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Paper:- Clinical Medicine

