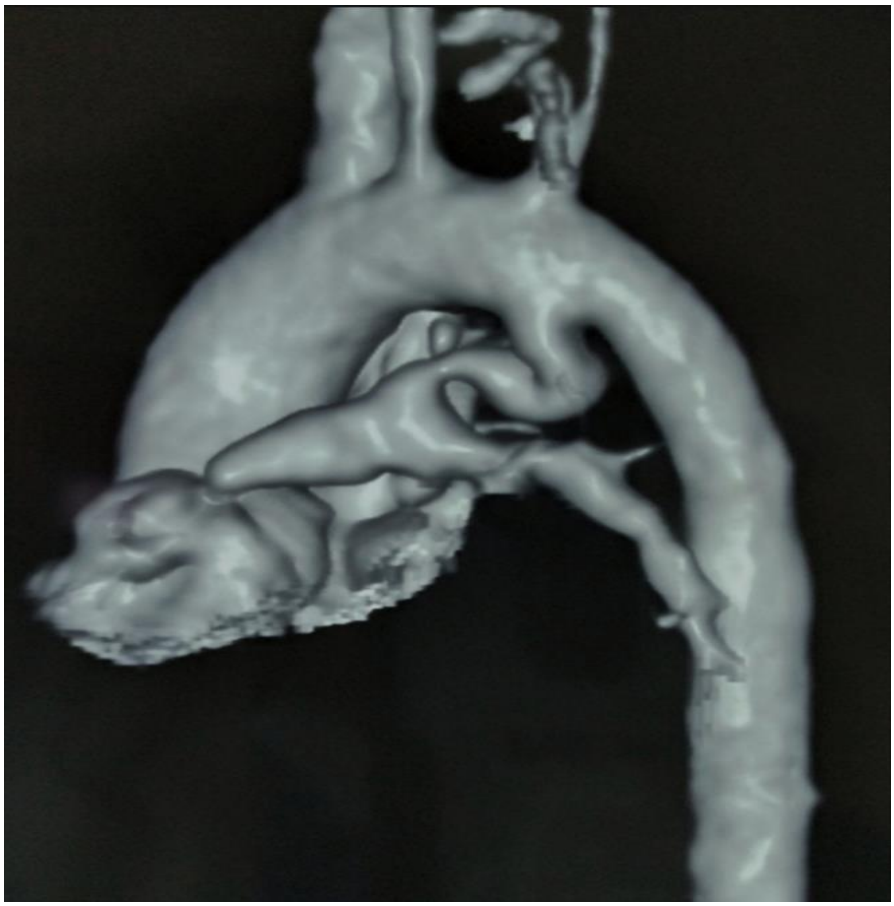
yr old 24 Pulmonary case
medical student , cough since yrs
mostly in winter . 3
Persistant dry cough , scanty sputum
.Blood inv normal .aggravates in
morning n evening and on anxiety .
Treatment given was inhalational mild
steroids , levocetrizine , benzoate and
cefpodoxime but was not relieved
now is on prednisolone and

and
acebrophylline
and still having
cough but
reduced
frequency



Pulmonary

TOF WITH PULMONARY days old 4 ATRESIA
neonate with tof with pulmonary atresia Describe
the CT angio findings

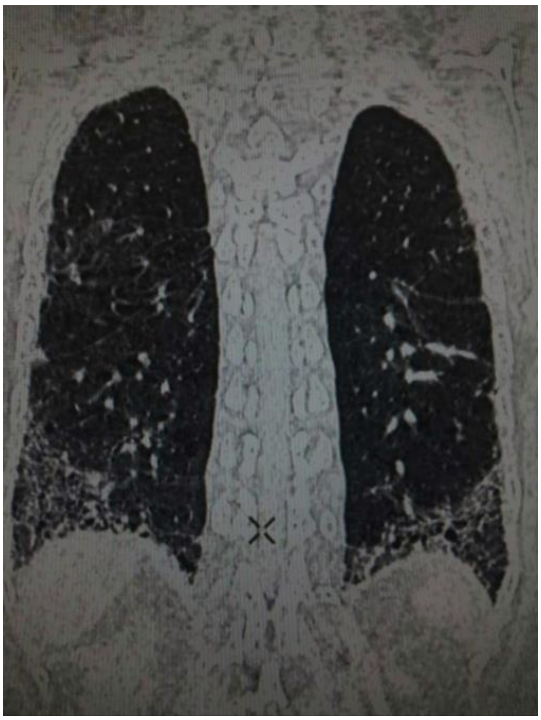


Acute Pneumonia

Acute onset chest pain and 51 pneumopericardium .
year old man with acute onset chest pain . CXR in ER showed pneumopericardium . He also has long past h / o multiple drugs abuse .
Barium study and CT images
. as given below

Acute Pneumonia

ry old female with dyspnoea 5



Interstitial lung disease or

Idiopathic pulmonary fibrosis

at B / L lung base with

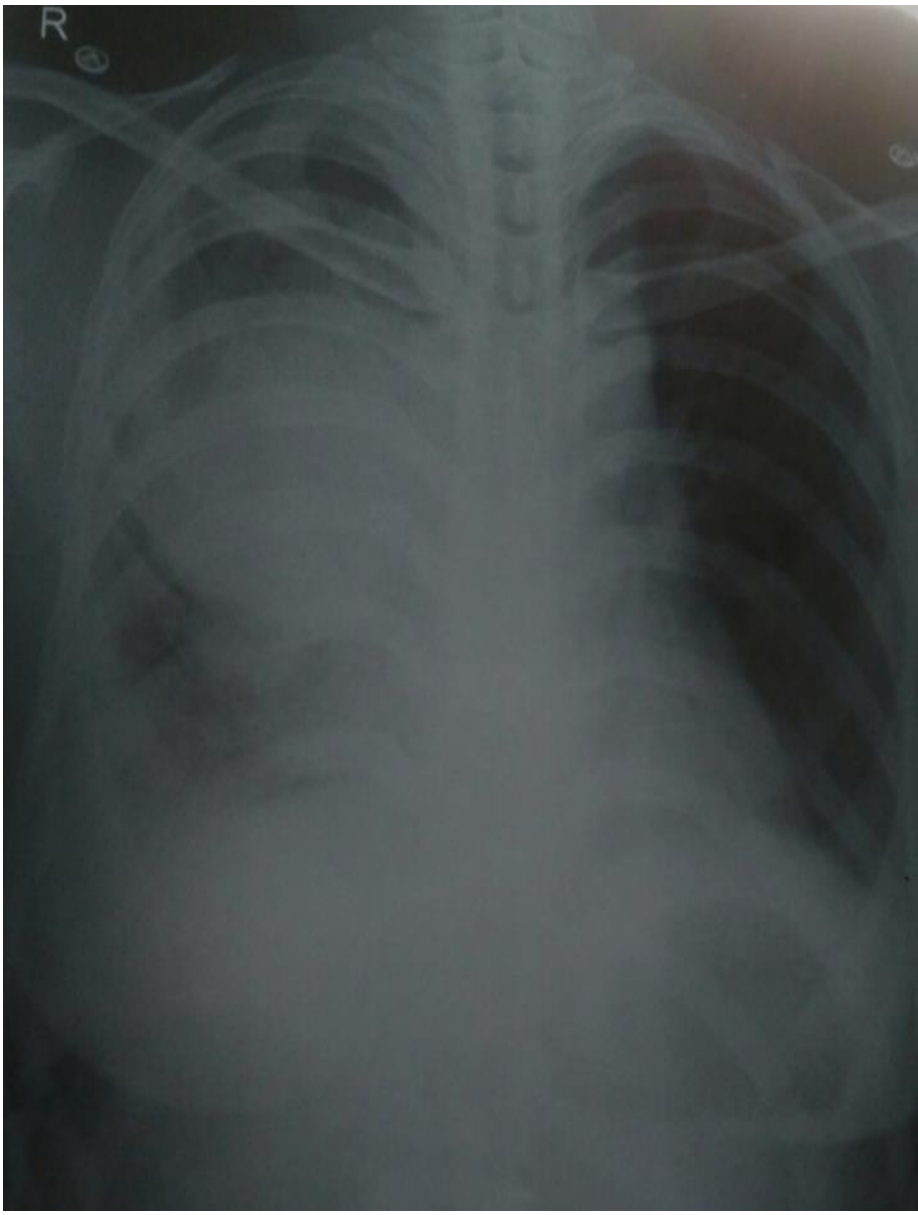
multiple reticulo nodular

. infiltrates in B / L lung fields

The xray shows large amount of air in the pricardium s / o pneumopericardium . CT image of the lower chest also demonstrates pneumopericardium with flattening of the
nd CT image 2anterior cardiac wall and the shows the contiguity of the pericardial air with the air in the stomach through an opening in the left hemidiaphragm . Barium swallow study shows barium outlining the stomach and extending through the defect in the left hemidiaphragm to the pericardium till oesophagus . I think the diagnosis is
. Gastropericardial fistula

Consolidation

Consolidation or tumor
Female pt with dry cough
no fever



Consolidatio n

year 50 B / I consolidation

male , streaky haemoptysis

5 - 4 , breathlessness since

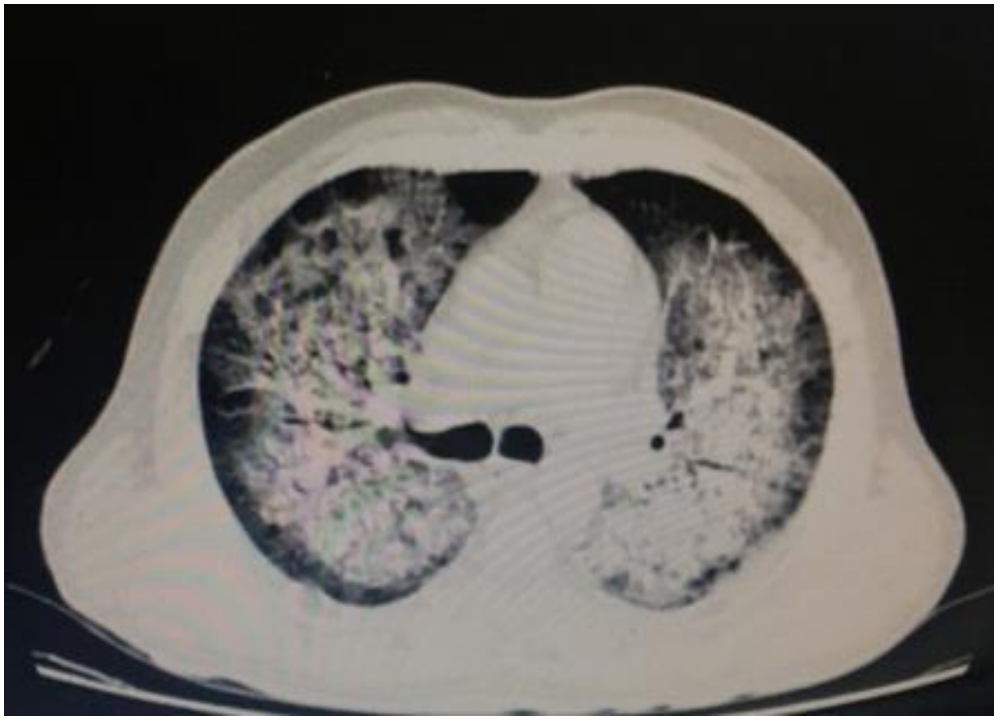
ria moor ni % 2 85 days , spo

.

Patient succumbed due to

nd 2 respiratory failure on

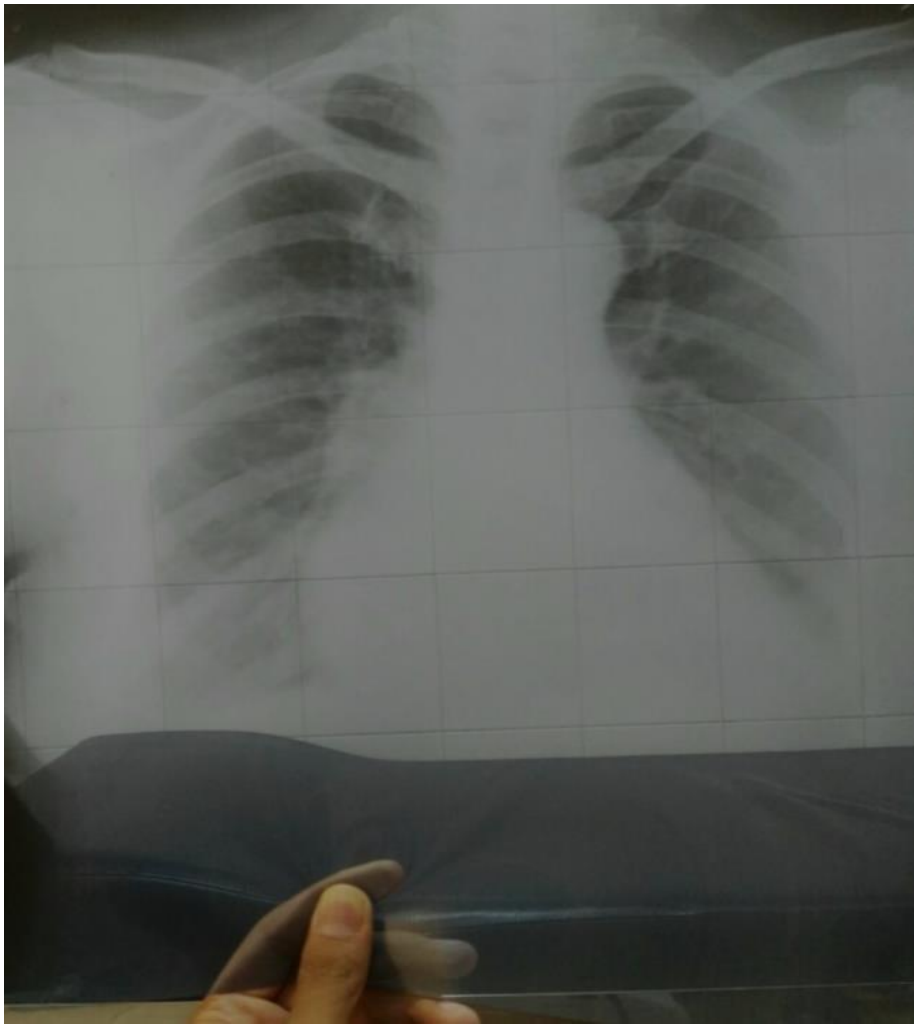
day of admission



Asthma

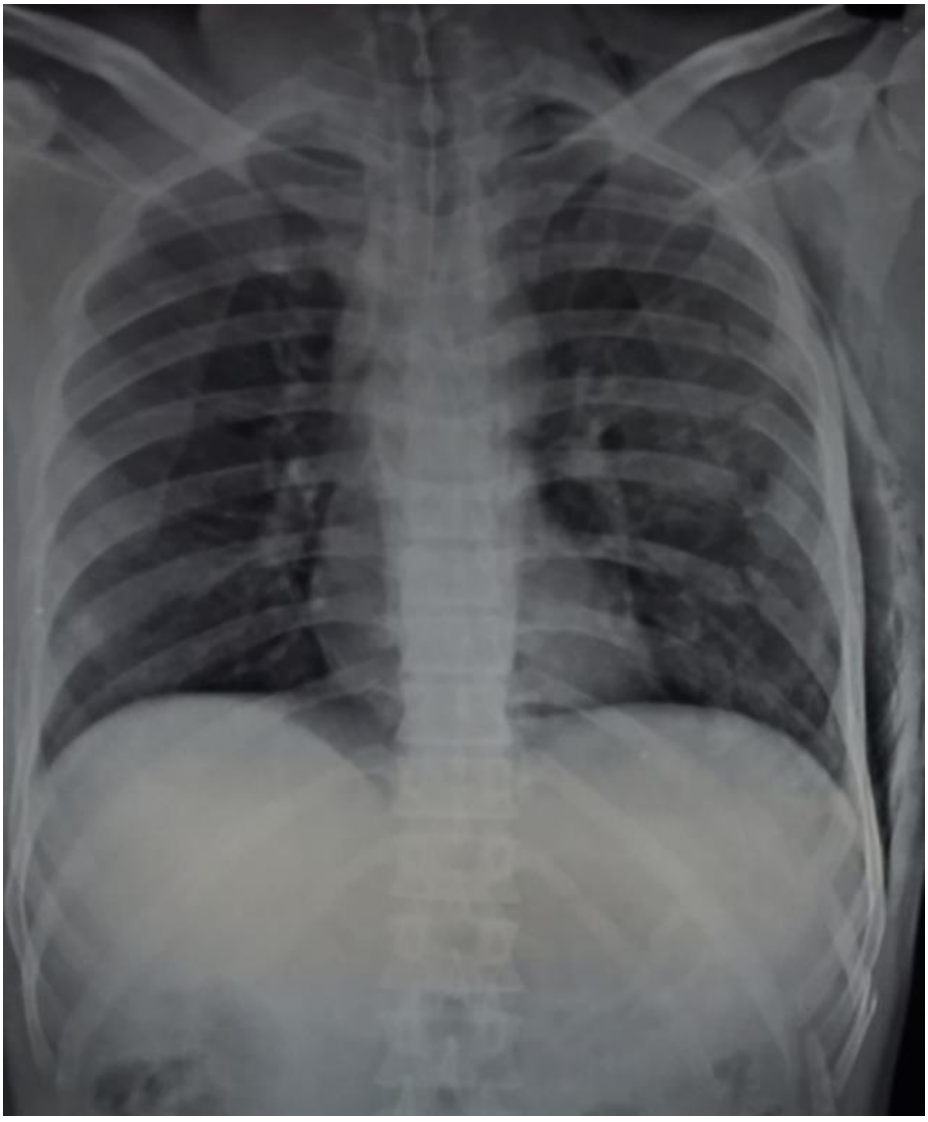
yr old female with 56

known case of asthma present with dyspnoea and ankle edema widespread ronchi (+) pitting ankle edema (+) JVP not raise heart sound not clear



Emphysema

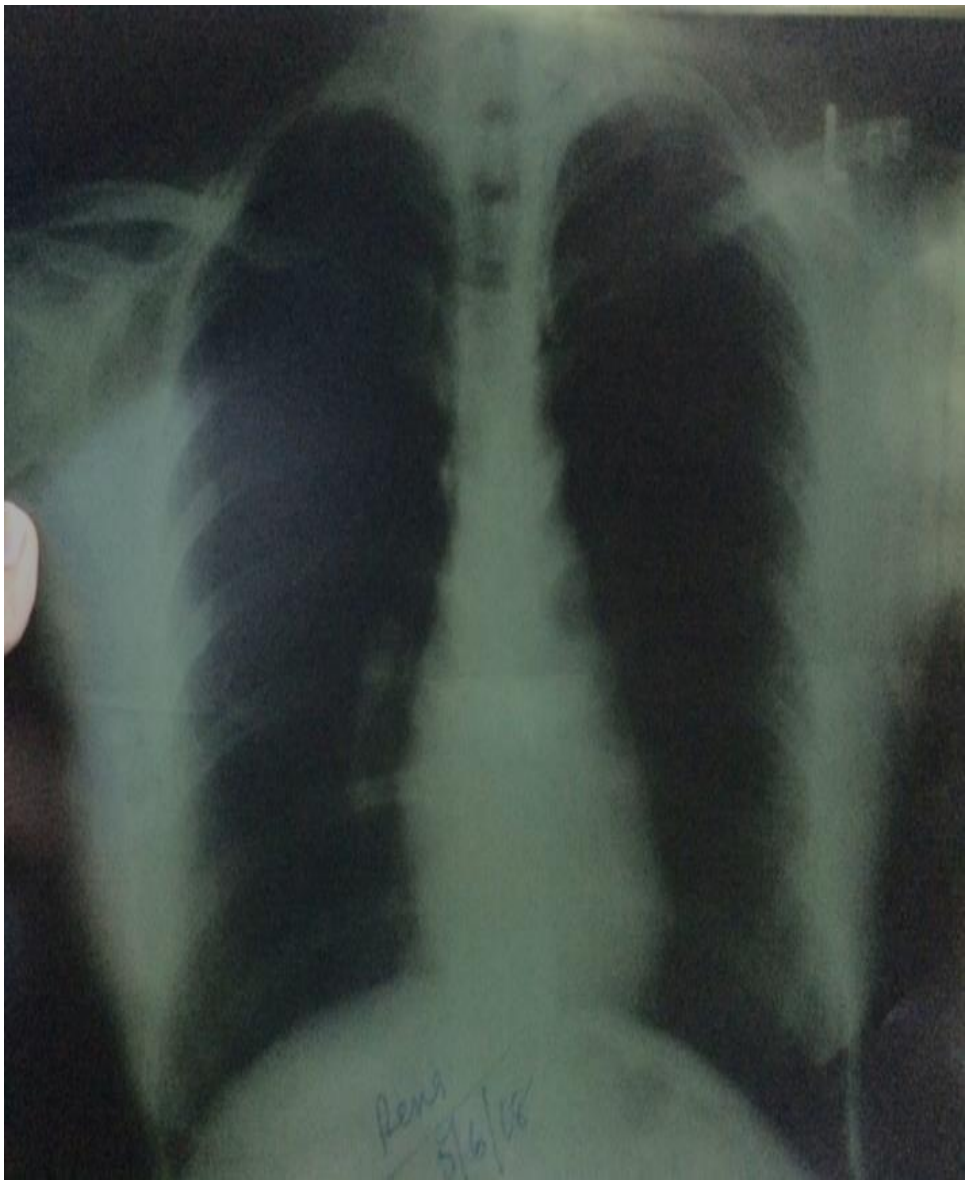
25 surgical emphysema years old male presented in
ED with RTA , blunt chest , no external injury , c / o chest pain , tachycardia , not 2 falling BP , SpO recorded , X - ray done in ED



Emphysema

yr old female pt H / O 20
mild fever , pain in rt upper
1 margin of chest from month off n on.No dysnpea
Previous H / O pulmonary yr back.taken10 TB

Tubular heart Hyperinflation Flattened diaphragm



Bronchitis

male patient suffering 80
rom Sob due to sticking of phelgm in respiratory passage

Hyperinflation . Most likely . COPD with Bronchitis

Bronchitis

bronchitis comment on yrs 35 chest x - ray ... female having cough with month n 3 sputum since chest pain.vital normal..chest clear

Cistic fiparosis

year old 60 case of dyspnea

man with dyspnea and severe

cough with green thick

sputu m

Probably right middle lobe

bronchiectasis and some

changes can be seen in left

lobe too .... considering

thick green sputum

exacerbation of

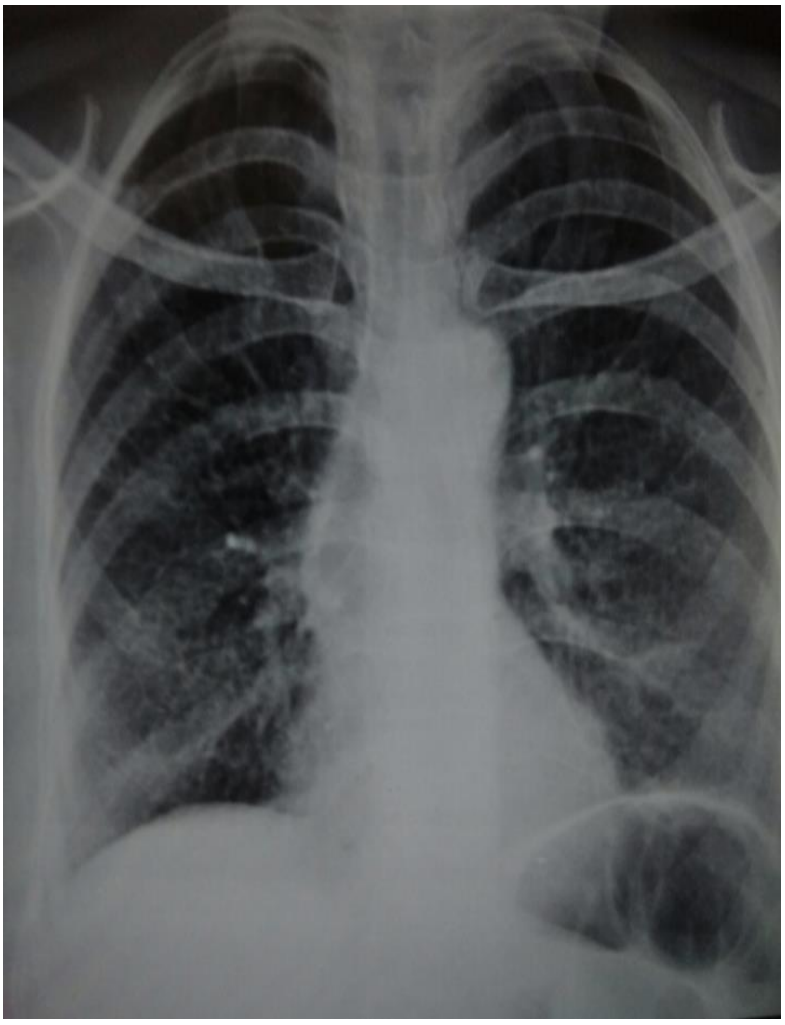
bronchiectasis should be

... considered

Cistic fiparosis

need a diagnosis . chronic elamef.50productive cough.esr 60 ega tneitap

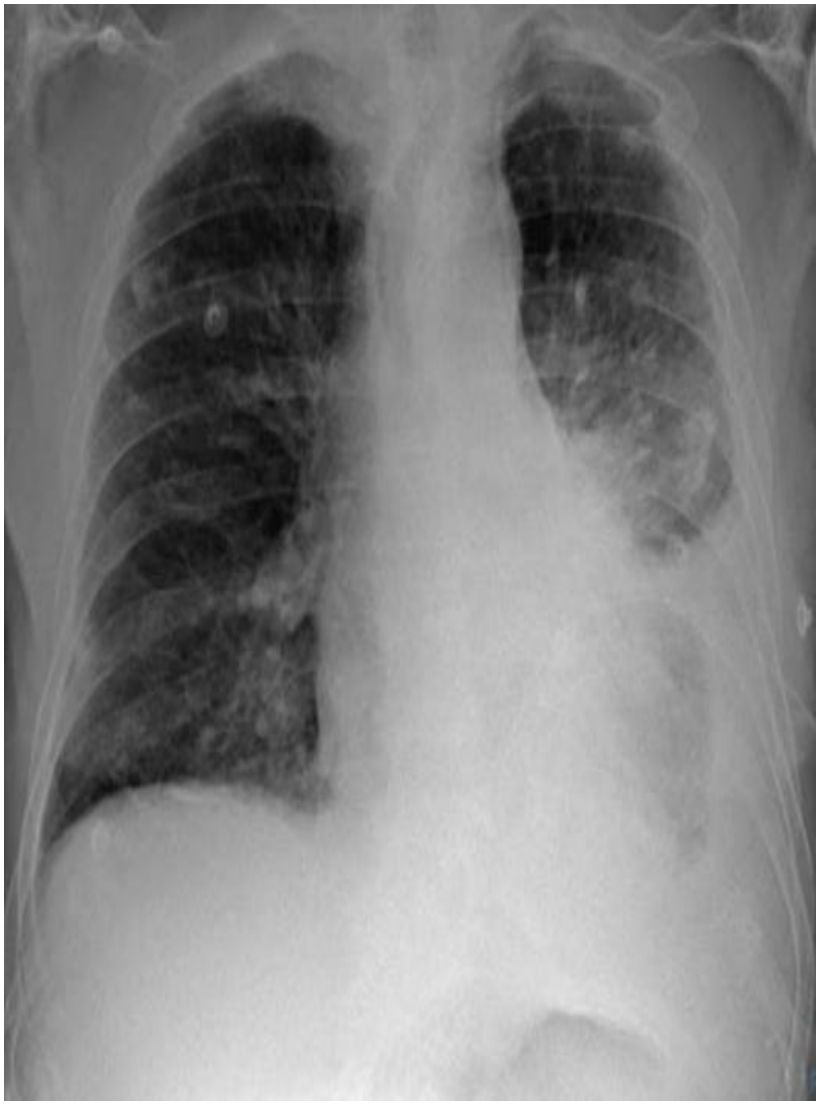
for high resolution CT chest sputum culture and sensitivity Bronchiectasis interstatial lung fibrosis giving history of chronic productive cough in favour of BRONCHIECTASIS bilateral reticulo nodular infiltrations of both lungs mainly bases with honey combing



. Breathlessness

Presentation Breathlessness .
80 Patient Data Age : years
Gender : Male

Left pleural effusion has been partially drained . Small left pneumothorax with incomplete re - expansion of the left upper lobe , which demonstrates peripheral increased density . Left sided pleural plaques are now



Calcified pleural

Left hemi - thorax white

- out . Tracheal and

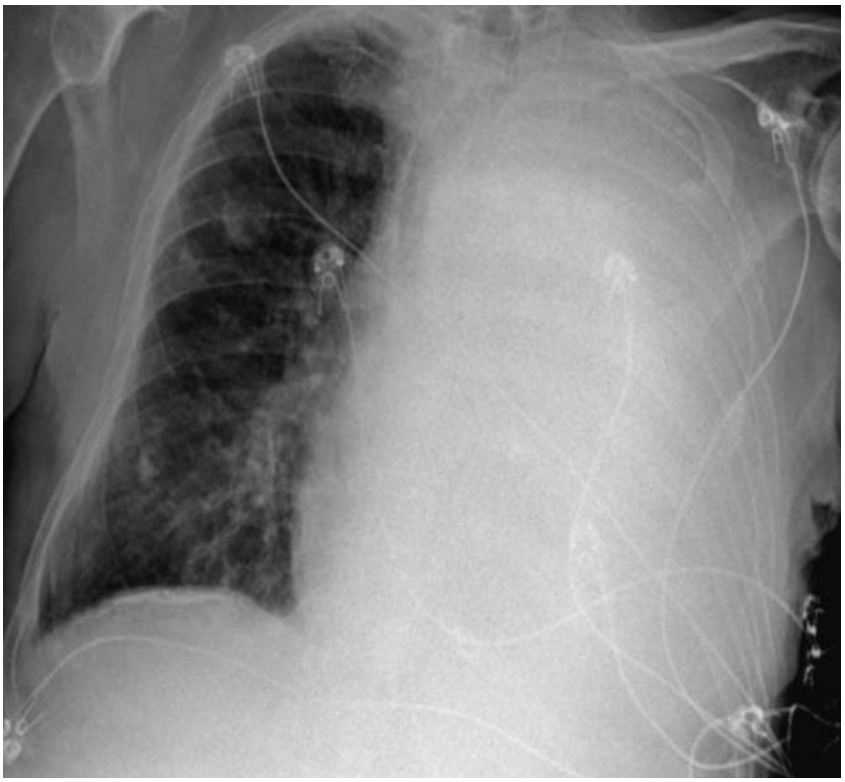
mediastinal deviation to

the right . Calcified

pleural plaques on the

right . No focal right lung

. lesion



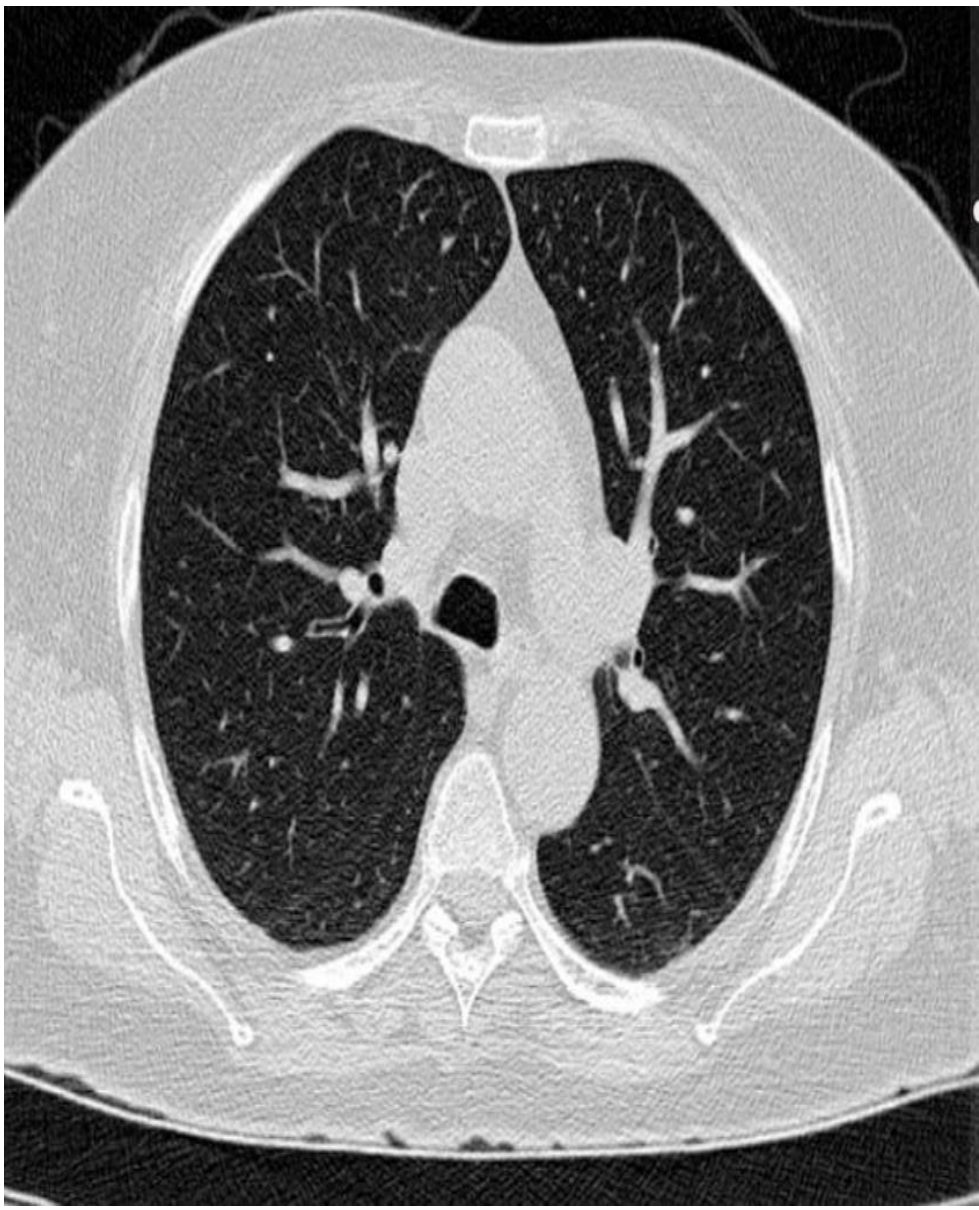
Presentation Shortness

Presentation Shortness of breath Patient Data

Gender : Female Age : 40

Pulmonary embolism

year old female has 76
right lower lobe resection for stage Iv non - small cell carcinoma of the lung
. Chest and CT images



3.Radiographic pathology of Gastrointestinal tract system

1.Esophageal web

2.Achalsia

3. Esophageal cancer (malignant)

4.sigmoid volvulus

5.Feces in bowel it causes discharges

6.Obstruction in large intestine

7.Interhepatic duct dilation

8.Metastatic pancreatic ductal

9.adenocarcinoma

10.Malignant gastrointestinal stromal

11.tumor of stomach

12.Hepatocellular carcenoma

13.Malignant gastrointestinal stromal

14.tumor of stomach

15.Paralytic ileus of gas

16.Umblical hernia

17.Hirschprungs disease

18.Mega colon

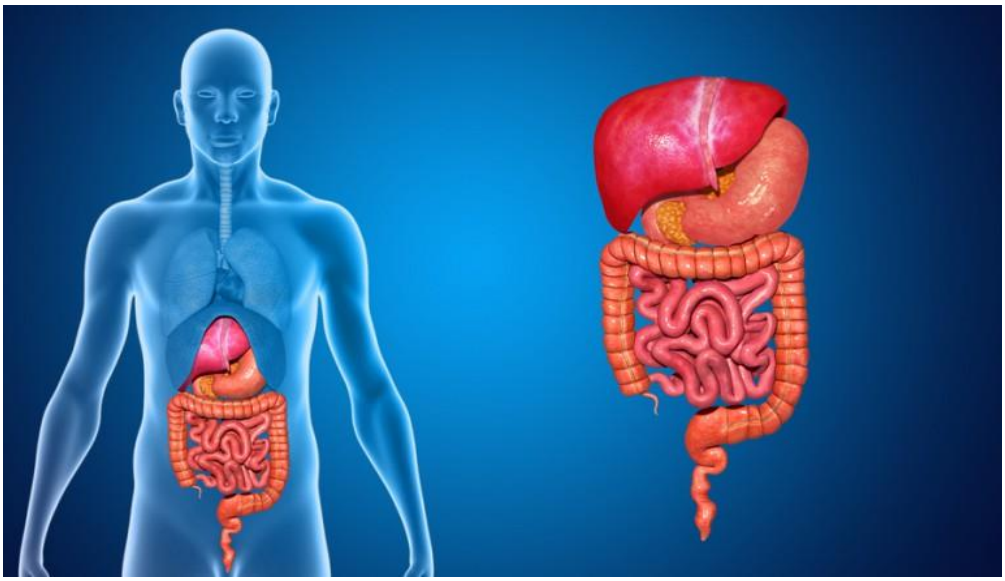
GIT PREPARATION

- T

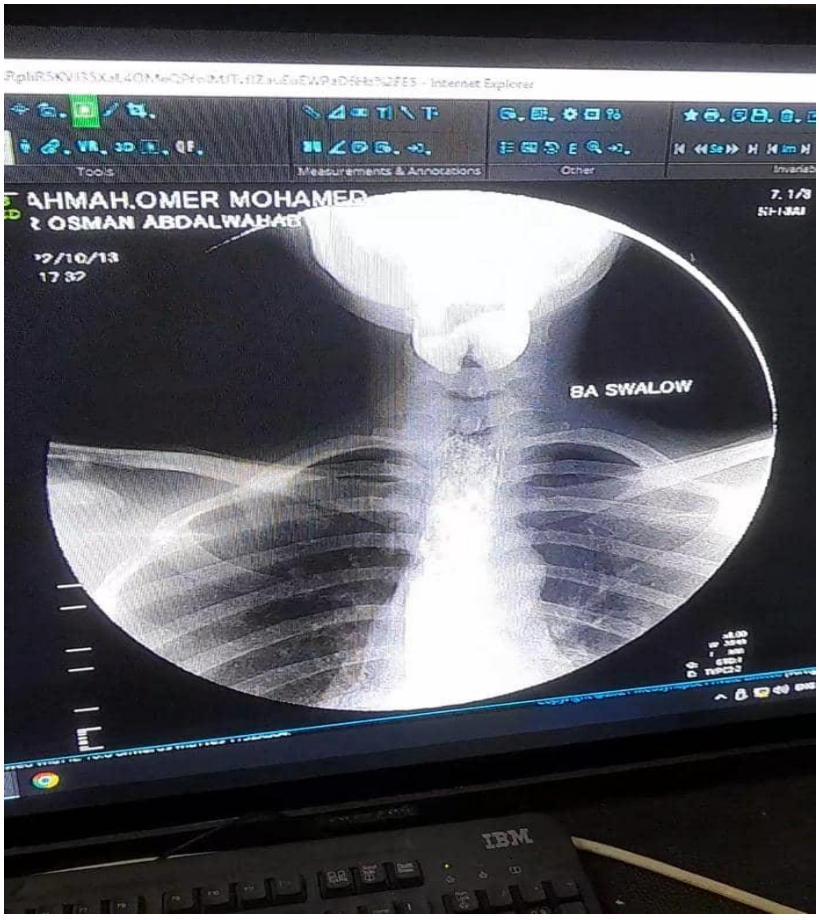
he gastrointestinal tract The gastrointestinal tract (GI tract, digestive tract, alimentary canal) is the tract or

- p

assageway of the digestive system that leads from the mouth to the anus. The GI tract contains all the major organs of the digestive system, in humans and other animals, including the esophagus, stomach, and intestines. Food taken in through the mouth is digested to extract nutrients and absorb energy, and the waste expelled at the anus as feces. Gastrointestinal is an adjective meaning of or pertaining to the stomach and intestines.

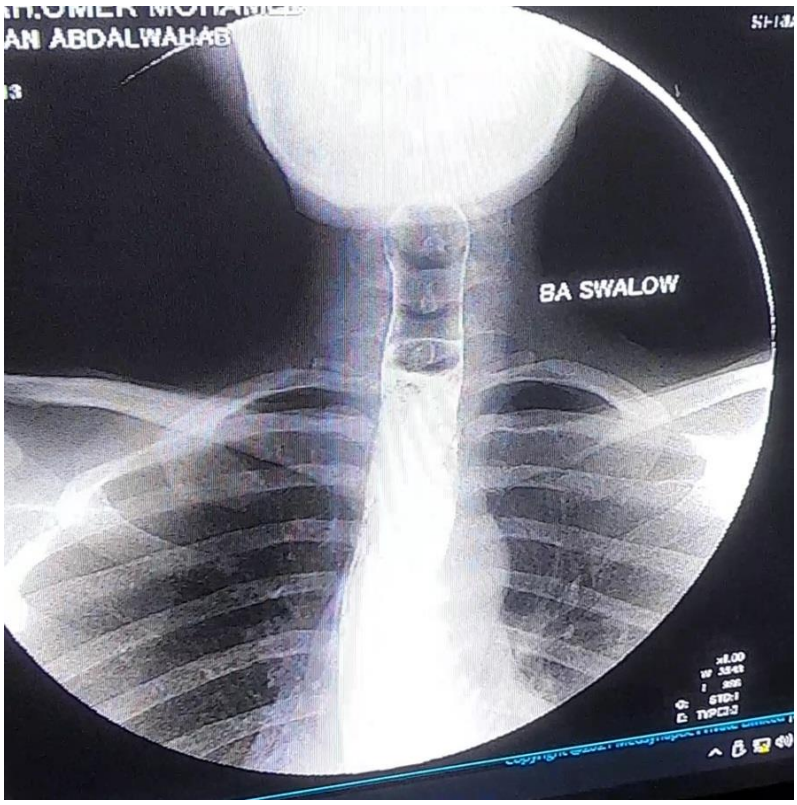


Modality : X-ray with contrast (Barium swallow)

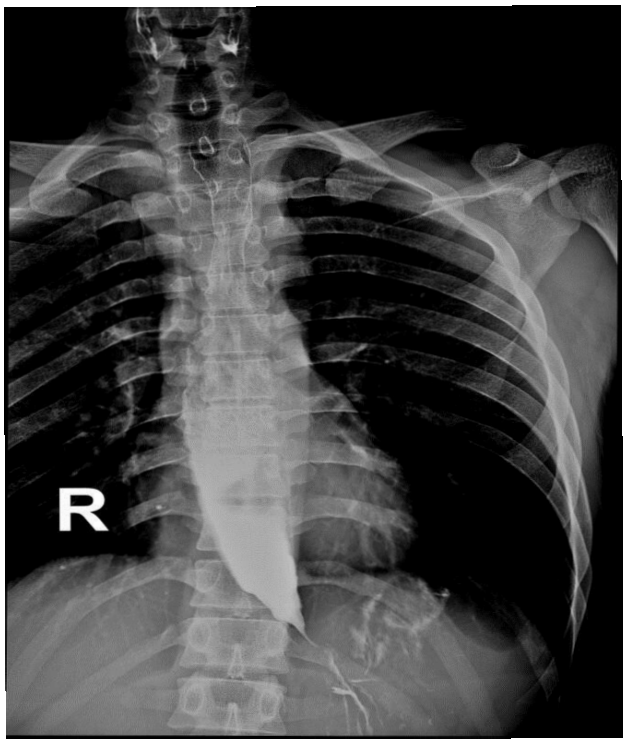


Final diagnosis

Esophageal web



Modality :x-ray with contrast



Final diagnosis

Achalsia

Case

presentation

- 65 yours old patient came to hospital complaining from diffculty swalloing and vomiting.
- After clinical examination physician request
- Lab test and x-ray barium swallow study then CT scan.
- Coronal CT Scan Abdomen with oral and iv contrast. (normal)

axial CT Scan Abdomen with oral and iv contrast

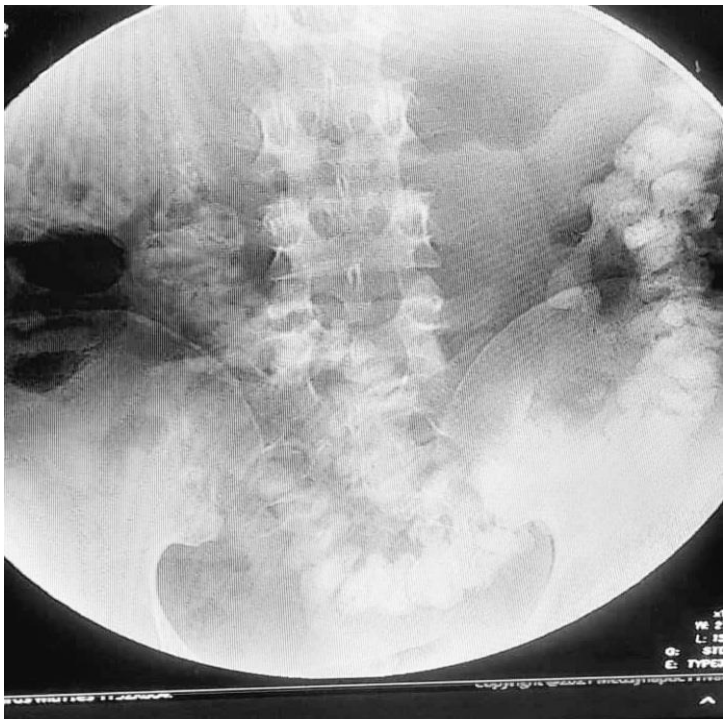
Final diagnosis

sigmoid volvulus

Modality: X-ray

Final diagnosis

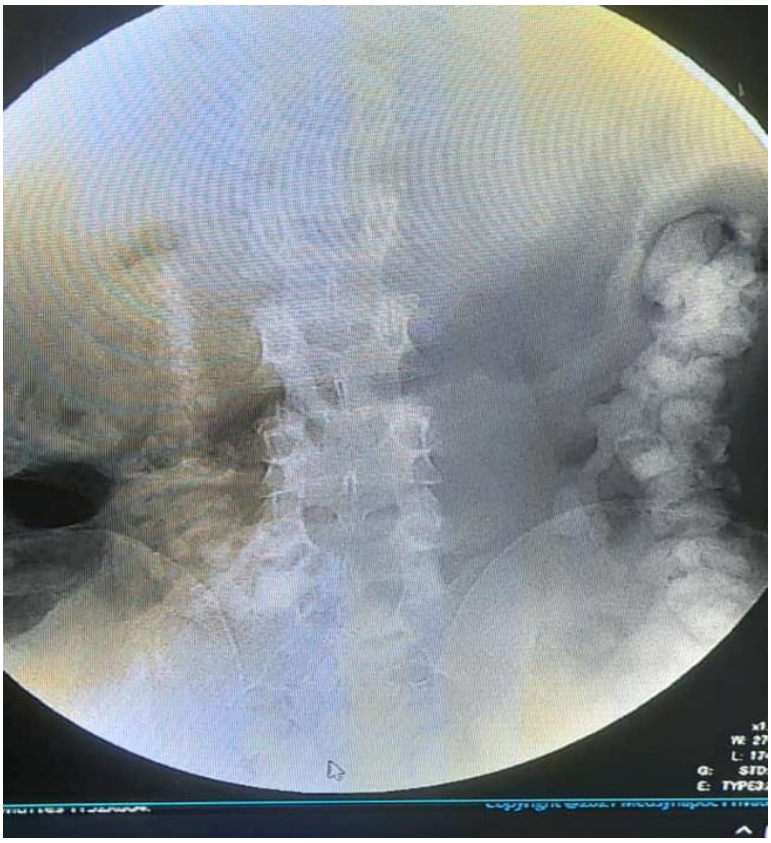
Feces in bowel it causes discharges



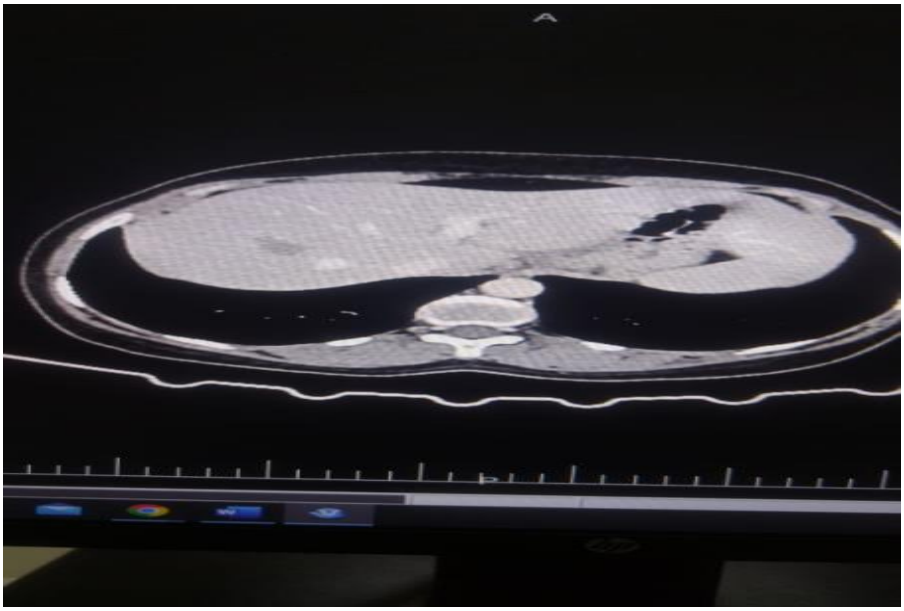
Modality : X-ray with contrast

Final diagnosis

Obstruction in large intestine

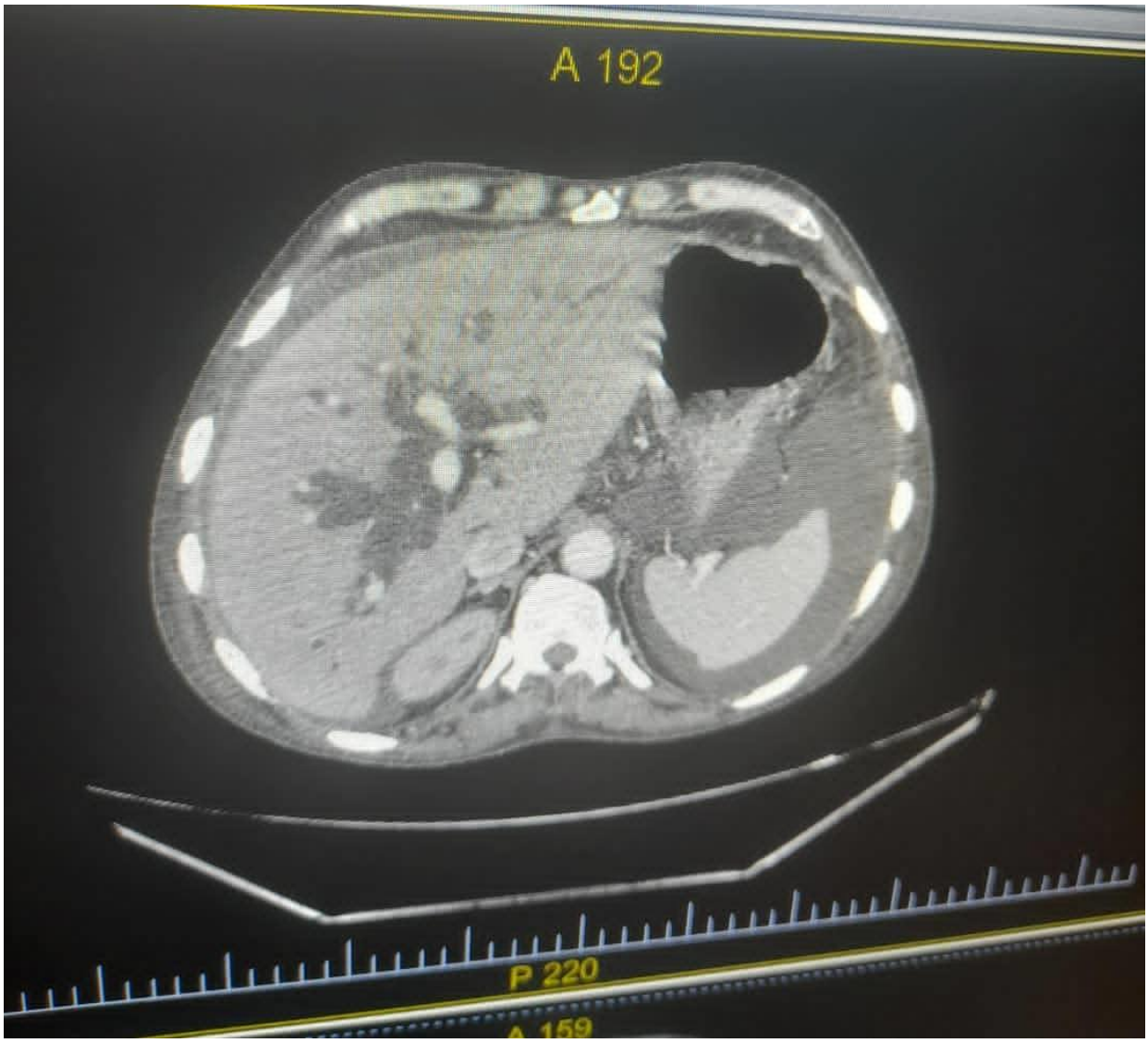


modality : CT SCAN WITH C.M



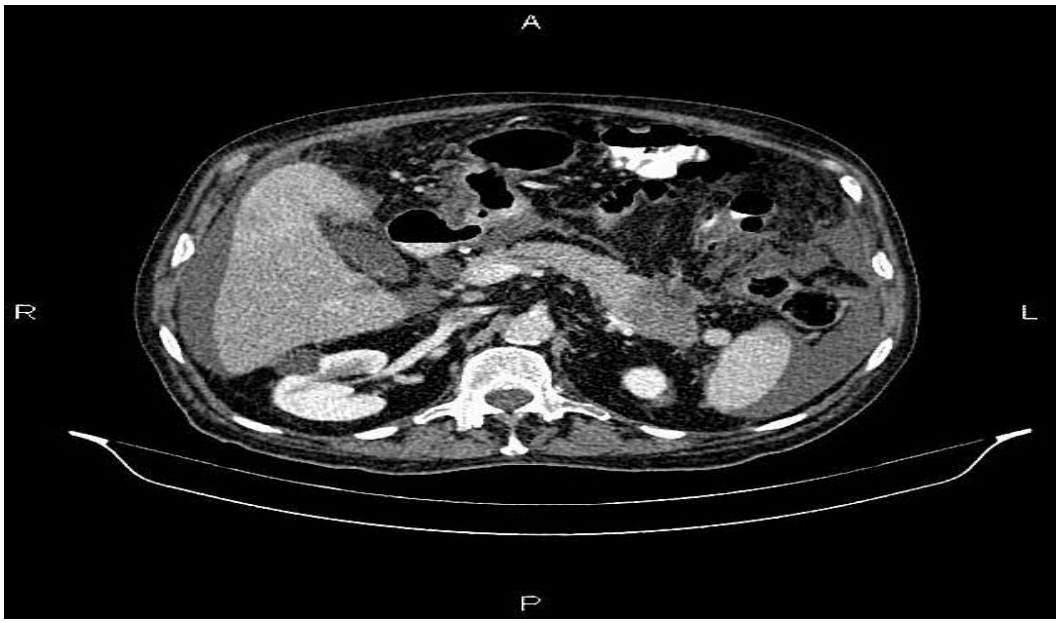
Final diagnosis

Interhepatic duct dilation


A 192
P 220

Case presentation

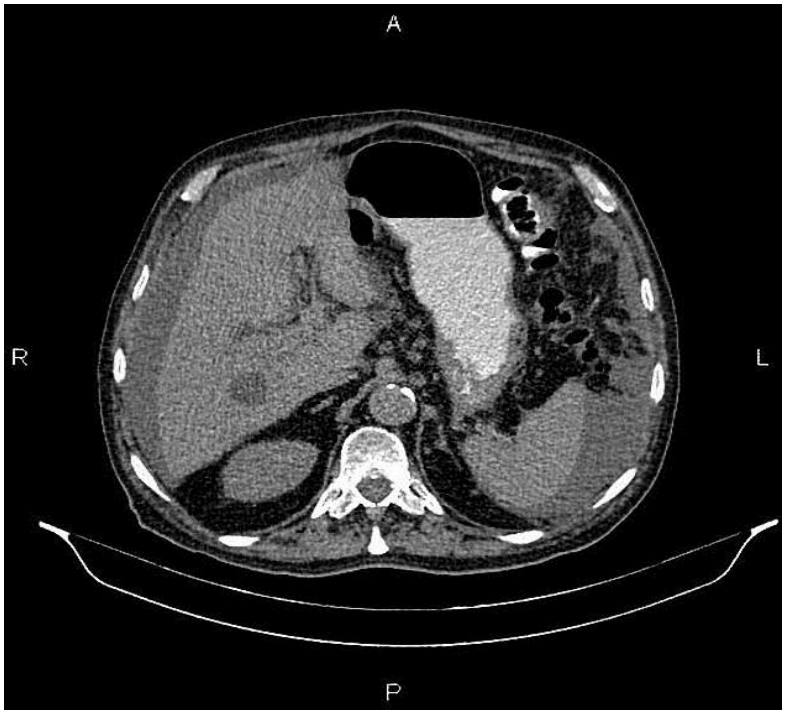
- 85 years old male patient complaining from abdominal pain and progressive distention



Axial CT Abdominal

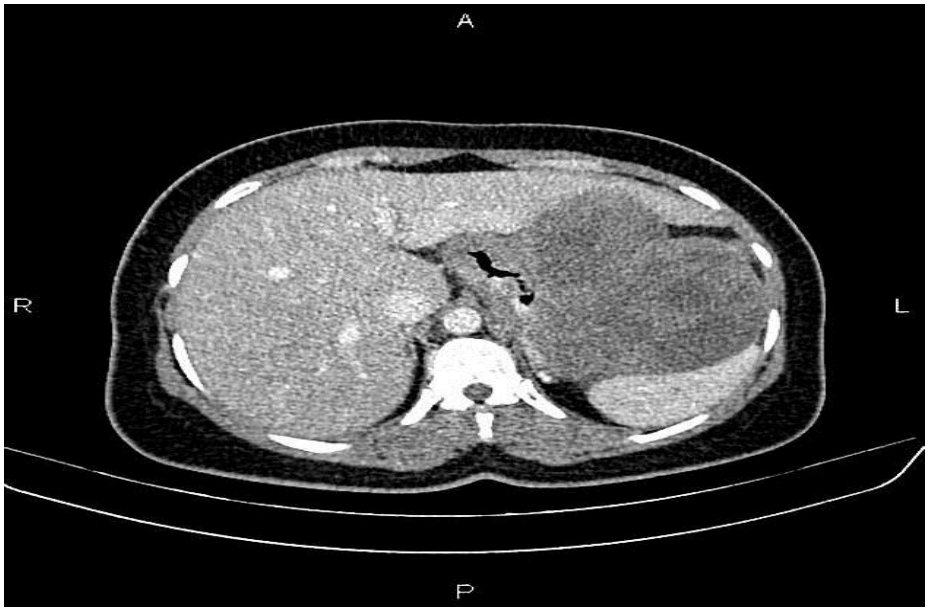
Final diagnosis

Metastatic pancreatic ductal adenocarcinoma



Case presentation

- 35 years old female patient came to hospital complaining from abdominal pain

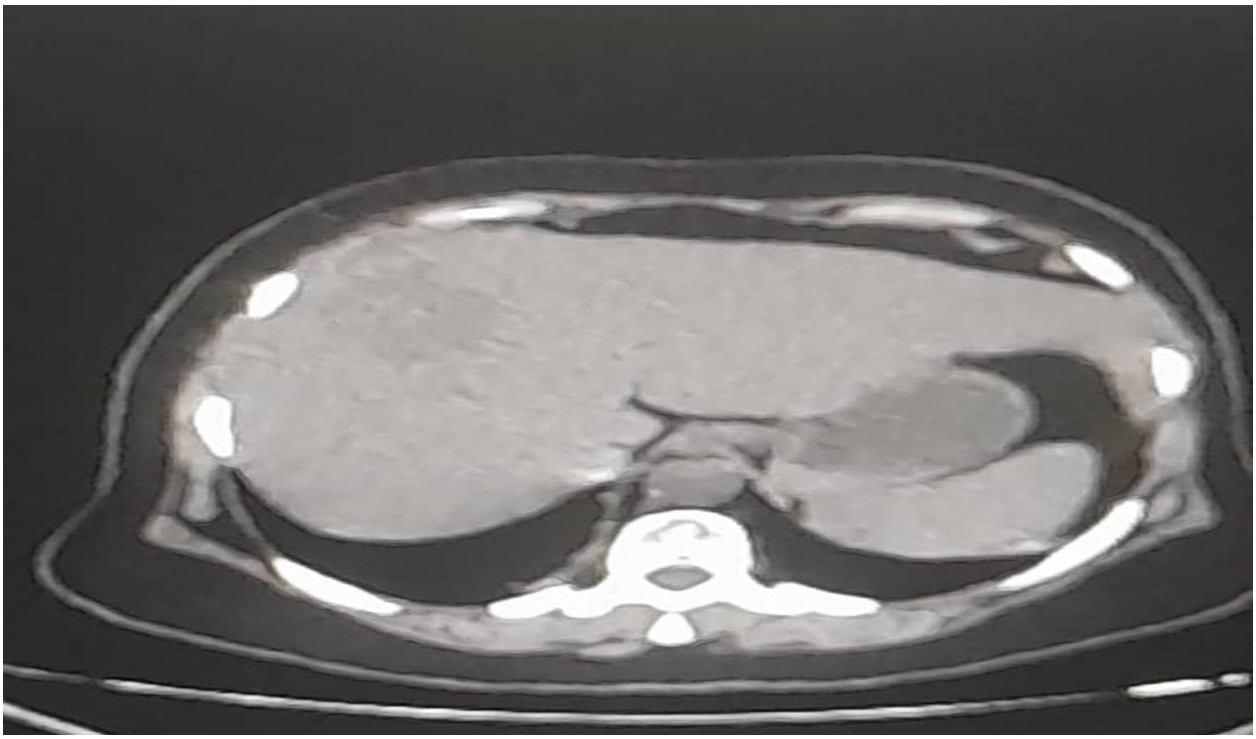


Axial CT Abdominal

Final diagnosis

Malignant gastrointestinal stromal tumor of stomach

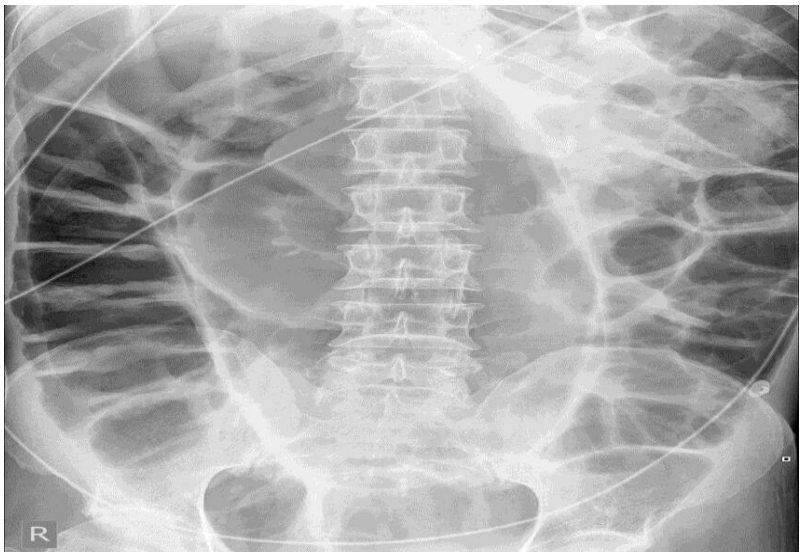
Modality: CT scan



Radiographicfinding:

Hepatocellular carcenoma

Modality :x-ray

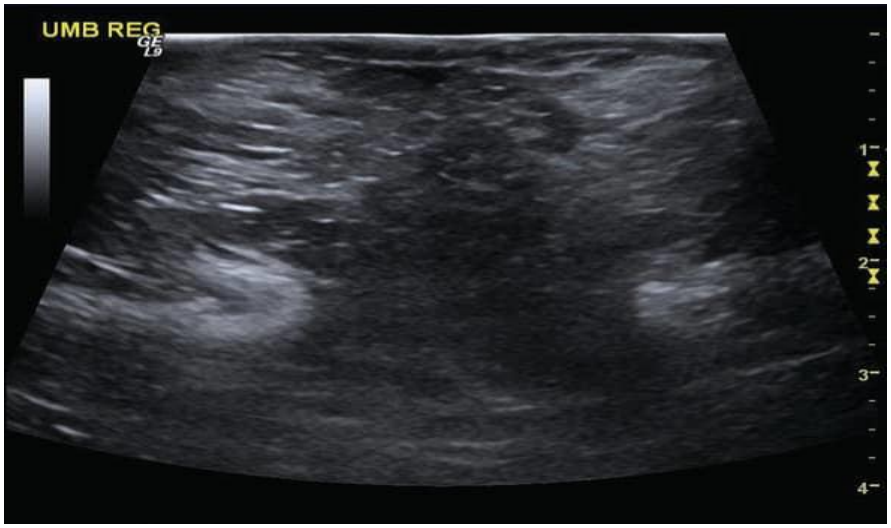


Final diagnosis

Paralytic ileus of gas

Case presentation

- 45 years old female patient came to hospital complaining from abdominal pain and swelling of the umbilical region
- After clinical examination the physician requested U\S then CT



Modality: Axial CT

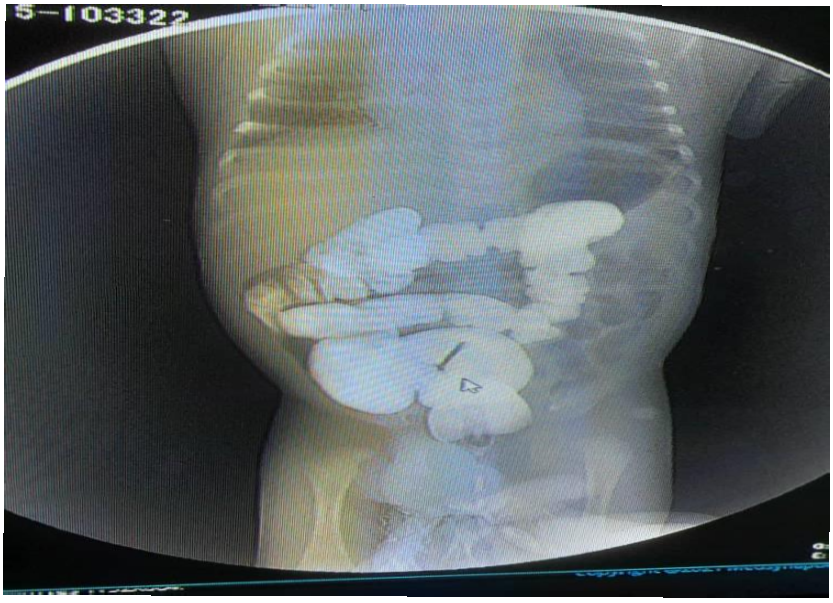
Final diagnosis

Umblical hernia

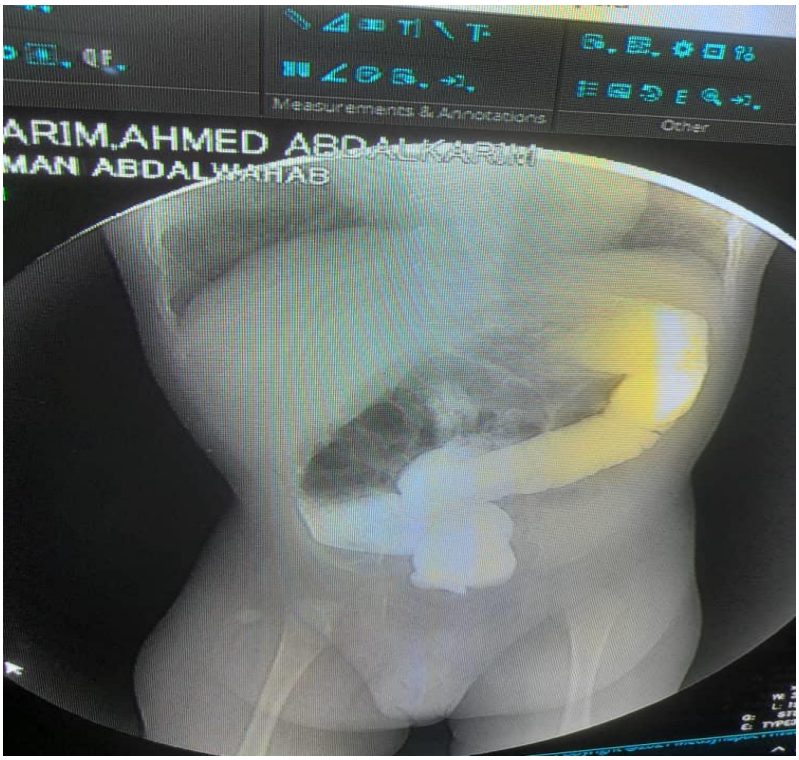
Modality :x-ray with contrast

Final diagnosis:

Hirschprungs disease

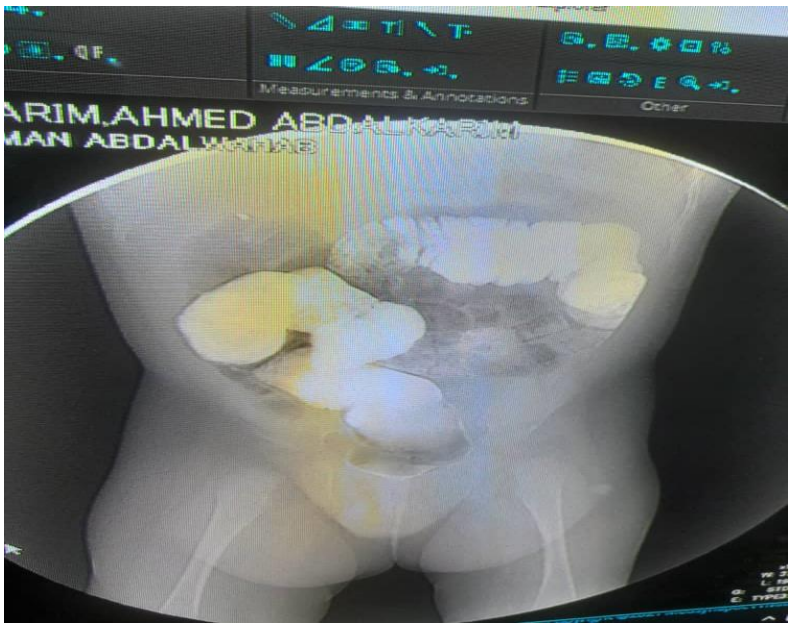


Modality :x-ray with contrast



Final diagnosis

Mega colon

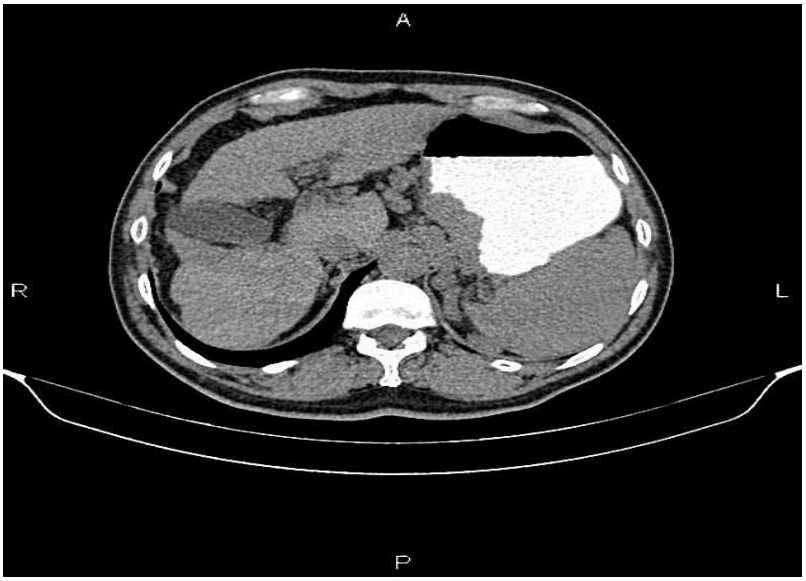


Axial CT

Presntation case :

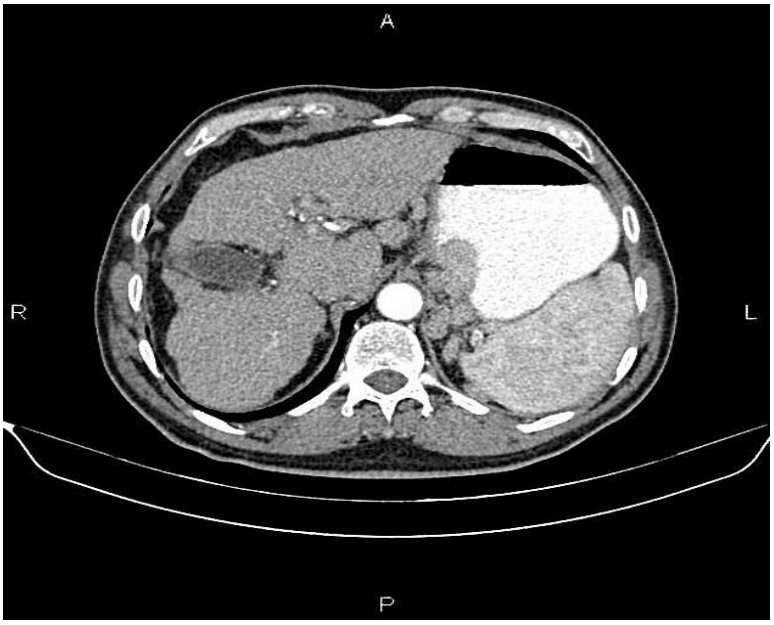
60 years male come hospital with symptoms

such AS: loss of appetite , jaundice and weight loss



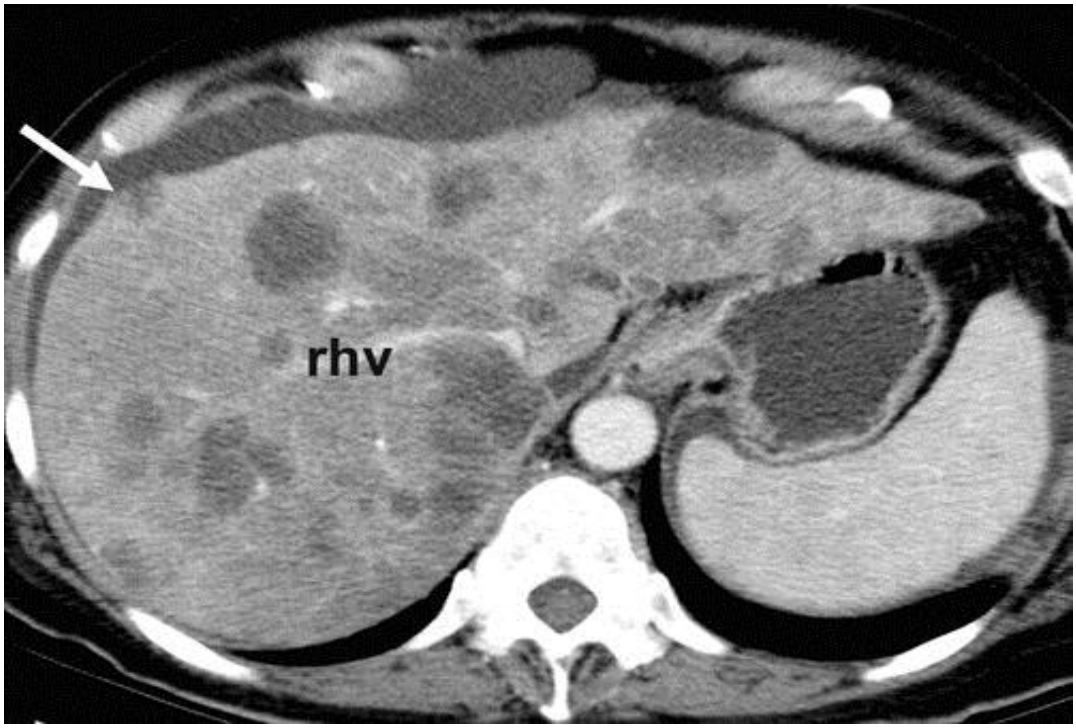
Final diognosis

Liver Cirrhosis



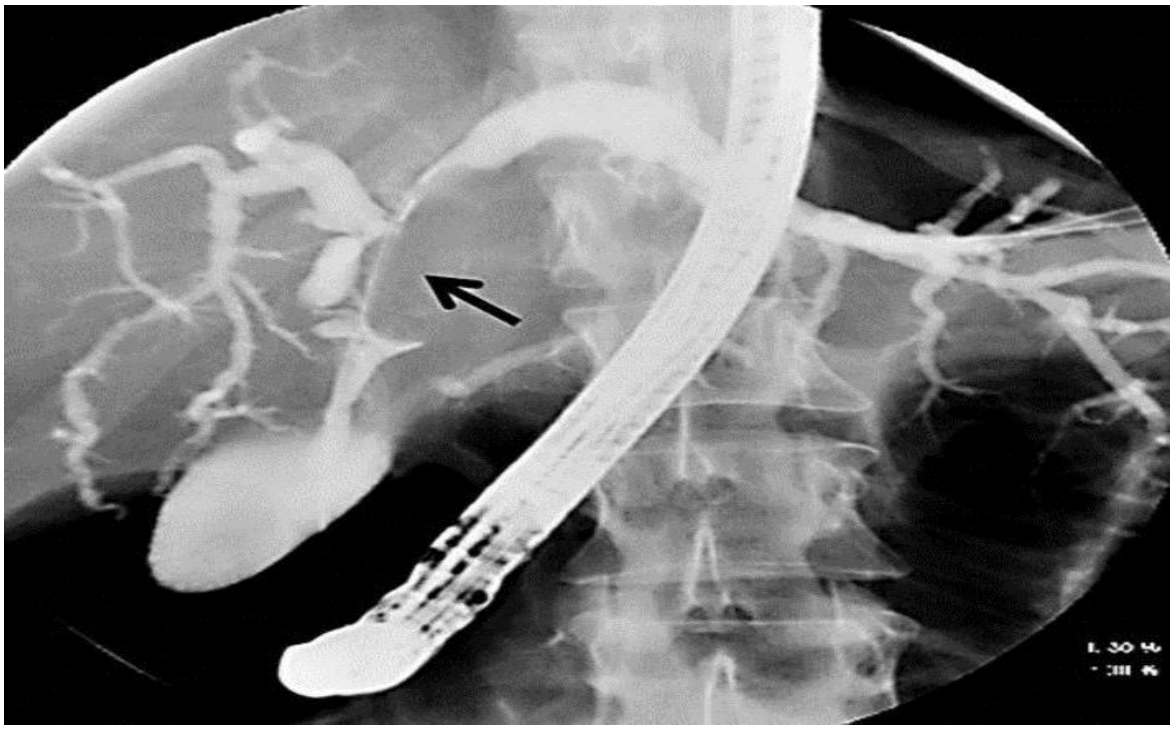
Modality: coronal CT sscan

Radiographic finding: faty liver



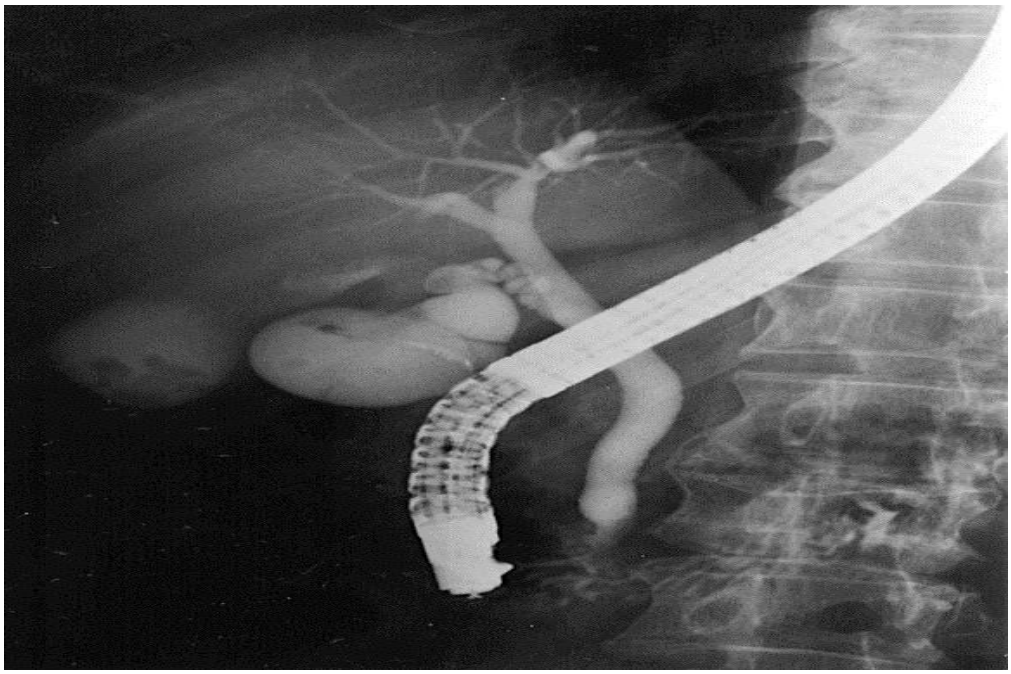
Modality :

X-rays with C.M (ERCP EXAMINATION) Stone
gall blader



Modality:

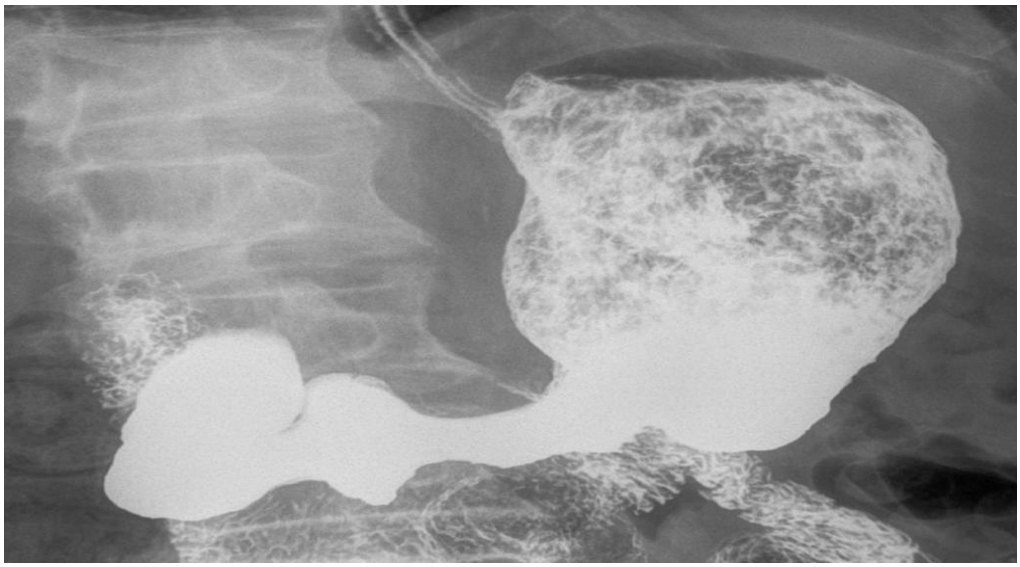
X-rays with C.M (ERCP EXAMINATION)
Duplicated gall blader

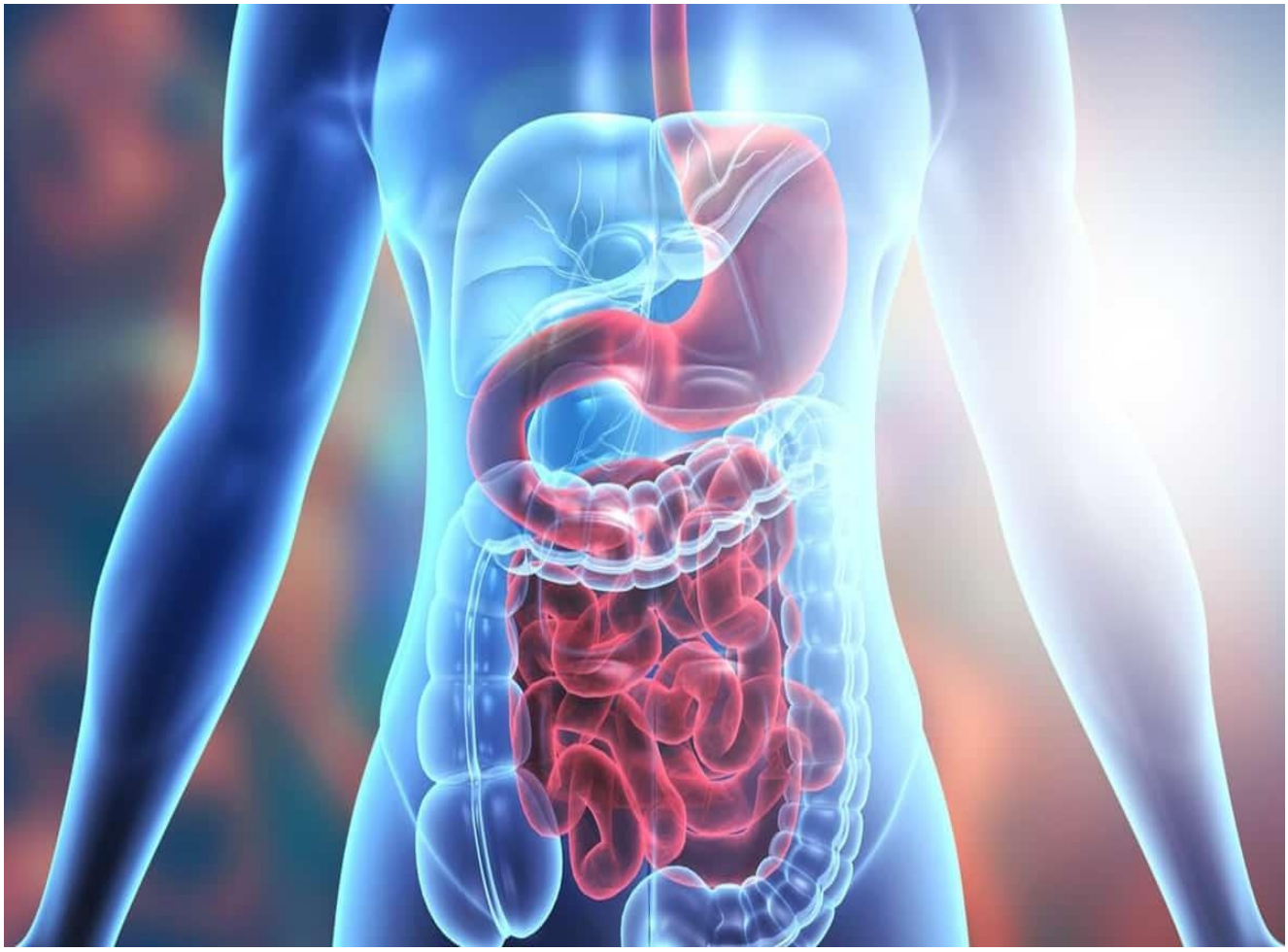


-Procedures:

-X-ray with C.M (Barium meal)

-Gastric adenocarcinoma





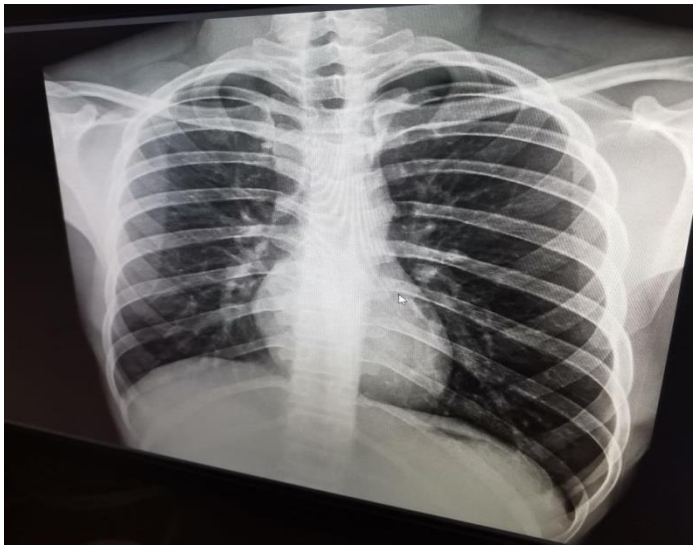
4.*CARDIOVASCULAR SYSTEM*

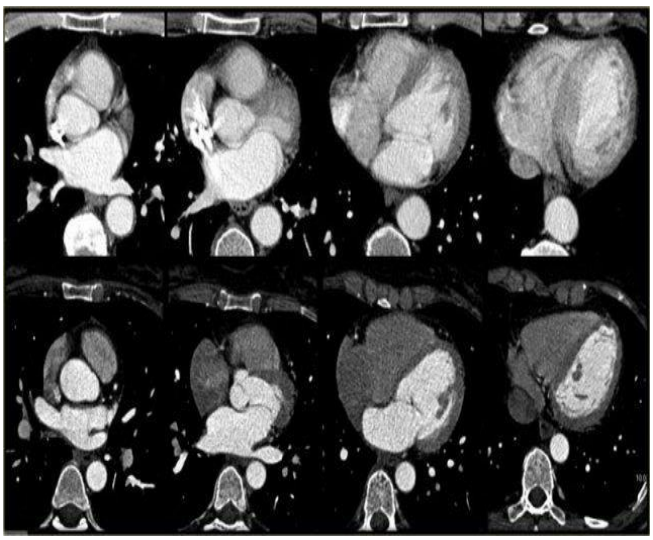
❖ *knowledge*

1) antome heart
2) physiology of the heart
3) Types of heart disease
4) The cause of heart disease
5) Read X-ray pictures

HEART

- *The heart is divided into humans*, other mammals and birds into four rooms: Alawes are right and left and right and left and left ventilation.
- The ionists and dancers are usually referred to as the right heart, as referred to as the atrium and left fats as the left heart. Consists of: Heart Chamber, Heart Orientation Nutriter: The left coronary artery, coronary coronary artery, blanket coronary artery .





❖ O

r cardiac physiology, or cardiac function is the study of the healthy and proper function of the heart.

❖ *T*

his study includes: blood flow, the structure of the heart muscle, the electrical conduction system in the heart, cardiac circulation, cardiac output, and how these functions interact and depend on each other.

❖ The heart acts as a pump, and as a double pump in the circulatory system to provide continuous blood circulation throughout the body.

❖ This inclu

carry.

❖ The Department of Pathology (Pathology): is a branch of medicine

concerned with studying the characteristics of diseases, structural changes, the nature and function of diseases.

- and
swelling, infla
- i
s a broad term used to describe a group of diseases that affect the heart. The various diseases that fall under the umbrella of heart *diseases include:*

- C
ardiovascular disease.
- A
rrhythmia.
- D
iseases of congenital heart defects.
- C
ardiomyopathy.
- V
alvular heart disease.
- a
nd others...
- S
ymptoms:

❖ Symptoms of heart disease vary according to the type of disease.

HEART DISEASE RADIOGRAPHS

NARROWING OF THE ARTERIES :

- **Narrowing of the arteries due to the accumulation of fat in them, which leads to enlargement of the heart muscle**

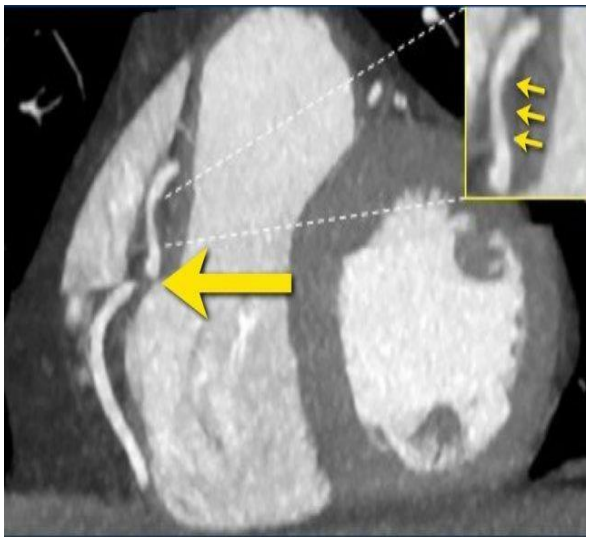
❖ **Symptoms:**

1) **difficulty breathing**
2) **Heaviness in the chest**
3) **arrhythmia**

❖ **the reasons:**

1) **smoking**
2) **Hypertension**
3) **high diabetes**

AN ENLARGED HEART DUE TO NARROWED ARTERIES:



- **X RAY**

CT

CARDIOMEGALY:

is a medical condition in which the heart is enlarged. It is more commonly referred to as an enlarged heart.

➤ An enlarged heart may not pump blood effectively, resulting in congestive heart failure.

- Longstanding anemia

-Pericardial effusion

-Excessive iron in blood (hemochromatosis)

-Rare diseases such as Amyloidosis

-Pregnancy

-Viral infection of the heart.

Kidney diseases requiring dialysis

- HIV infection

-Alcohol or cocaine abuse

- Diabetes

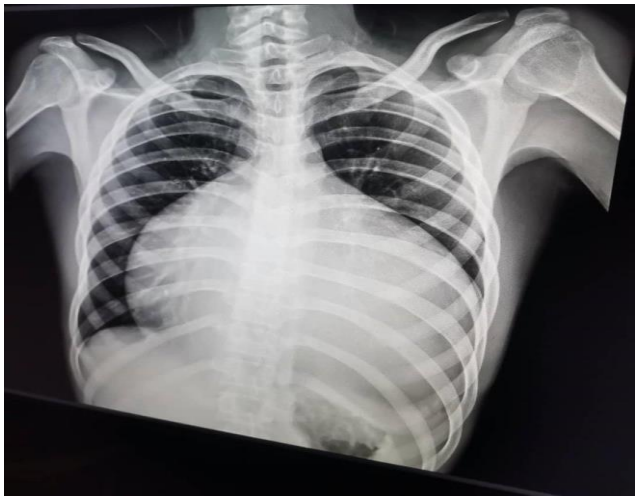
High blood pressure higher than 140/90

millimeters of mercury

-A family history of enlarged hearts or

cardiomyopathy

- Coronary artery disease
- Congenital heart disease
- Valvular heart disease
- Heart attack



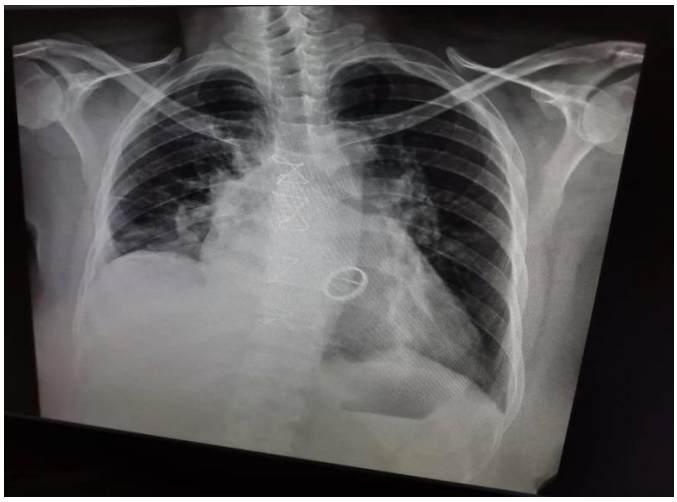
HEART VALVE :

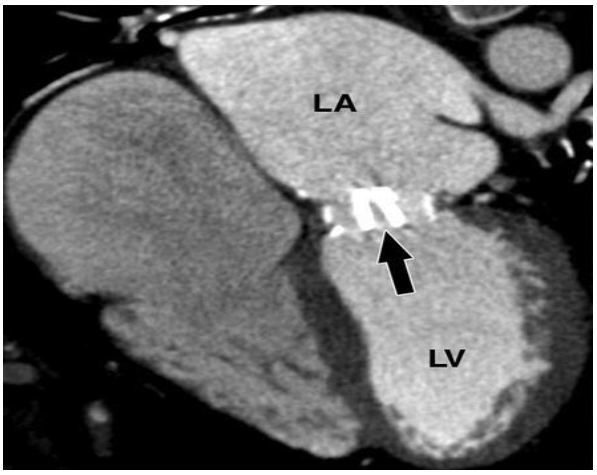
surgery is an operation to treat heart valve disease. Heart valve disease involves at least one Heart of the four heart valves not working properly. valves keep blood flowing in the right direction through the heart.

What is the reason for changing the heart valve?

Heart valve replacement surgery aims to replace the damaged heart valve with an artificial or biological one; To maintain the integrity of heart function, this damage results from several reasons, such as: birth defects, bacterial infections, and valve damage caused by age.

Risks





HEART PACEMAKER:

A pacemaker or artificial heart pacemaker is an electrically charged medical device, which the doctor implants under the skin to electrically stimulate the heart by ejecting impulses from outside the chest wall, used as an emergency treatment for cardiac arrest, or heart block that occurs with severe slowing of the heart.

A pacemaker generally treats two types of arrhythmia disorders: Rapid heart rate. slow heart rate

WE DIVIDE THE PACEMAKER INTO TWO MAIN TYPES:

Devices that regulate the contraction of one of the heart's chambers, usually the ventricles. Devices that regulate two

chambers together; ie the atria and ventricles.

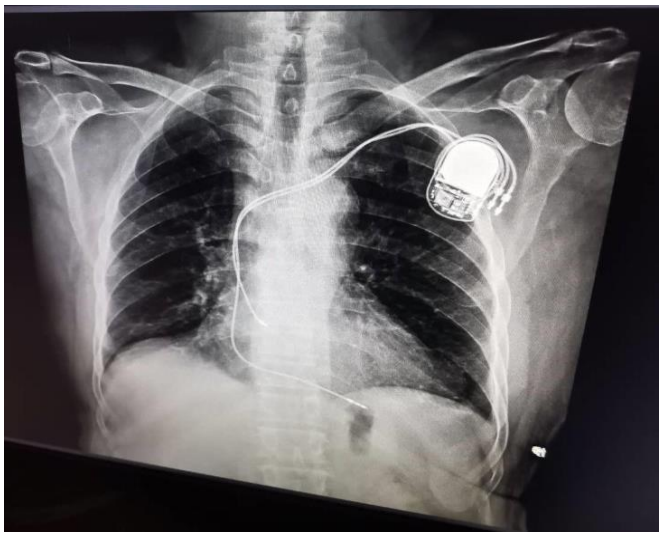
Pacemaker insertion The pulse generator is implanted under the skin below the collar bone on either the right or left side. Wires are inserted using X-ray control through a vein in this area and positioned in the appropriate right heart chamber. Wires are tested before the pacemaker is installed and closed slit

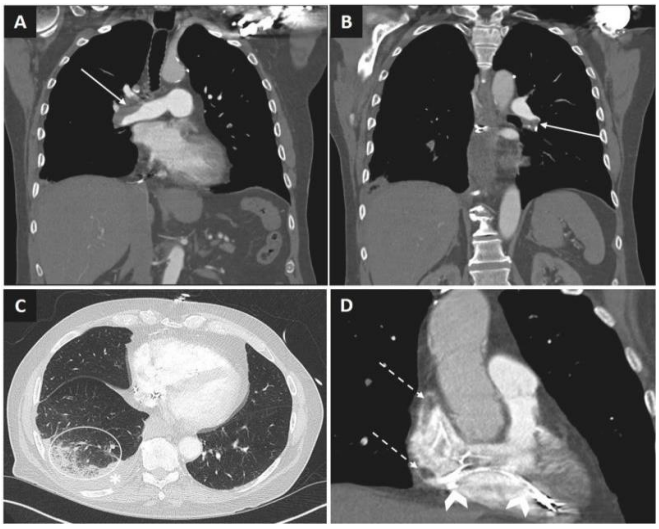
HOW THE PACEMAKER

WORKS A PACEMAKER:

is a small, battery-powered computer that attaches to the heart and rests on the inner wall of the heart using either small plastic hooks or a short metal screw. The pulse generator sends electrical

signals that stimulate the heart to contract.





- **XRAY** **CT**

AORTIC DISEASE:

- The aorta is the largest blood vessel in the body. It carries
- blood from your heart to the rest of your body.
-
-
-

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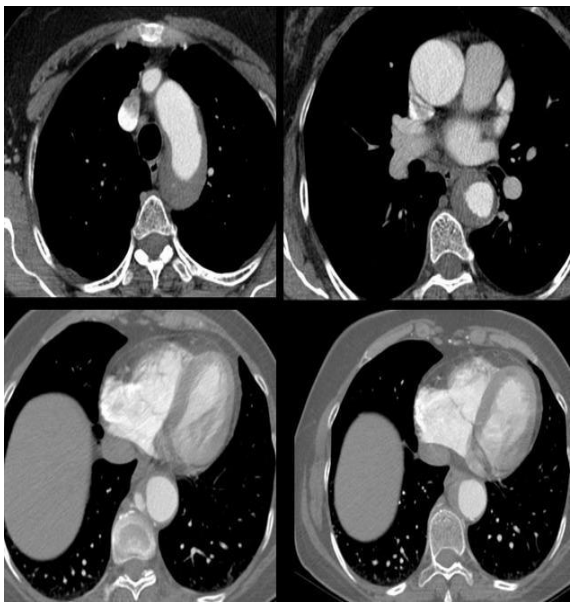
whic
bulg



- back or abdomen (tummy).

(COPD) :

• Chronic obstructive pulmonary disease is a chronic inflammatory lung disease that obstructs the outflow of air from the lungs. Symptoms include difficulty breathing, coughing, mucus (phlegm) and wheezing.

It is

❖ the reasons :

•

The

COPD SIGNS AND SYMPTOMS MAY INCLUDE:

1)
Shortness of breath, especially during physical activities

2) buzzing

3)

s

adness

4)
A chronic cough that may produce mucus (phlegm) that may be clear, white, yellow, or greenish

5)

F

requent respiratory infection

6)

l

ack of activity

7)

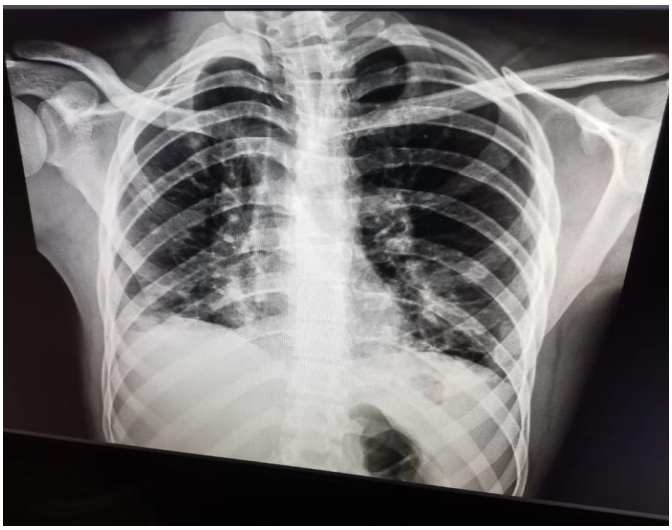
U

nintended weight loss (in later stages)

8)

S

welling in the ankles, feet or legs



•

• **X** **RAY**

CT

5.System pathology

Reproductive

-Female reproductive system pathology

-Breast palpable mass

-Lobular mass

-Breast cancer

-Ovarian cysts

-Multiple ovarian cysts

-Submucosal uterine fibroid

-Multiple intramural fibroid

-Unicornuate uterus blocked

-Adnexal cystic masses

Male reproductive system pathology

-prostate cancer

-Chronic prostatitis

-Benign prostate hyperplasia

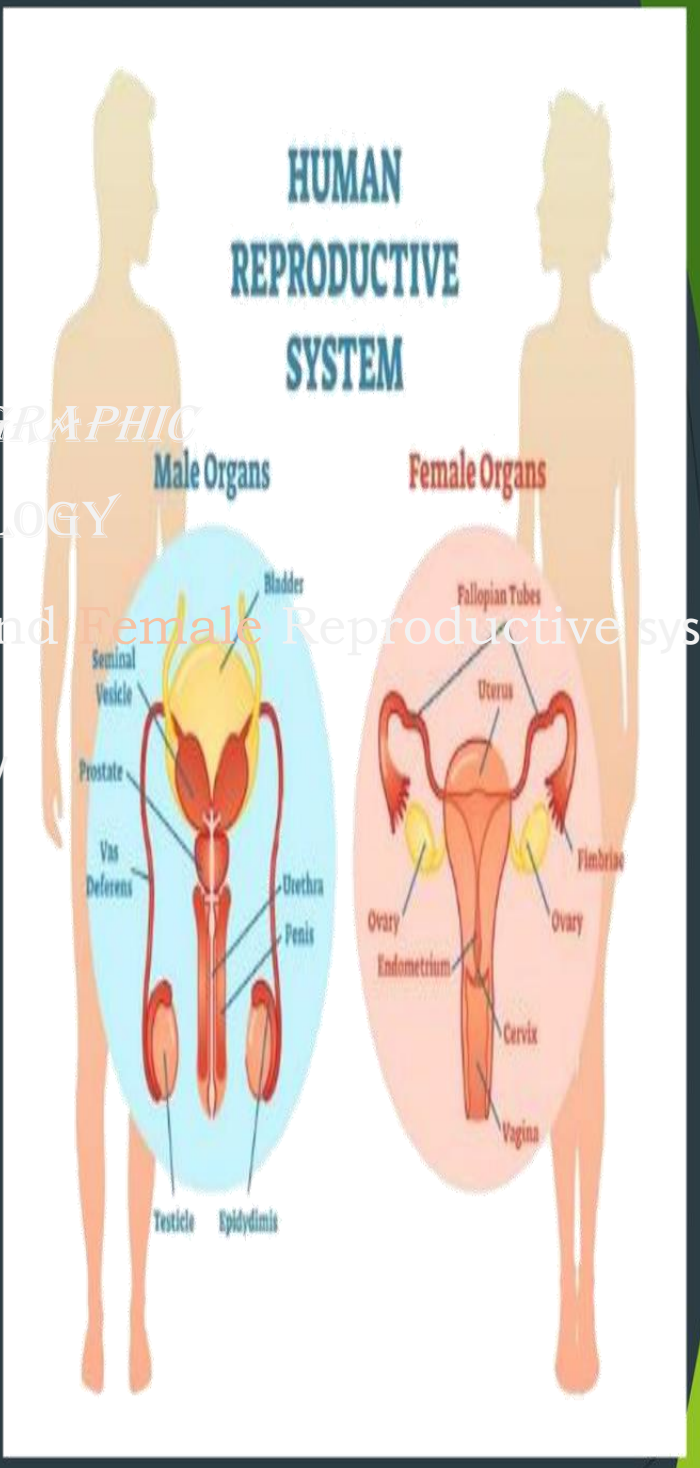
-Testicular Torsion

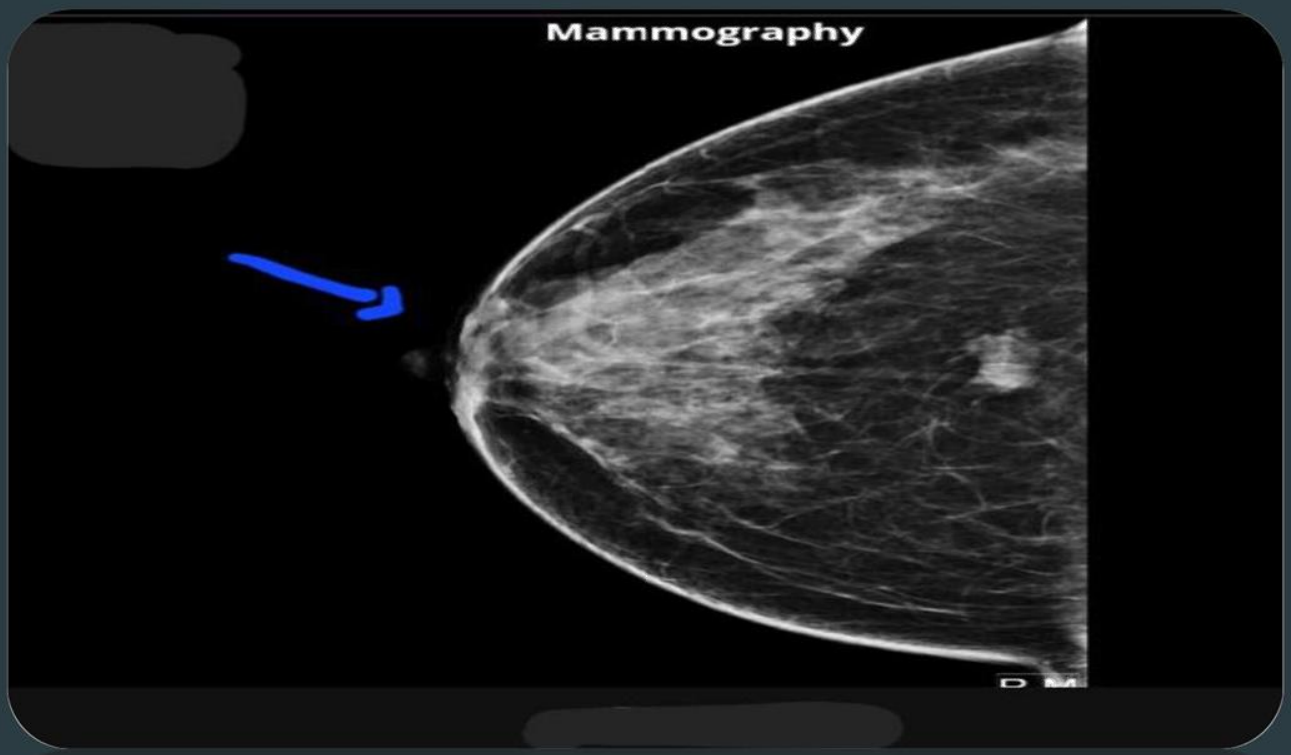
RADIOGRAPHIC

PATHOLOGY

Male And Female Reproductive system

Pathology





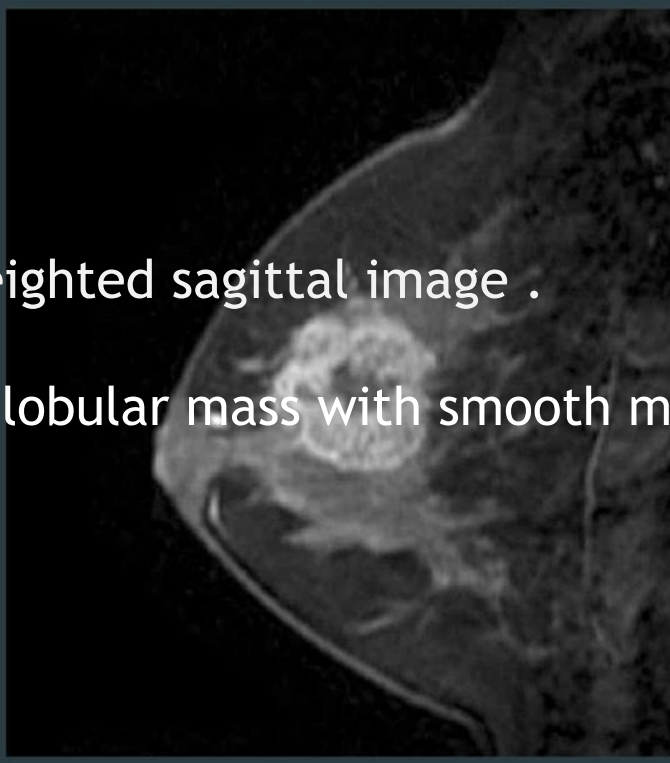
Procedure

Radiographic finding

Patient data

Procedure ; MRI T2 Weighted sagittal image .

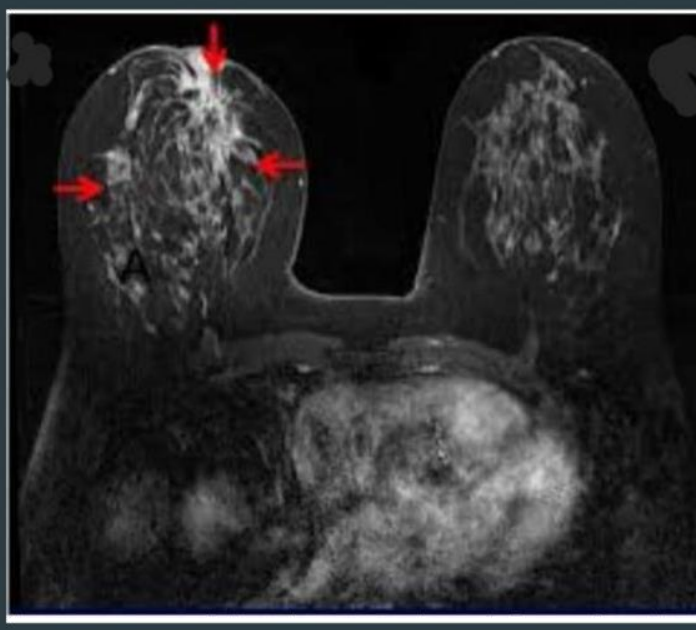
Radiographic finding : lobular mass with smooth m



Procedure : MRI image.

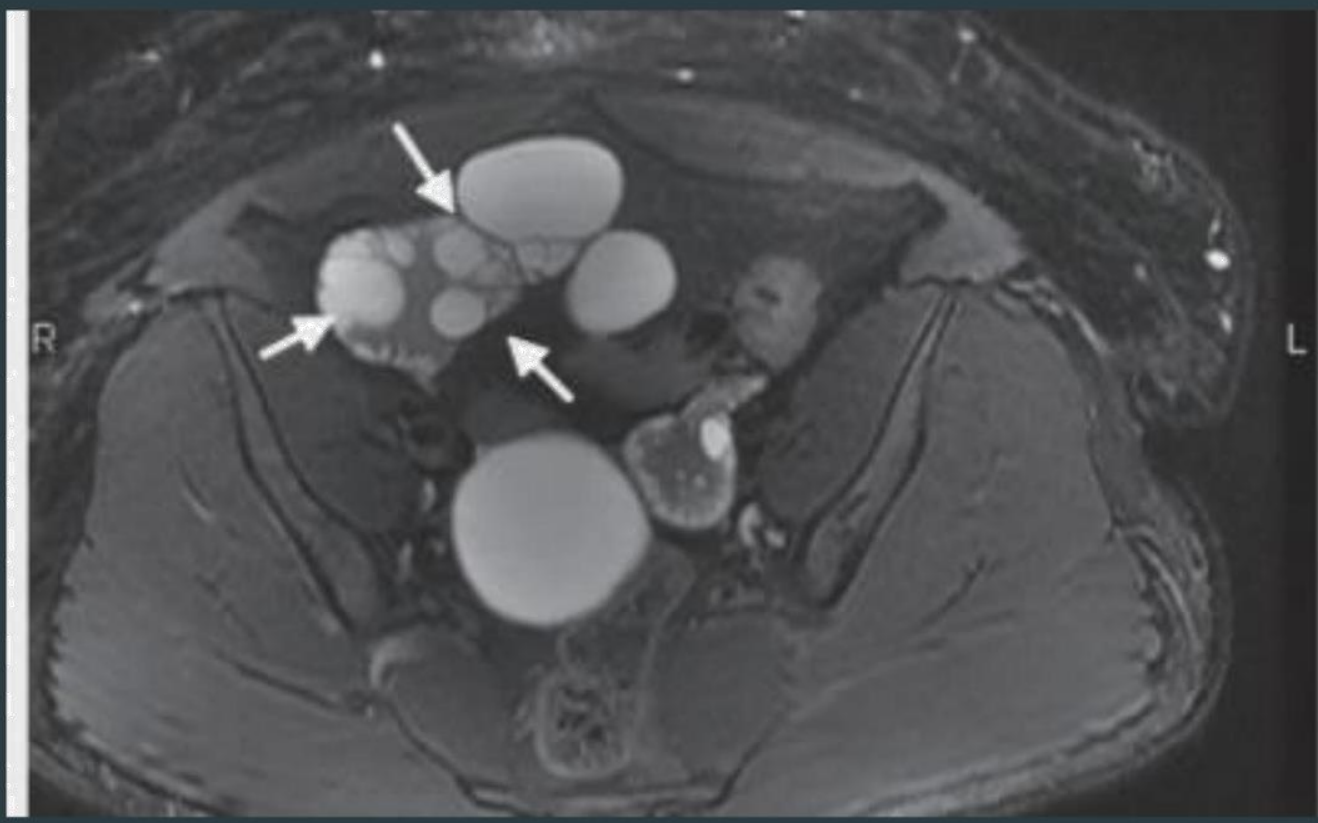
Radiographic finding ;

Breast cancer .



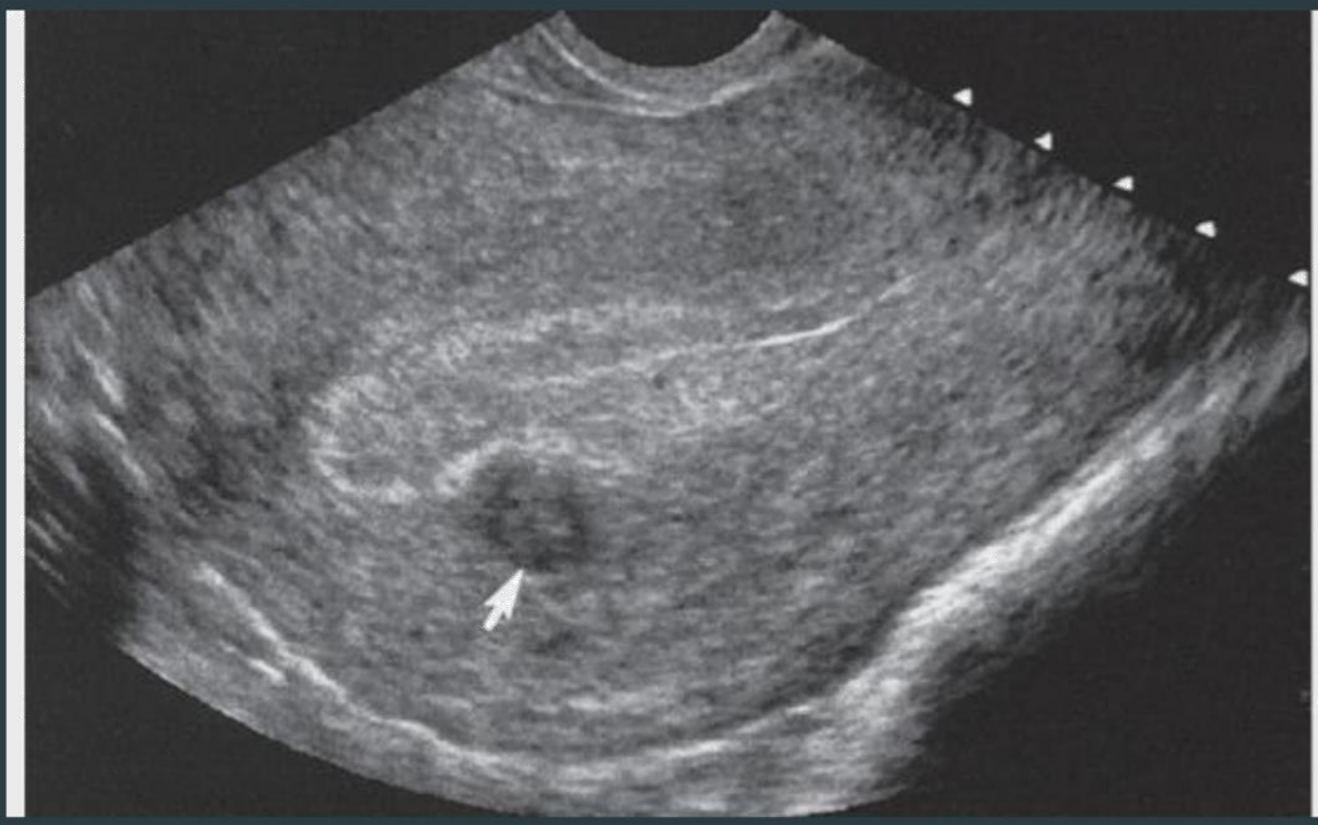
ultrasound .

Radiographic Finding



MRI

Radiographic finding



Procedure

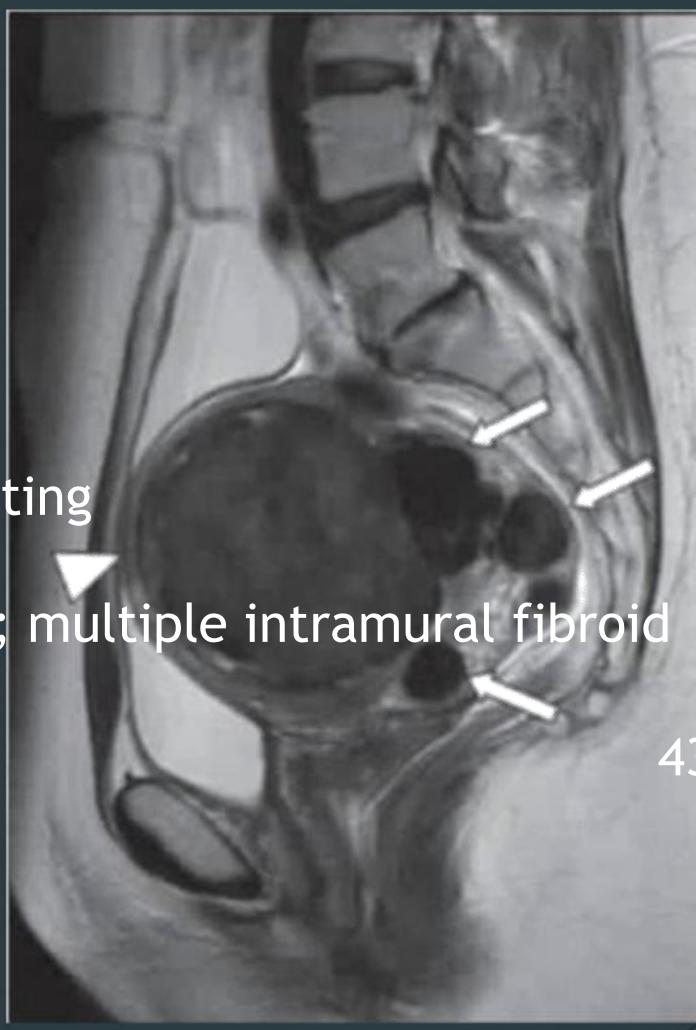
Radiographic finding

MRI sagittal T2 Weighting

Radiographic finding ; multiple intramural fibroid

A

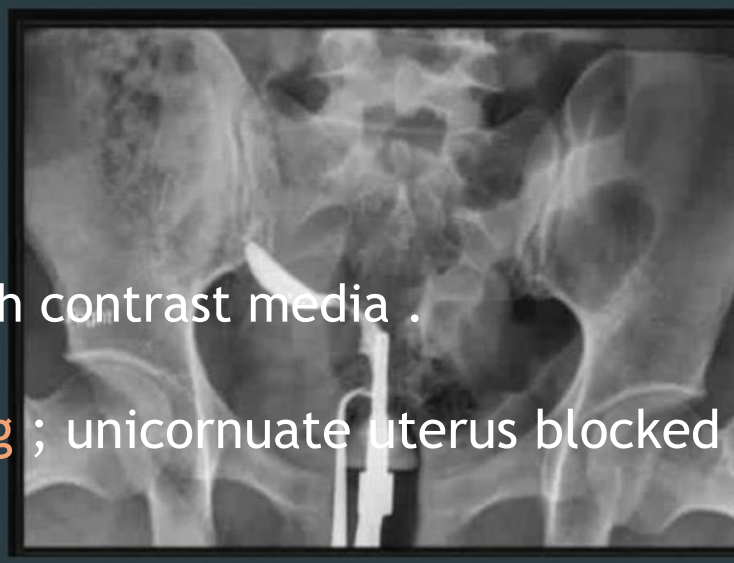
with menorrhagia



4

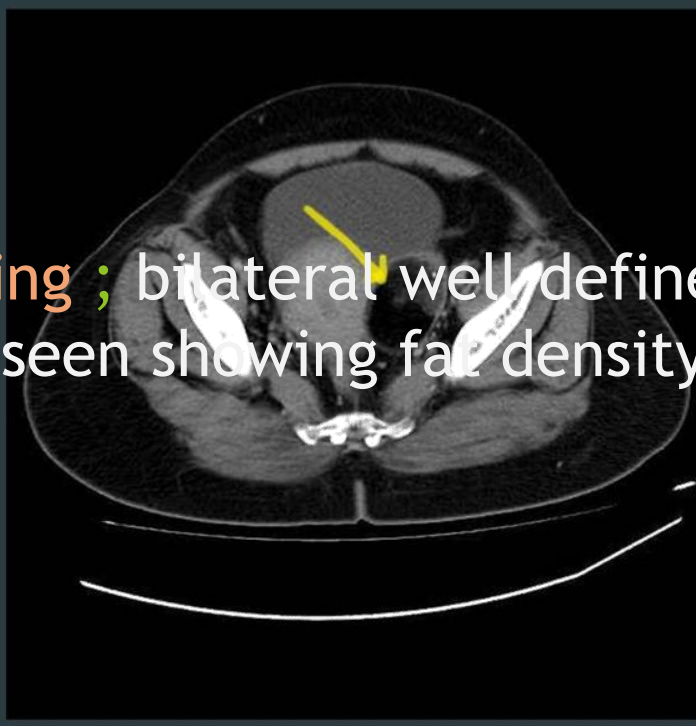
Procedure ; HSG with contrast media .

Radiographic finding ; unicornuate uterus blocked



Procedure ; CT

Radiographic finding ; bilateral well defined cystic masses are seen showing fat density



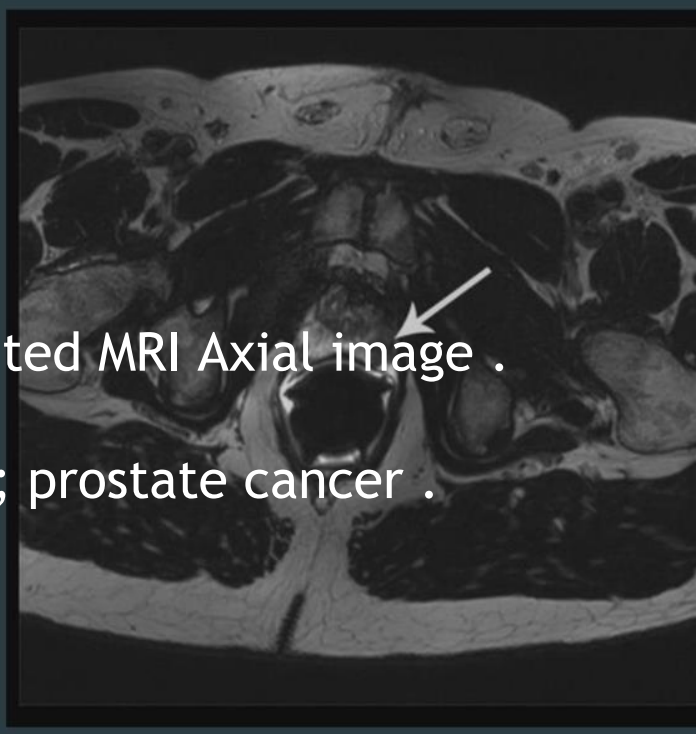
MALE REPRODUCTIVE SYSTEM

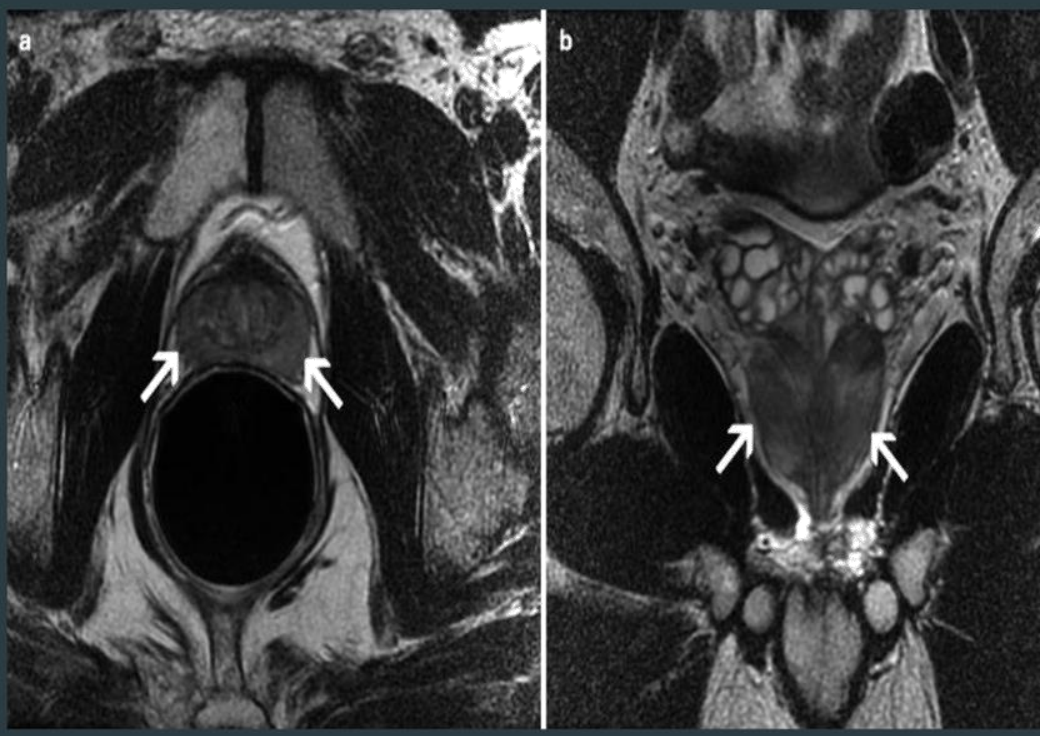
Procedure ; MRI T2 Weighted coronal image .

Radiographic finding ; prostate cancer .

Procedure : T2 Weighted MRI Axial image .

Radiographic finding ; prostate cancer .



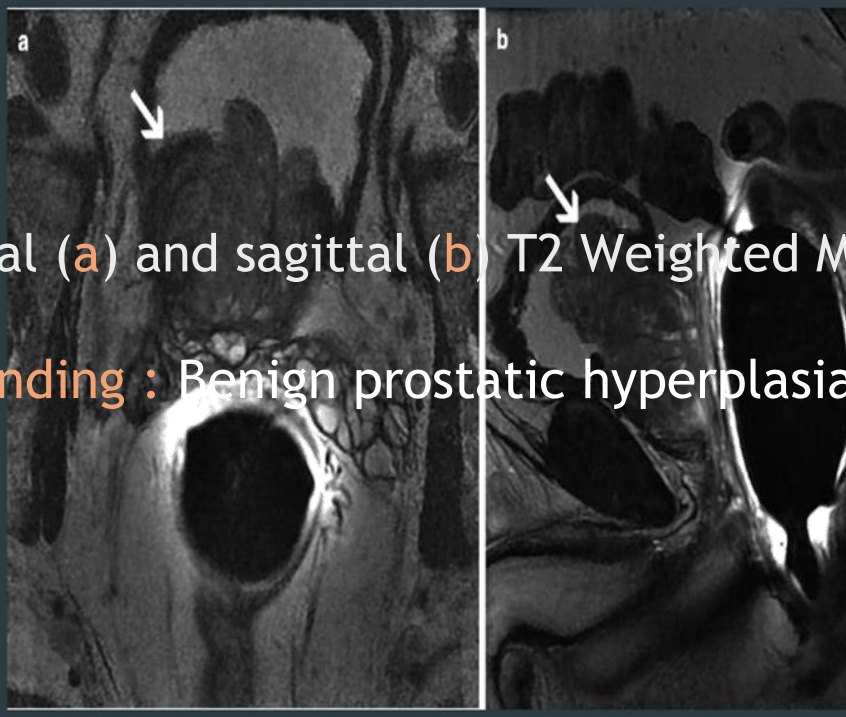


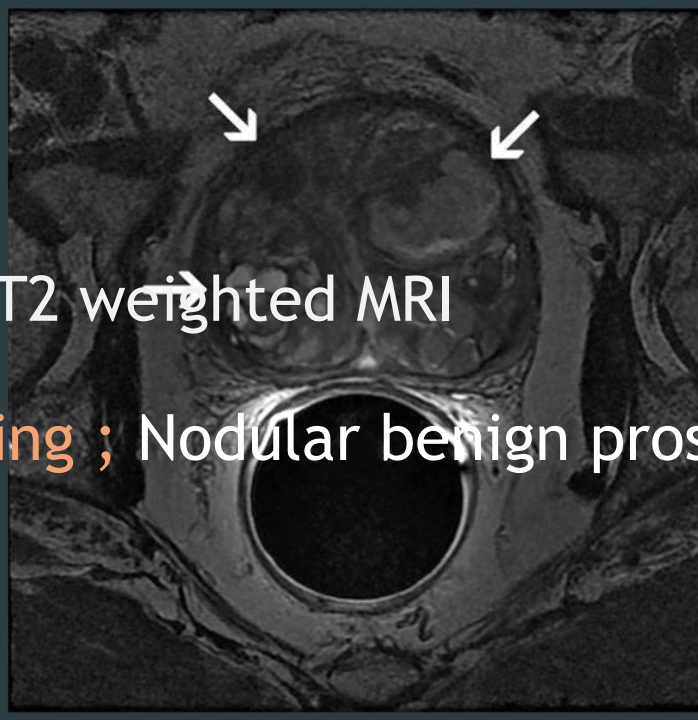
Procedure

Radiographic finding

Procedure ; Axial (a) and sagittal (b) T2 Weighted M

Radiographic finding : Benign prostatic hyperplasia
zone .





Procedure ; Axial T2 weighted MRI

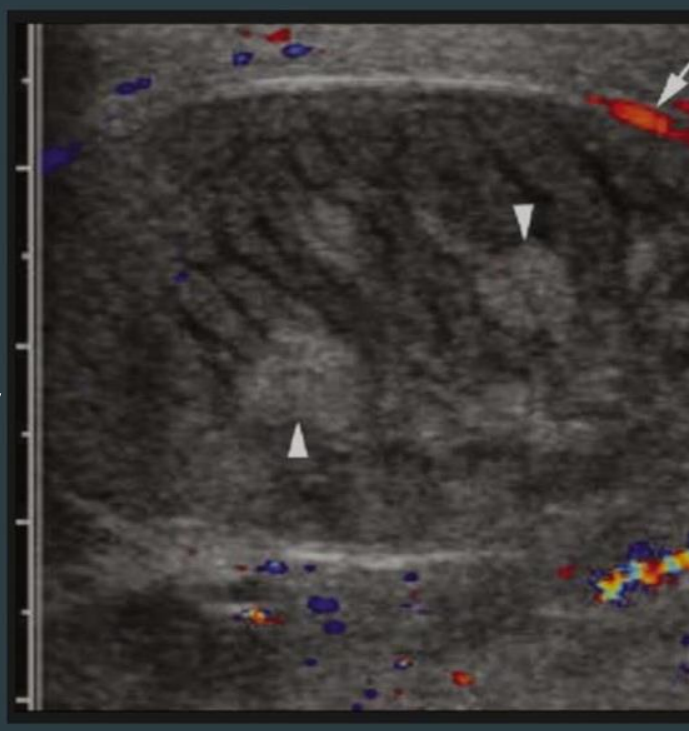
Radiographic finding ; Nodular benign pros
hyperplasia .

Procedure ;

Doppler ultrasonograghy

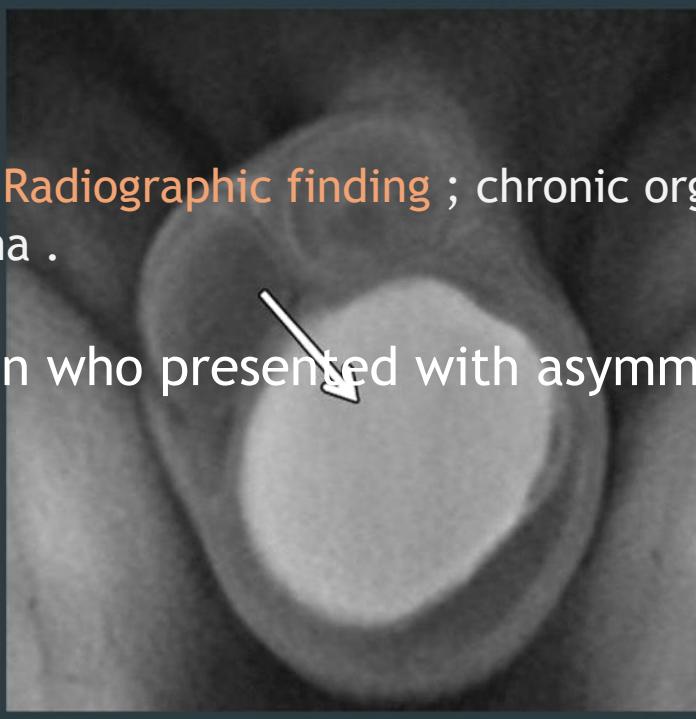
Radiographic Finding ;

Testicular Torsion .



Procedure ; MRI image . Radiographic finding ; chronic org
extratesticular hematoma .

In a 31 _ year_old man who presented with asymm
testicular swelling

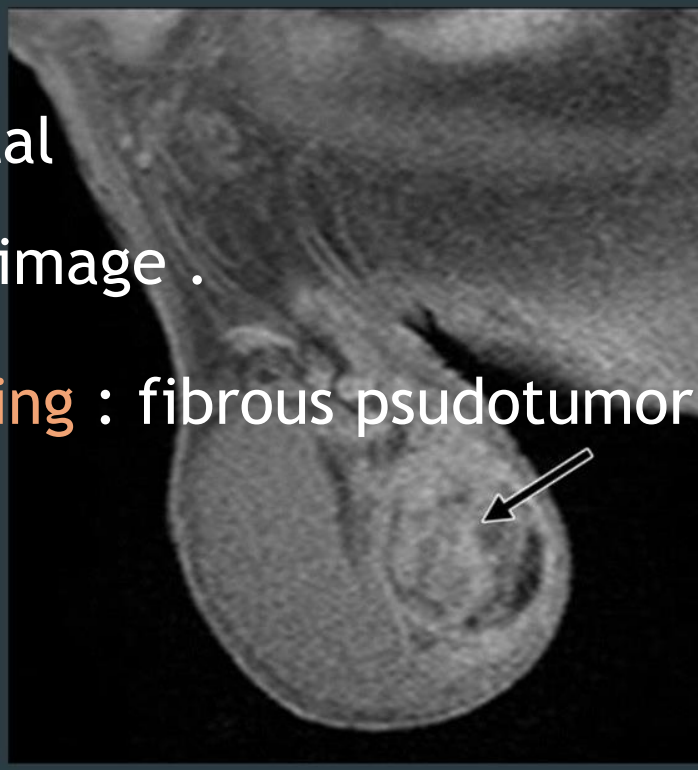


Procedure ; sagittal

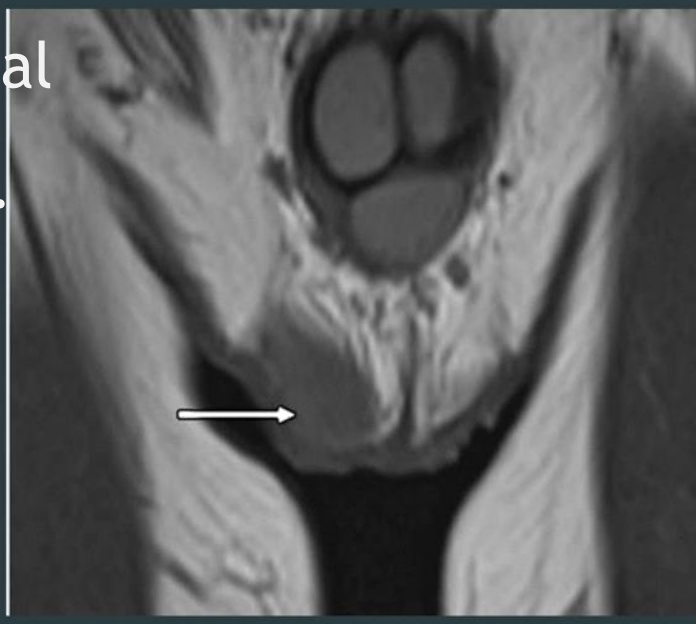
T2_weighted MRI image .

Radiographic finding : fibrous psudotumor

In a 30 year man



Procedure ; sagittal T2_Weighted MRI .



Radiographic finding :

Adenomatoid tumor

in a 54 year old man with a right scrotal ma

6.Urinary system pathology

✦ *Cogenital diseases based on:*

- Anomalies of number
- Anomalies of rotation, position ,or fusion
- Anomalies of renal pelvis and ureter

✦ *Pathological diseases based on:*

- Inflammatory diseases
- Tumors and cysts
- Stones
- Urinary tracts obstruction
- Renal failure

- **CONGENITAL DISEASES:**

Solitary kidney

Solitary kidney is a condition in which a person has a single kidney instead of two , The patient is either is bornwith one kidney or born with two but only one is functioning .

Case :
Patient comes to clinic with non specific abdomen pain ,CT of abdomen demonstrates a solitary left kidney.

Age of the patient: 30 yearsGender: male

CT of the abdomen shows solitary left kidney with physiological hypertrophy

.The morphology of the left kidney is normal. The right renal bed is empty, with no evidence of prior surgery or renal tissue.

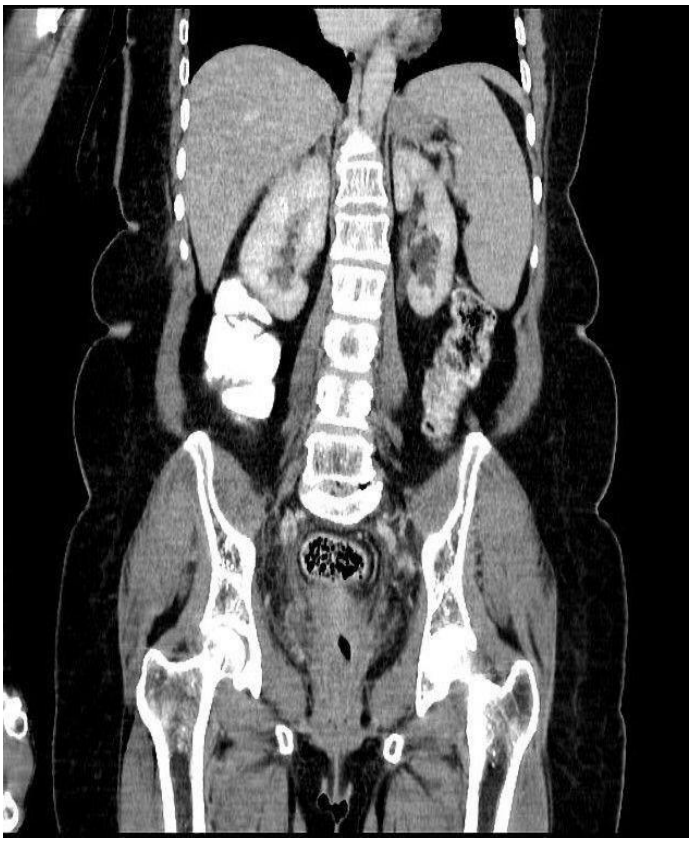
Duplex KIDNEY

Coronal contrast-enhanced CT images in the arterial phasewhich demonstrate features consistent with a left-sided duplex renal collecting system, with two renal. pelvises anupper and a lower ureteric moiety.

Case

The individual has an additional kidney to the originaltwo, it may or may not be fused to the others,

This condition happens due to the abnormal division of nephrogenic cord into two metanephric blastemas with orwithout division of uretric bud.



ureterocele

A ureterocele is a swelling at the bottom of one of the ureters. Ureters are the tubes that carry urine from the kidney to the bladder. The swollen area can block urineflow.

Case:

Major trauma,Primary retrieval.Age: 20 years

Gender: Male

Intravenous pyelogram shows bilateral duplex kidneys. Onthe right side,upper moiety ureter enters distally and is associated with a ureterocele. A well defined intravesical filling defect centered on the right vesicoureteric junction with mild proximal ureteric dilatation indicates ureterocele

.


PLAIN
L

Renal malrotation

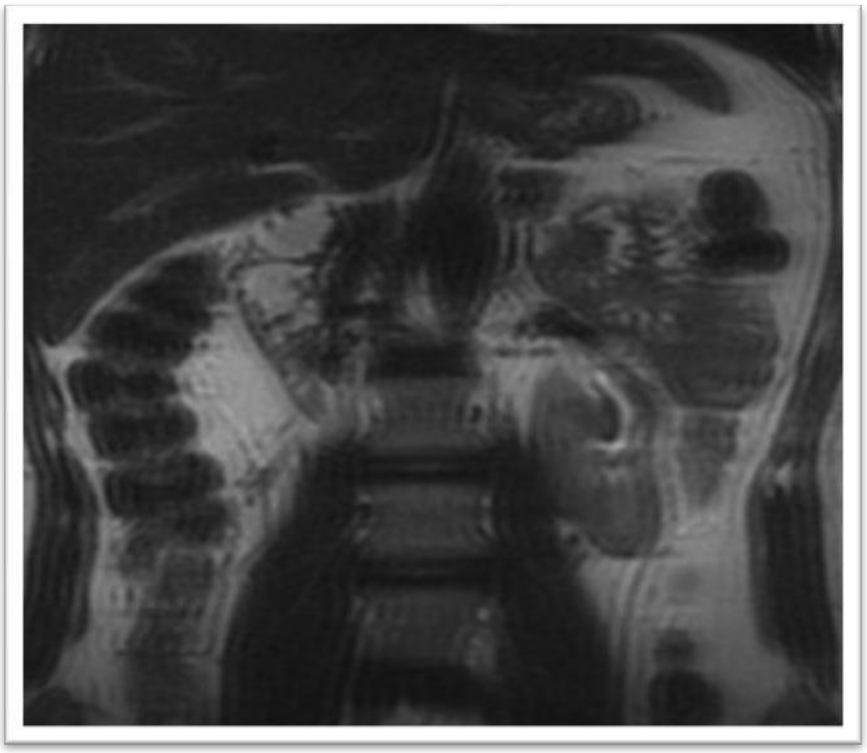
Renal malrotation is a rare congenital variation of kidneysand hilum position, more common in males.Usually renalmalrotation occurs unilaterally and many patients might show no symptoms at all during life. reversed rotation: laterally faced hilum.

Case:

Left varicocele.

Suspicious left kidney on ultrasound.Age: 35 years

Gender: Male



Supernumerary kidney

The supernumerary kidney is the kidney in addition to two kidneys. It may or may not be fused to the other kidneys. The supernumerary kidney is the result of the abdominal division of nephrogenic cord into two metanephric blastemas with or without division of uretic bud.

Case :

Patient comes with abdominal pain, fever, hepaticabcess was suspected.

Age of the patient: 60Gender : female

Previous images shows two well formed ,fused kidneys atthe left side of the abdomen ,the upper kidney is smaller
,but it's shape and cortex are normal a simple cyst is observed.Right kidney is almost normal presenting onlysmall calcification.

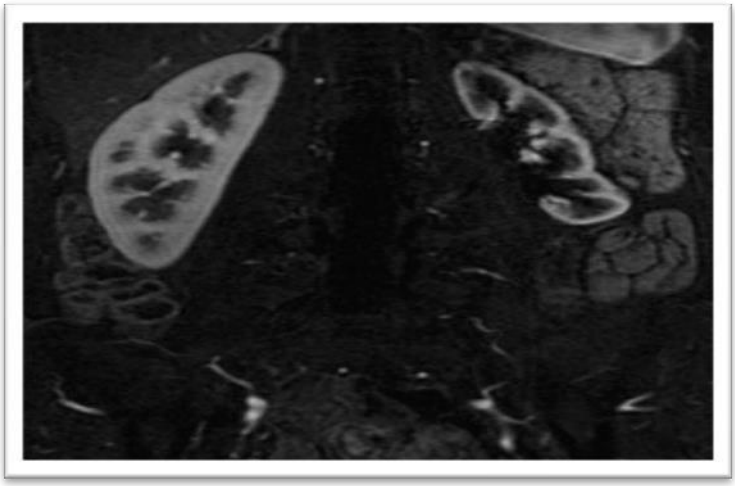
Renal hypoplasia

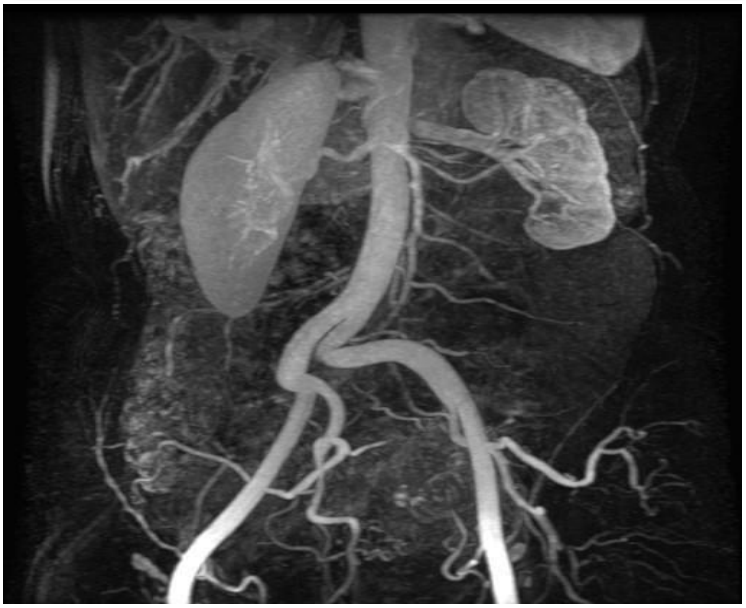
Renal hypoplasia (or kidney hypoplasia) means that partof the kidney does not fully develop in the womb .the kidney may be slightly smaller due to that it may not work properly as a normal sized kidney.

Case:

Patient has hypertensionAge: 50

Gender : female





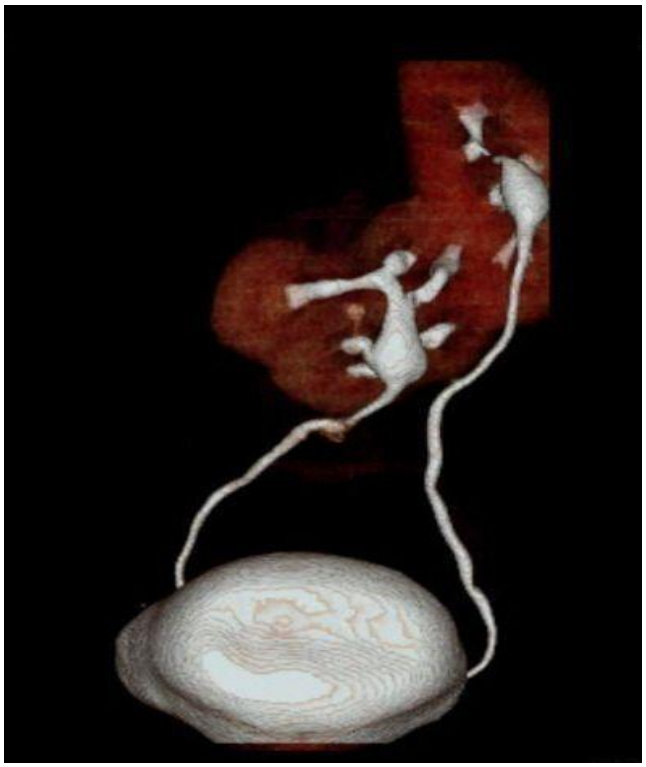
In the previous images ,the left kidney is marked smallerand supplied by a filiform left renal artery without irregularities or stenosis . a tiny accessory aberrant renalartert entering the lower third of the left artery .

Crossed fused renal ectopia

when the kidney is located opposite from which its ureter inserts into the bladder, its defined as crossed renal ectopia and its fused with the opposite kidney its defined as crossed fused renal ectopia.

Case

25 years old female , L shape kidney



CTU 3D VR

Both kidneys are seen on the left side (crossed fusedectopia). The right kidney is malrotated, crosses the midline to the left side, and fused with the lower pole ofthe left kidney

ECTOPIC KIDNEY

When a kidney is located below, above, or on the oppositeside of the kidney's normal position in the urinary tract.

Case

Pelvic kidney

65 years old male

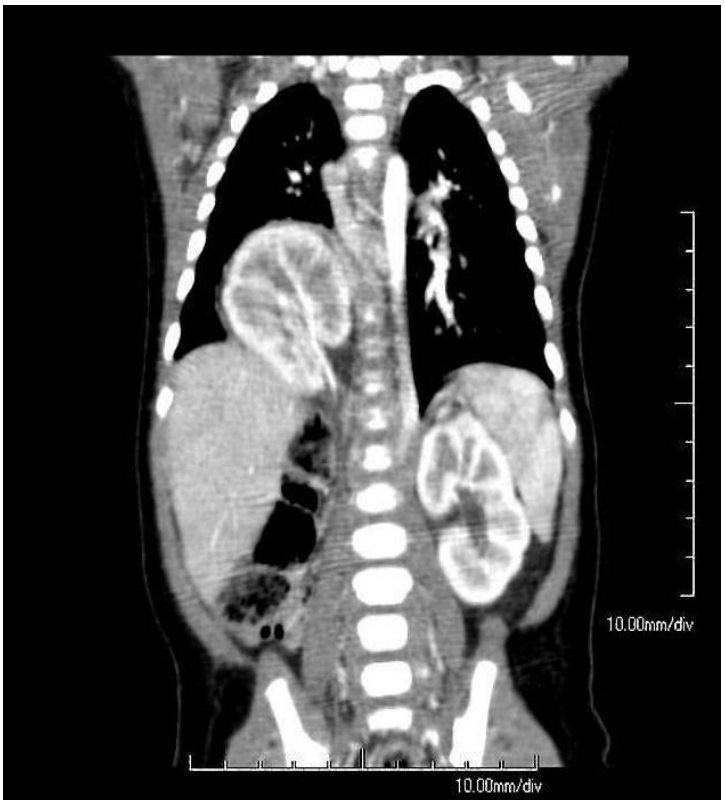
FDG PET

Both kidneys are seen on the left side (crossed fusedectopia). The right kidney is malrotated, crosses the

midline to the left side, and fused with the lower pole ofthe left kidney. Thoracic kidney .

Case 2 for ectopic kidneythoracic kidney:

Patient age :2 monthsGender: male



Intrathoracic right kidney, through a posterior defect atright hemidiaphram.

- **Pathological diseases**

INFLAMMATORY DISORDERS

Glomerulonephritis:

Glomerulonephritis is a nonsuppurative inflammatory process involving the tufts of capillaries (glomeruli) thatfilter the blood within the kidney.

Signs and symptoms:

Pink colored urine, foamy or bubbly urine due excessprotein

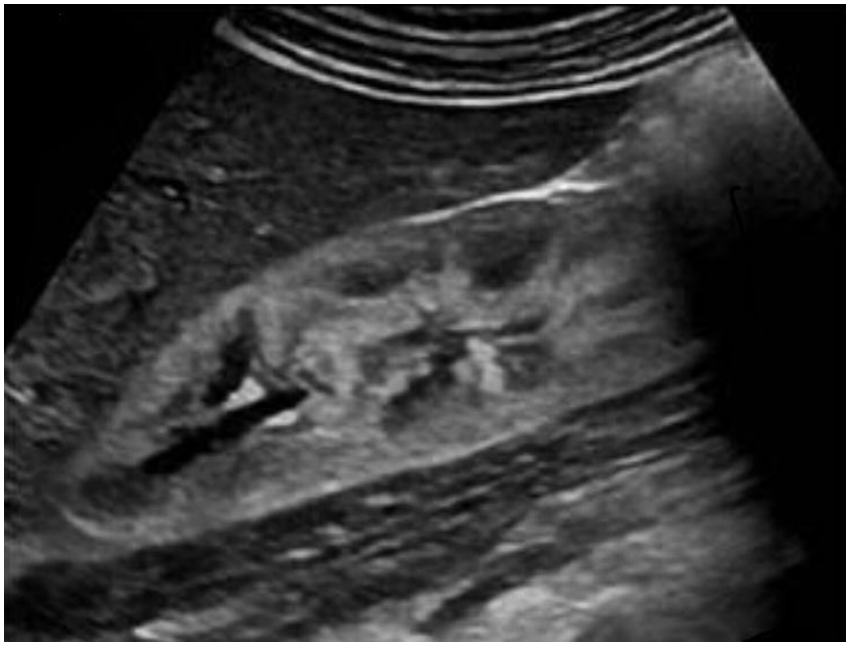
Hypertension Nausea and vomiting

Urinating less than usual

Fluid retention (edema) with sweeling evident in the face,hands, feet, and abdomen.

Image modalities

CT, X- ray, MRI, US (preferred or gold standard)



Paediatric with immune disease, strep throat, vasculitis.Procedure:

Ultrasound Finding:

hyperechoic cortex, enlarged kidneys.

Pyelonephritis

Pyelonephritis is a suppurative inflammation of the kidneyand renal pelvis caused by pyogenic (pus-forming) bacteria.

Sign and symptomshigh fever

chills and sudden back Painful urination (dysuria)Pyuria

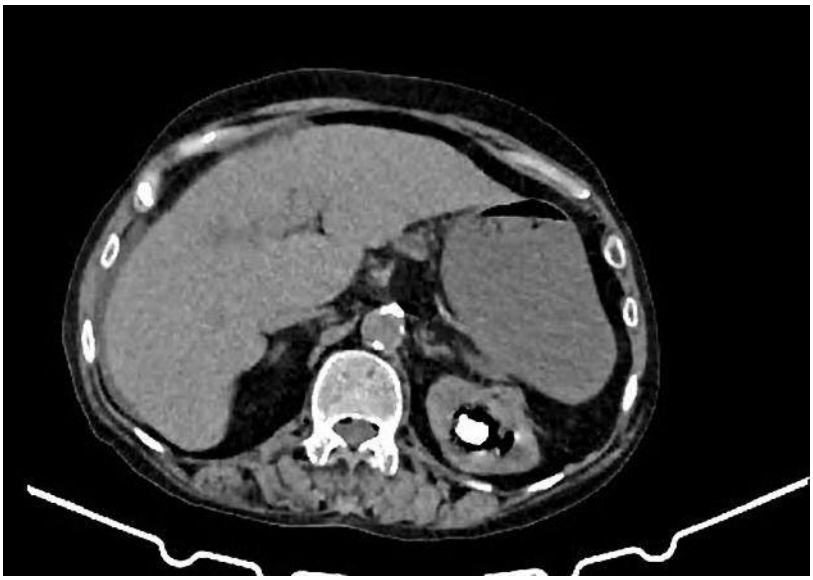
Kidney stones Flank pain Vomiting Hematuria Irregular bleeding

Bilateralabdominal pain

Case

Patient age: 75 years

Gender: famale



CT scan

Bilateral staghorn calculi, gas in both pelvicalyceal systems, ureters, and bladder. Intraparenchymal gas in theleft kidney. No urinary catheter.

Tuberculosis

The hematogenous spread of tuberculosis may lead to the development of small granulomas scattered in the corticalportion of the kidneys. Renal tuberculosis usually occurs as a secondary infection from lung involvement butcan evolve from other sites .

Signs and symptomsCough, fever fatigue

weight loss night sweat back, side, groin pain nausea ,vomiting clody, dark, bloody, or foul smelling urine frequent and painful

urination. Age: 80 years
Gender: female

CT scan, Small right kidney with dystrophiccalcifications.

On the image above, 80 years old female with Nonspecificabdominal pain focused on epigastrium. Incidental finding.

Procedure
Cronal C+ portal venous phase CT, APABDOMEN X RAY

Findings

Amorphous calcifications in the area of the kidney.Alsoknown as putty kidney or mastic kidney.

Papillary Necrosis

Papillary necrosis refers to a destructive process involving a varying amount of the medullary papillae and the terminal portion of the renal pyramids.

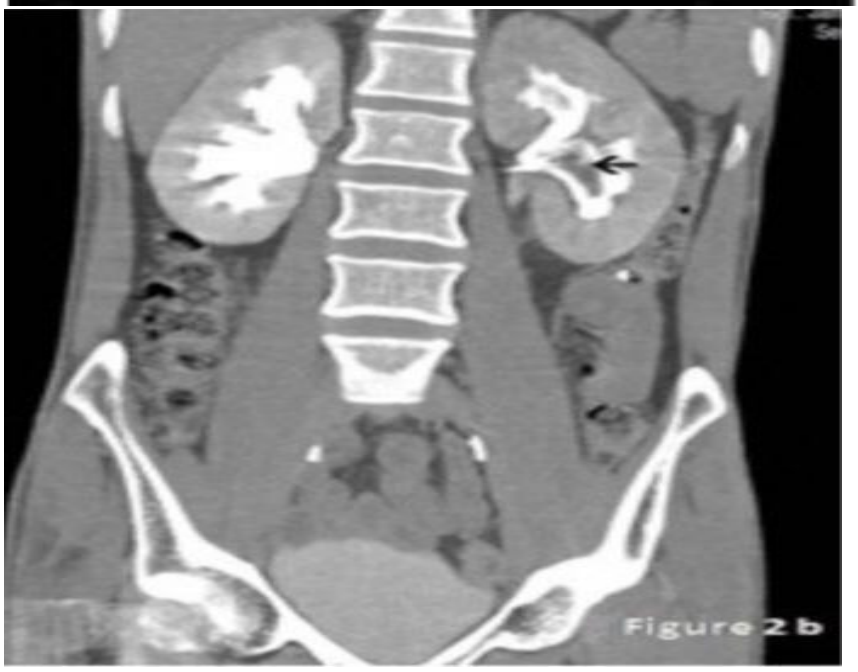
Sign and symptoms Dysuria, painful urination.Fever and chills.

Hematuria, blood in your urine visible with the eye or under microscopic examination.

Nocturia, frequent urination at night.

Pyuria, unusually high amount of white blood cells inurine.

Severe flank pain on either side of your back.Urinary tract infections.



40-year-old male patient presented with flank pain andhaematuria.

- Axial, cronal CT abdomenFindings

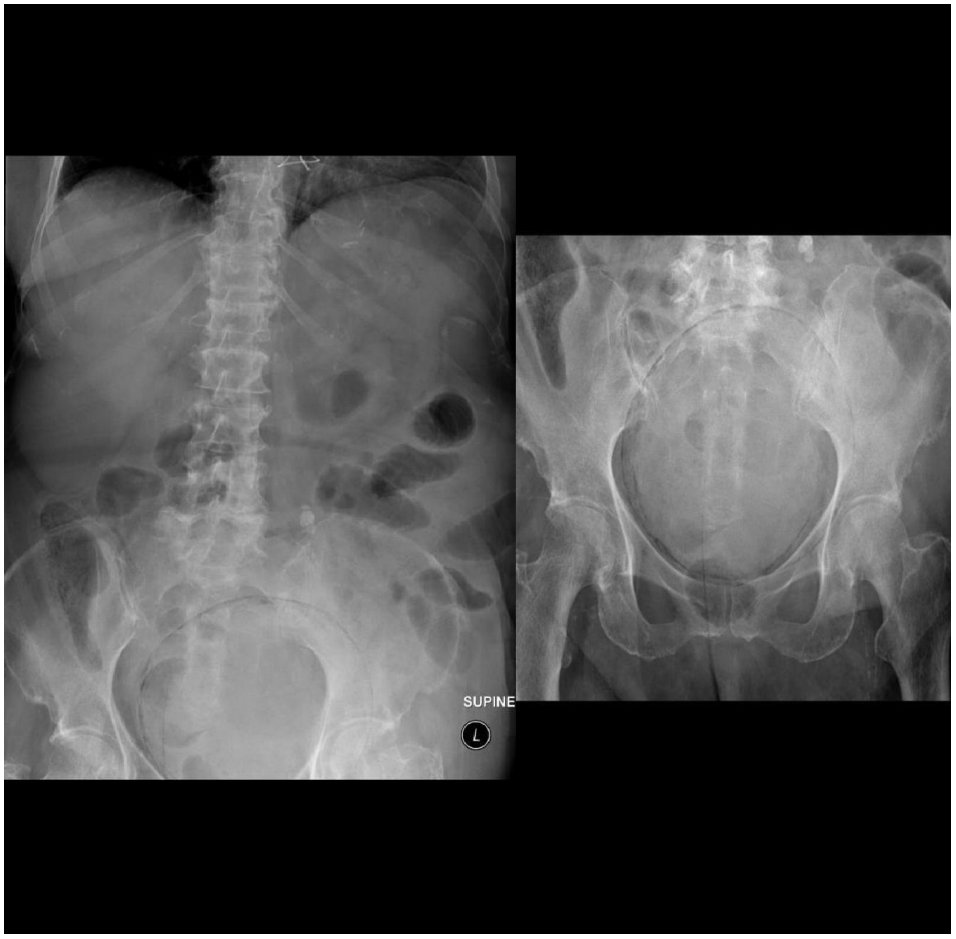
Axial section of Delayed phase of CT scan showing normal excretion of contrast with multiple filling defectsin Pelvi calyceal system and pelvis (white arrow).

Cystitis

Inflammation of the urinary bladder is more common inwomen because the urethra is shorter.

Sign and symptoms

Painful urination Frequent urination Small amount of urine Hematuria Pain low down in your tummy Feelinggenerally unwell, achy, sick and tired Dark, cloudy or strong smelling urine



75 female unwell with delirium. Known type 2 diabetes.

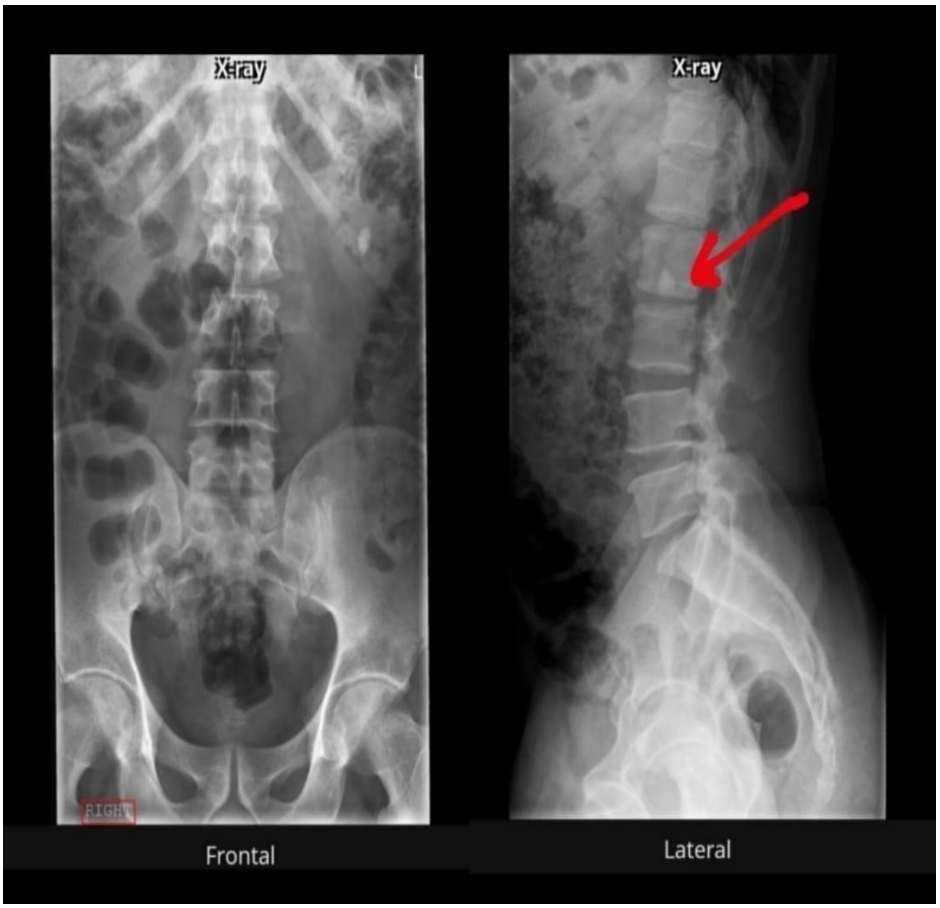
Procedure: AP Abdominal x ray

Findings: Air lucency is seen outlining the urinarybladder.

Renal stone:

Renal stone is a small, hard deposit that forms in thekidneys and often painful when passed.

Case



Low back pain for 3 months radiating to left lower limbs,with mild numbness.

Patient Data

Age: 50 yearsGender: MaleFinding:

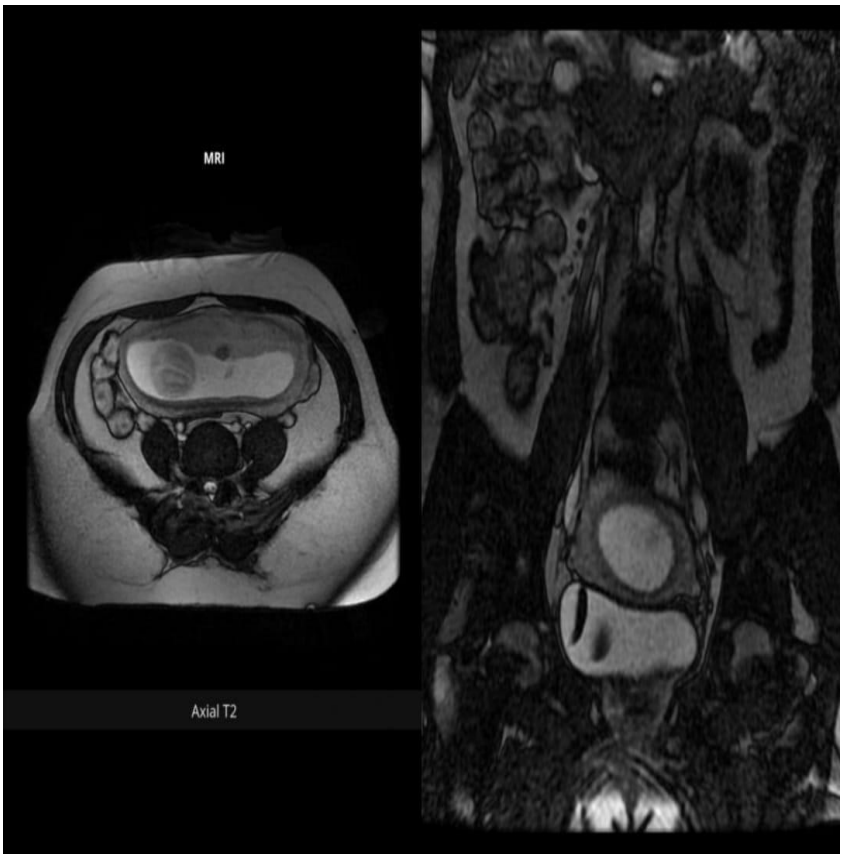
Latral and frontal x_ray.Case 2

Ureteric stone: Vesico-ureteric junction stonePresentation

Left flank pain radiating to the groin and hematuria.Patient Data Age: 30 years

Gender: Male Finding:Transverse Ultrasound

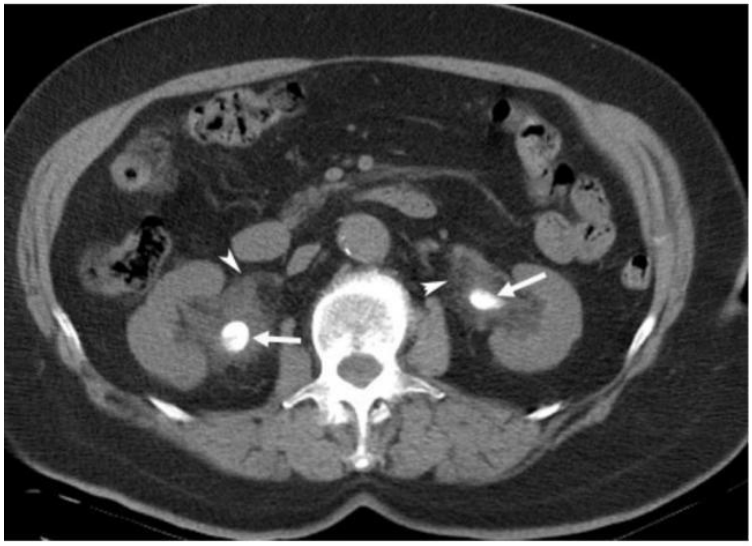
Case 3



Vesical stone: Bladder stones in pregnancy (MRI).

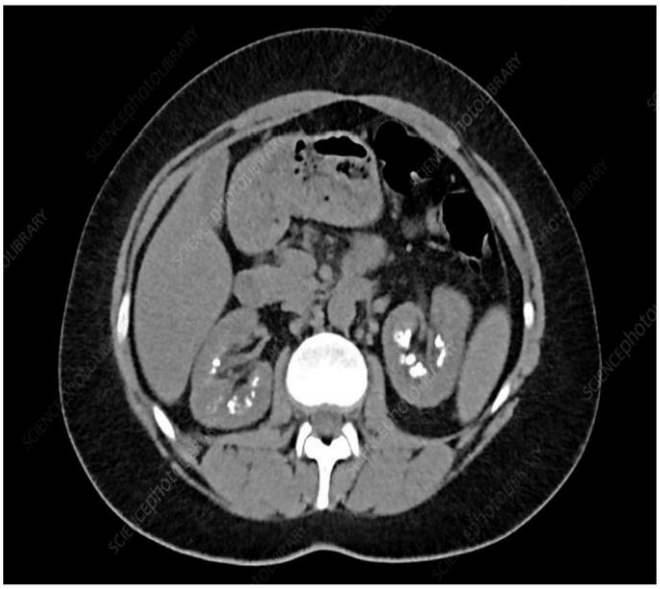
A 15 weeks of gestation woman presenting with dysuriaand gross hematuria.

Case 4

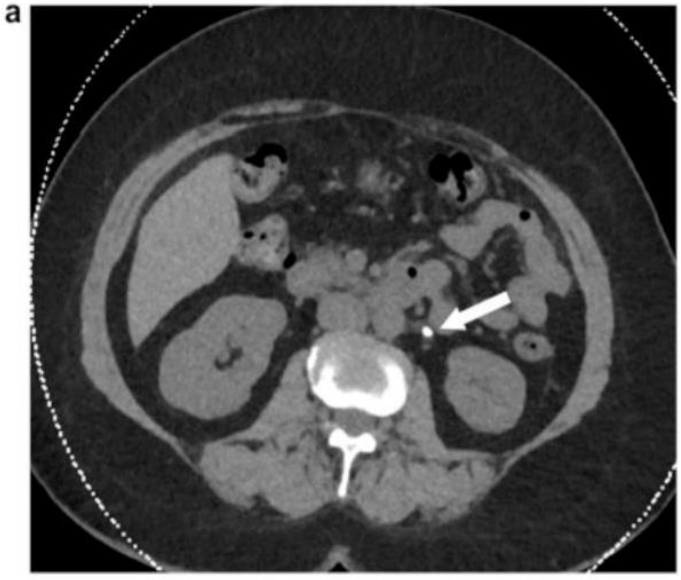


Patient data

60 years male patient completed from severe pain in his backCase 5

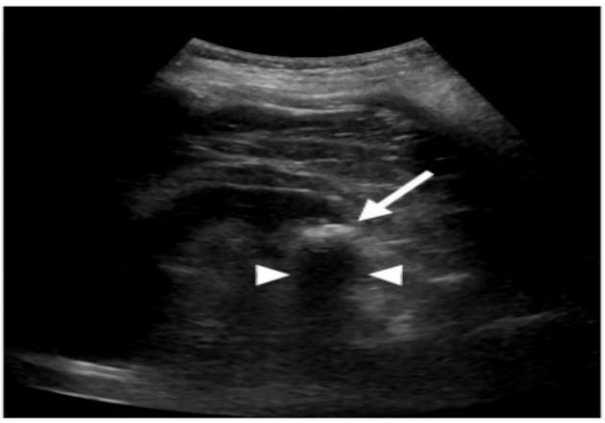


Kidney stones. Computed tomography (CT) scan of a section through the abdomen of a patient with stones (small, white) in both kidneys. Kidney stones are usuallyformed by the precipitation of the mineral salt
calcium oxalate from the urine.Case 6



66 year old female presenting with hypogastric pain withbilateral costovertebral angle tenderness. Axial
NCCT image shows a calculus in left upperureter.

Case 7



Patient data:
79-year-old man with history of nephrolithiasis, undergoingfollow-up ultrasound.
Sagittal image of the left kidney reveals a large stone in thelower pole (arrow), with posterior acoustic shadowing (arrowheads).

Case 8

40 year old man completed from left side flank pain

Procedure:x-ray

Large number of huge stones in the left kidney - a combination of a central collection system centredstone and cortical stones.

Ureteric stone with a dilatated pelvicalyceal system and asmall perirenal effusion 30 years old female

A large Bladder stones
92 years old female with Hematuria

50 years old female completed from haematuria and pelvic pain .A large spiculated calcification is seen in the bladder on this unenhanced CT scan. The patient had no renal stonesor other known urinary tract pathology. A few smaller stones are present as well.

Tumor

An abnormal mass of tissue that forms when cells grow and divide more than they should or do not die when they should. Such as: Polyps and lipomas .

Malignant tumors are cancerous. Cancer cells can break away from tumors and travel through the bloodstream or lymphatic system causing what's known as Secondary tumors. Tumors of the renal calyces, renal pelvis and ureters start in the layer of tissue that lines the bladder and the upper urinary tract, called the urothelium .Cancer that starts in the urothelium is called urothelial (or transitional cell) cancer. This is the most common type of cancer found in the bladder,as well.

Case
Signs and symptoms of the patientBlood in the urine
Pain while urinating
Losing weight without tryingFatigue

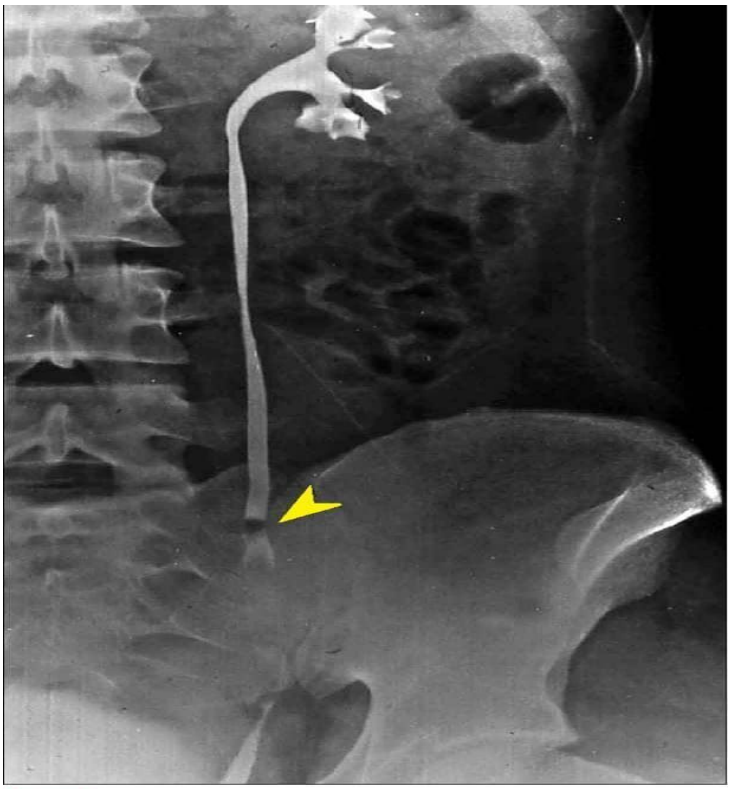


Figure 1 Retrograde ureteropyelography showing fibroepi-

Benign ureter tumor
A 40 years old male came to the hospital suffering from blood inurine.
An x-ray was taken and found to have tumor in the ureter.

Case
Signs and symptoms
heamatouria and dysuria with back pain

A 52 years old female patient suffering from hematouria and dysuria
An xray was taken andcarcinomal bladder tumor was found

CASE
Signs and symptomsHeamatouria
A lumb on the side or backLoss of appetite
Weight loss not caused by dieting Fever that is not caused by an infection

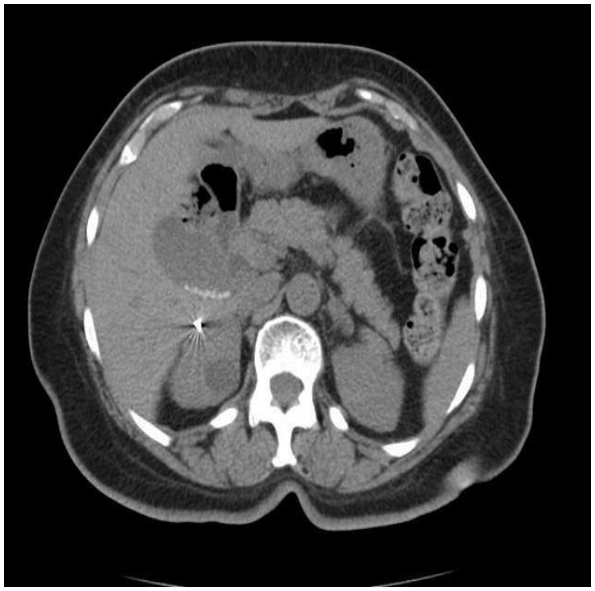
A 60 years old woman was rushed to the hospital afte admitting to have a lumb on her back ,fatigue ,and lowerback pain on her left side a A ct scan revealed her to have a renal carcinoma on herleft kidney

Renal system cysts :

Renal cyst is a generic term commonly used in description ofany predominantly cystic renal lesion. The majority of parenchymal cystic lesions represent benign epithelial cysts; however, malignancy such as renal cell carcinoma may also present as a cystic lesion

Female 35 years old complained from dull pain. Procedurex-ray abdomen high resolution scan.
Finding :

calyceal diverticulae Male 75 years old complained frompain in the upper abdomen



Procedure: Ct abdomen high resolution scan. Finding :Hypoattenuating renal cysts characterized ashomogeneous thin-walled and nonenhancing fluid- attenuation lesions.
Female 30 years old complained from fever if the cystbecomes infected.

Procedure :MRI abdomen high resolution scan.

Finding :The fluid - filled branching cavities in both renal pelvises are not dilated calyces , but peripelviccysts , as could be proven by MRI Male 60 years old complained from pain in the back or sideof the abdomen.

Procedure :Ct abdomen high resolution scan.

Finding: CT images demonstrate a simple cyst in the upper pole of the right kidney. Incidental note ismade of cholelithiasis

Renal obstruction

Male 79 years old complained from blood in theurine.

Procedure :ultrasound abdomen simple renal cystshigh resolution scan.

Finding :Debris filled renal cyst possibly caused bya hemorrhage or infection mimicking a mass.

Renal obstruction

Renal obstruction can occur to many reasons suchas stones ,tumors or

cognitively

Case : 28 years patient complaing from difficulturination and blood in urine

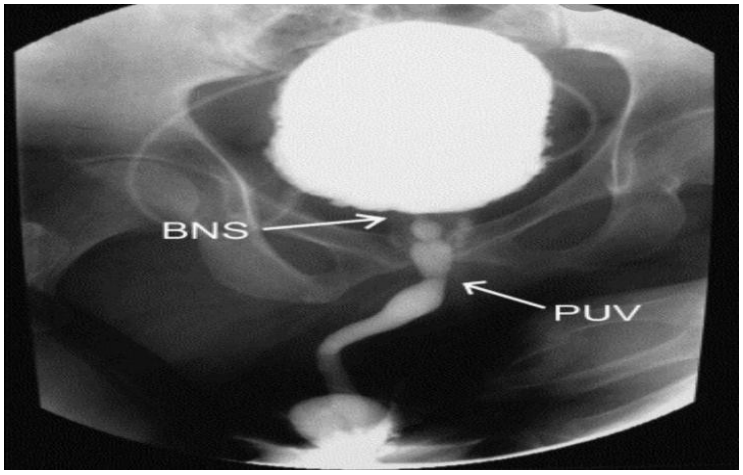
Procedure : IVU

Finding : IVU special procedure show obstructionin upper ureter lead to hydronephrosis

Picture above shows a Case : 52 years patient complaing from Recurring urinary tract infection(UTI).

Procedure : MRI SCAN T2 image Finding : MRISCAN Show obstruction in lower ureter lead to hydroureter and hydronephrosis

Posterior urethral valves (PUV) are obstructive membranesthat develop in the urethra (tube that drains urine from the bladder), close to the bladder. The valve can obstruct or block the outflow of urine through the urethra.



Picture above showa a Case of : 60 years male patient complaied from weak urine stream and painful urinationProcedure : MCUG Special procedure.

Finding : MCUG show that obstructive membranes in urethra lead to enlargemant in urethra and back Flow of urineto the bladder

Another case:

35 years patient complaing from enlarged bladder and itshow as large mass in abdomen

Procedure : Ultra sound scan

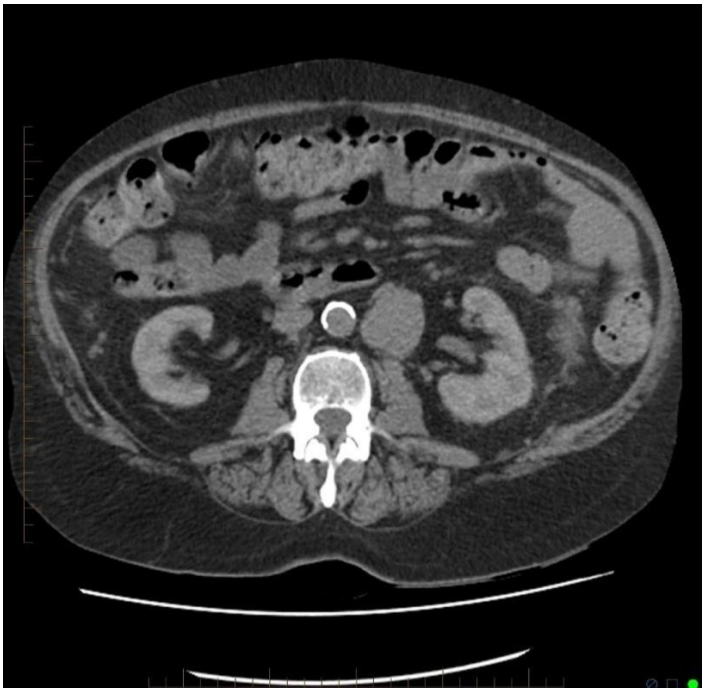
Finding : Ultra sound scan show posterior urethral valveobstruction.

Acute renal failure

Acute renal failureoccurs when the kidneys suddenly becomeunable to filter waste products from the blood. When kidneysloose their filtering ability, dangerous levels of wastes may accumulate, and your blood's chemical makeup may get out of balance.

Case

Acute renal failure (anuria) 48 hours post IV radiographiccontrast injection for assessment of disseminated malignancy.



Patient data
75 year’s old, male
Residual contrast in the renal parenchyma but not the collecting systems without contrast in other organs or bloodvessels desite isolated IV contrast injection 2 days previously

7.Skeletal System

1-Osteoporosis:

is a bone d seas that deve ops when bone mineral density and bone mass decreases, orwhen the quality or structure of bone changes

Symptoms:

1_ Fragility-related fractures. These occur when even mild impact causes a fracture of thewrist, back, hip or other bones

2_ Height loss. More than two inches in height can be3_ Receding

ggums

4_ Acurved, stooped shape to the spine5- Lower back pain

The picture is of a 28 year old man.

Who came to complain about fracture in the pelvis

Procedure: x-ray

Finding: Osteoporosis

The picture is of a 33 year old man.

Who came to complain about losing some of his height and lower back pain

Procedure: x-ray ***Finding***: Osteoporosi

2 Rickets:

Rickets is a systemic disease of infancy and childhood that is the equivalent of osteomalacia in the mature skeleton. In this condition, calcification of growing skeletal elements is defective because of a deficiency. of vitamin D in the diet or a lack of exposure to ultraviolet radiation (sunshine), The early radiographic changes in rickets are best seen in the fastest-growing portions of bone, such as the sternal ends of the ribs, the proximal ends of the tibia and humerus, and the distal ends of the radius and ulna.

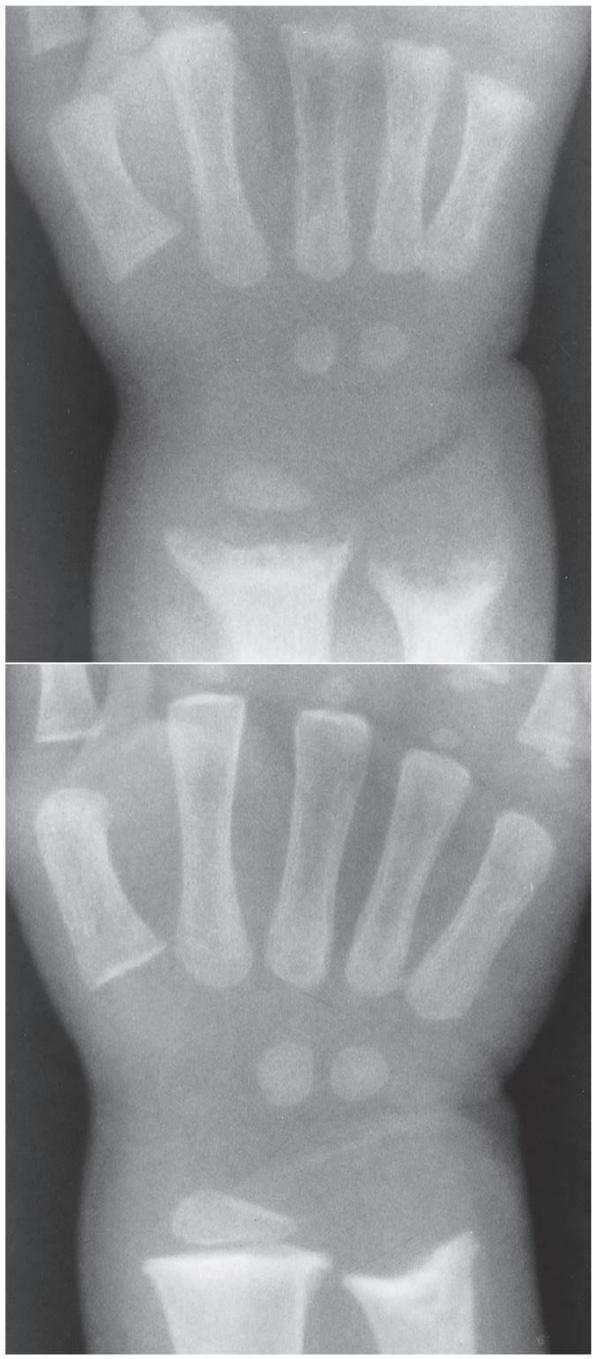
Symptoms Rickets:

Severe pain in the spine,pelvis,legs..
Severe decrease in the level of calci.um in the blood.Weakness in the muscles and joints.
Short stature its very low in weight.

This picture is 15year old boy complinig of very low in weight .
Procedure : CT

Finding : rickets .

Picture toke from reference (radiographic pathology) .



This picture is 6 year old boy complinig of very low in weight .
Procedure : CT

Finding : weakness in the muscle and joint .

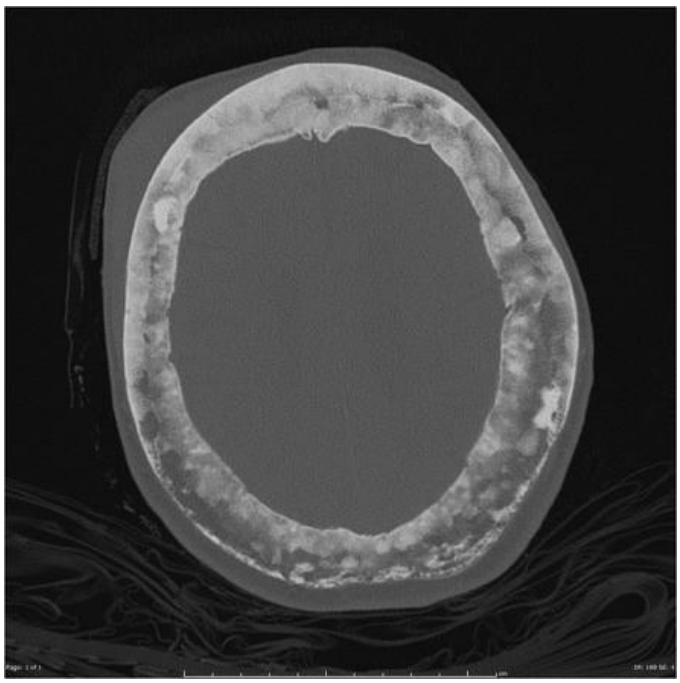
Picture toke from reference (radiographic pathology) .

3–Paget's disease of bone:–

A chronic condition in which both the breakdown and regrowth of bone are increased

Symptoms of Paget's disease of bone:

Symptoms can include: constant, dull bone pain. joint pain, stiffness and swelling. a shooting pain that travels along or across t Osteoporosis drugs (he body, numbness and tingling, or loss of movement in part of the body.



The picture is of a 23 year girl

The picture is of a 23 year man

Who come complaining of headaches , pain	who come complaining of
Hearing loss and pain in the bones CT	muscle and joint Procedure : Procedure : CT
Finding : paget .	Finding : paget .

Picture toke from reference (radiographic pathology) .

4-Congenital bone disorders:

The term congenital bone disorder describes alterations in typical combination that present themselves at one or multiple parts of the skeletalsystem Many diseases of the skeletal system are congenital in the sense thatthey become evident at or soon after birth.

This does not imply that they all are genetically determined. Most are caused byfactors operating during pregnancy, delivery, or early infancy.

Intrauterine injuries of the skeletal system were dramatically seen in children born of some women who received thalidomide, a drug previously used to treat morning sickness, during the initial three months of pregnancy. These children suffered severe extremity defects such as shortened or malformed limbs (phocomelia). Most intrauterine injuries are probably not caused by drugs, however, but perhaps by viral, hormonal, or mechanical factors and a examples of these diseases spinal deformities.

-***Kyphosis***

is an exaggerated, forward rounding of the upper back. In older people, kyphosis is often due to weakness in the spinal bones that causes them to compress or crack. Other types of kyphosis can appear in infants or teens due to malformation of the spine or wedging of the spinal bones over time.

-Scoliosis

Is where the spine twists and curves to the siIt can affect people of any age, from babies to adults, but most often starts in children aged 10 to 15. Scoliosis can improve with treatment, but it is not usually a sign of anything serious and treatment is not always needed if it's mild

A 26 year old girl complained from uneven shoulders

One shoulder blade is more prominent than other waist asymmetry. High resolution x-ray image

5-Fractures:

A fractures is a break, usually in a bone. If the broken bone punctures the skin, it is called an open or compound fracture. Fractures commonly happen because of car accidents, falls, or sports injuries.

Symptoms of fractures:

Intense pain, Deformity - the limb looks out of place Swelling, bruising, or tenderness around the injury Numbness and tingling, Problems moving a limb.

1- Fixation:

External fixation is a method for stabilizing open limb fractures and other complex limb injuries (e.g. extensive soft tissue or vessel injuries). It is mostly a temporary measure until definitive surgical treatment (open reduction and internal fixation) can be safely performed.

The signs and symptoms of fixation fracture:

The signs and symptoms of a bone fracture will depend on the severity and location of the injury. Generally, the

-Pain
-Swelling
-Difficulty moving
-Bruising
-Altered normal limb alignment

Patient male 27 years old Procedures: x-ray Complaining pain in the ankle

2- *Displaced oblique fractures:*

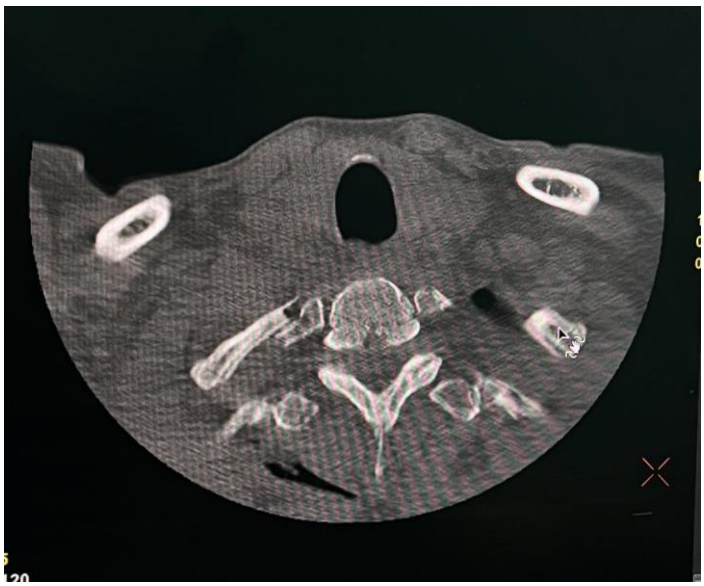
A displaced fracture means the pieces of bone moved so much that a gap formed around the fracture. Non-displaced fractures are still broken bones, but the pieces weren't moved far enough to be out of alignment during the break. tests are done to diagnose an oblique fracture:

X-rays: An X-ray will confirm any oblique or other fractures and show how damaged your bones are.

(MRI): to get a complete picture of the damage to bones and the area around them. This will show them tissue around your bones, too.

-The symptoms of oblique fracture:

-Pain.
-Swelling.
-Tenderness.
-Inability to move a part of body that you usually can.
-Bruising or discoloration.



Patient male 30 years old her come complaining clavicle .Procedures: CT high resolution scan

6-Orthopedic cancer:

can begin in any bone in the body, but it is commonly affecting the aquarium or long bones on arms and legs. Orthopedic cancer is rare, with less than 1 per cent of all types of cancer. In fact, non-cancerous moisturizing tumors appear more common than cancer tumors
The term "bone cancer" does not include cance types that begin elsewhere from the body and spread (transmitted) to the bone. Instead, those cancers are named in place where I started, such as breast cancer that go to bones. Some types of bone cancer in children occur mainly, while some of them are often affecting. Surgical removal is the most common treatment but can be used chemotherapy and radiotherapy.
The resolution of using surgery, chemotherapy and radiotherapy on the type of bone cancer is processed.

-Benign Bone:

Tumors Benign bone neoplasms generally displace soft tis sue , whereas malignant bone tumors produce true soft tissue swelling . When there is bone expansion , an intact cortex with a sclerotic margin usually indicates a benign lesion . Benign bone neoplasms occur much less often than do bone metastases.

Radiographic Appearance of giant cell tumors:

Agiant cell tumor is a benign solitary tumor that usually grows in the ends of long bones, and contains unusually large cells that are called giant cells. They most commonly occur in the femur (thighbone), tibia (shinbone), and distal radius (wrist), and sometimes occurs in the lower end of the spinal cord.

(osteoclastoma) typically arises at the end of the distal femur or proximal tibia of a young adult after epiphyseal closure 20- to 40 - year olds) . MRI is used to de termine intraarticular extension

Signs&;Symptomsof a giant cell tumor ÷

A visible mass · Bone fracture · Fluid buildup in the joint nearest the affected bone

Radiographic Appearance of Enchondromas:

An enchondroma is a type of benign bone tumor that originates from cartilage. It is not cancerous. It most often affects the cartilage that

lines the inside of the bones. Enchondromas are the most common type of hand tumor. The exact cause of enchondroma is not known. They are most fre quently found in children and young adults
,T2 - weighted MR images demonstrate a lesion.

Signs&Symptoms:

Hand pain, if the tumor is very large or if the affected bone has weakened and caused a hand fracture.

-radiographic appearance of Osteochondroma:

Osteochondroma is a growth in the cartilage and bone at the end of the bone near the growth plate. It most often affects the long bones of the leg, pelvis, or scapula. Osteochondroma is the most common noncancerous bone growth.
Osteochondroma:
(exostosis) is a benign growth of bone with a cartilaginous covering that arises in the hood of a child or teenage years, especially around the knee. Metastases occur in the epiphyseal plate the annulus.

The best modality to demonstrate the thickness of the cartilaginous cap and thus rule out malignant con version is MRI with long TR pulses

-Signs&Symptoms:

uncomfortable heaviness and pain in the spine.

Radiographic Appearance of Osteomas:

Osteomas are benign head tumors made of bone. They're usually found in the head or skull, but they can also be found in the neck. While osteomas are not cancerous, they can sometimes cause headaches, sinus infections, hearing issues or vision problems – however, many benign osteomas don't require treatment at all Diagnosis of these tumors may be incidental on radiographs taken because of the pain produced by bone

expansion
Well - circumscribed extremely dense round lesions less than 2 cm in diameter

-*Signs&Symptoms*:

Headaches · Sinus infections · Hearing or vision problems

Non ossifying Fibroma (NOF):

A non-ossifying fibroma is a benign (non-cancerous), non-aggressive tumor that consists mainly of fibrous tissue. It usually occurs in the thighbone or shinbone but may also occur in the upper extremities. most patients with an NOF should return to their doctor regularly for X- rays to make sure the tumor is not coming back or growing.

-Signs and symptoms:

Mild swelling or soreness in the affected area, even during periods of inactivity. A broken bone that is later discovered to be caused at least partly by the nonossifying fibroma that has weakened the overall strength of the bone.
MRI appearances of non-ossifying fibromas are variable and depend on when along with the development and healing phase the lesion is imaged.

Osteosarcoma:–

is a type of bone cancer that begins in the cells that form bones. Osteosarcoma is most often found in the long bones — more often the legs, but sometimes the arms — but it can start in any bone. In very rare instances, it occurs in soft tissue outside the bone.

-Signs and symptoms of osteosarcoma may include, among others:

Swelling near a bone. Bone or joint pain.

Bone injury or bone break for no clear reason.

-MRI is the most accurate tool for determinig the limits of tumor within and outside the bone. MRI should include the whole of the involved bone with one joint above and below so that skip lesions are not missed in the same bone and across the joint.

20 yearold girl complaining about 29
year old man complaining Swelling in the wrist

Procedure : X-ray

Finding : Giant cell tumors .

Picture toke from reference (radiographic pathology) .

40 year

old man complaining about Exhaustion and headache . Procedure : MRY .

Finding : osteomas . 36 year old man complaining

About osteosarcoma . Procedure :CT Finding

Pain and swelling

43 year old woman complaining about Fractures without a known reason .

Procedure : x_ray .

Finding : Non Ossifying Fibroma (NOF) .

3 Pictures toke from reference (radiographic pathology)

-*Malignant Bone Tumors*:

Malignant bone neoplasms generally cause soft tis sue swelling and cortical bone erosion that has a poorly defined or absent margin. The neoplasm ex tends into the soft tissue through spiculations (fin gerlike

projections). Plain radiographs may identify a single lesion. A radionuclide bone scan or posi tron emission tomography (PET) scan can detect si lent lesions when minimal cellular destruction has occurred.

-*Bone Metastases ÷*

Metastases are the most common malignant bone tumors, spreading by means of the bloodstream or lymphatic vessels or by direct extension. The most common primary tumors are carcinomas of the breast, lung, prostate, kidney, and thyroid. Favorite sites of metastatic spread are bones containing red marrow. such as the spine, pelvis, ribs, skull, and the ends of the humerus and femur. Metastases distal to the knees and elbows are infrequent but do occur, es pecially with bronchogenic (lung) tumors. The best screening examination for the detection of asymptomatic skeletal metastases is the radionuclide bone scan or the PET scan which is unquestionably more sensitive.

Radiographic Appearance of Osteogenic

Osteogenic sarcoma generally occurs in the end of a long bone in the metaphysis (especially about the knee). This tumor consists of osteoblasts. Most os teogenic sarcomas arise in persons between 10 and 25 years old, although a smaller peak incidence is seen in older persons who have a preexisting bone disorder, particularly Paget's disease. The usual initial com plaints are local pain and swelling, sometimes fol lowed by fever, weight loss, and secondary anemia. Pulmonary metastases develop early, and a plain chest radiograph should be obtained to exclude this unfavorable prognostic sign. If no metastases to the lung are detected by this modality, CT or a PET scan should be performed.

1- Radiographic Appearance of Ewing's Sarcoma:

Ewing's sarcoma is a primary malignant tumor aris ing in the bone marrow of long bones. A tumor of children and young adults, Ewing's sarcoma has a peak incidence in the midteens and is rare in persons over 30 years of age. The major clinical complaint is lo cal pain, often of several months' duration, that persis tently increases in severity and may be associated with a tender soft tissue mass. Patients with this tumor char acteristically have malaise and appear sick, often with fever and leukocytosis, suggestive of osteomyelitis. The best screening examination the MRI.

2- Radiographic Appearance of Multiple Myeloma :

Multiple myeloma is a disseminated (widespread) malignancy of plasma cells that may be associated with bone destruction, bone marrow failure, hyper calcemia, renal failure, and recurrent infections. The disease affects primarily persons between 40 and 70 years of age This

frequently occurring primary bone tumor attacks the intramedullary canal of the diaphysis. Typical laboratory findings include an abnormal spike of monoclonal immunoglobulin and the pres ence of Bence Jones protein in the urine.

Because multiple myeloma causes little or no stimu lation of new bone formation, radionuclide bone scans may be normal even with extensive skeletal infiltration.

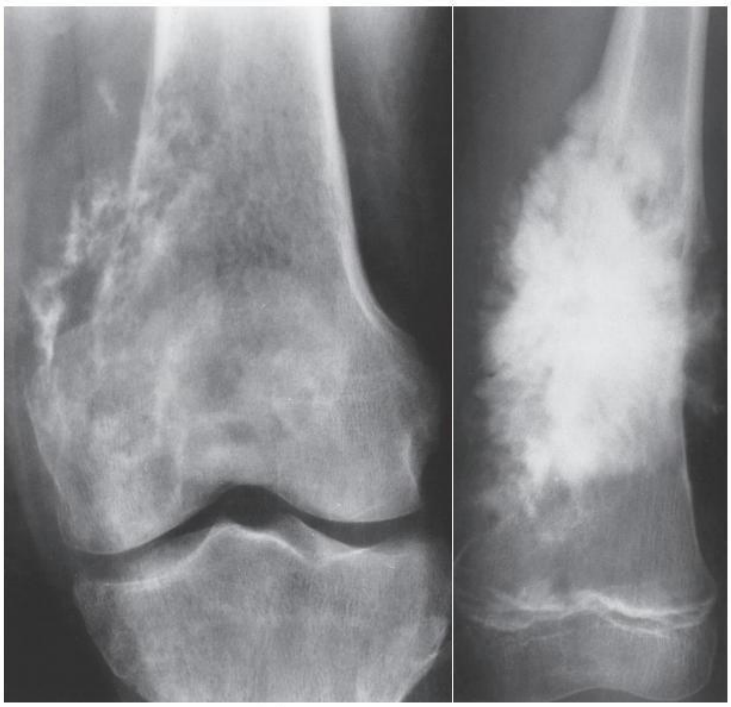
3- Radiographic Appearance of Chondrosarcoma :

Chondrosarcoma is a malignant tumor of cartilaginous origin that may originate anew or within a preexisting cartilaginous lesion .Tumor grading of this particular neoplasm de pends on the maturity and differentiation of the cells.

Chondrosarcomas commonly occur in long bones, but often originate in a rib, scapula, or vertebra.(peak incidence in 35- to 60-year olds), grows more slowly, and metastasizes later.

In addition to the bone destruction seen with all ma lignant tumors, chondrosarcoma often contains punc tate or amorphous calcification within its cartilaginous matrix.

On CT, as on radiographs, chondro sarcomas demonstrate endosteal scalloping and cortical destruction.



36 year old female complaining about fever and fractures .

Procedure x_ray

Finding : osteogenic sarcoma

50 year old man complaining about pain In the muscle and joint .

Procedure : Xray .

Finding : codman’s triangle .

d man complaining about pain In the muscle and joint .

Procedure : Xray .

Finding : codman’s triangle .

complaining about fever and swelling Procedure : X-ray .

28 year old man

Finding : multiple myeloma

.

37 year old female complaining about Swelling

Procedure : X-ray . Finding : ewing’s sarcoma

Knowledgement

Thanks to God before and after and then I see a compulsion on me and in recognition of those who are credited with their thanksgiving, I find myself indebted to all those who helped me to accomplish this research and to extend my sincere thanks and appreciation to all those who have helped us from near or far.

I would like to thank and appreciate Dr. Maha Ismail to whom we say that with polytheism, the Prophet (peace and blessings of Allaah be upon him) said: "The whale is in the sea, and the bird is in the sky, to pray to the teacher of good people."

To all our distinguished professors

"Be a scientist, if you can't, be educated, if you can't, love scientists, if you can't, don't hate them."

Finally, I thank our colleagues and comrades who have sown optimism and provided us with help, ideas and information.

Supervised by: Professor Maha Esmeal Ahmed Esmeal /professor in Diagnostic Radiology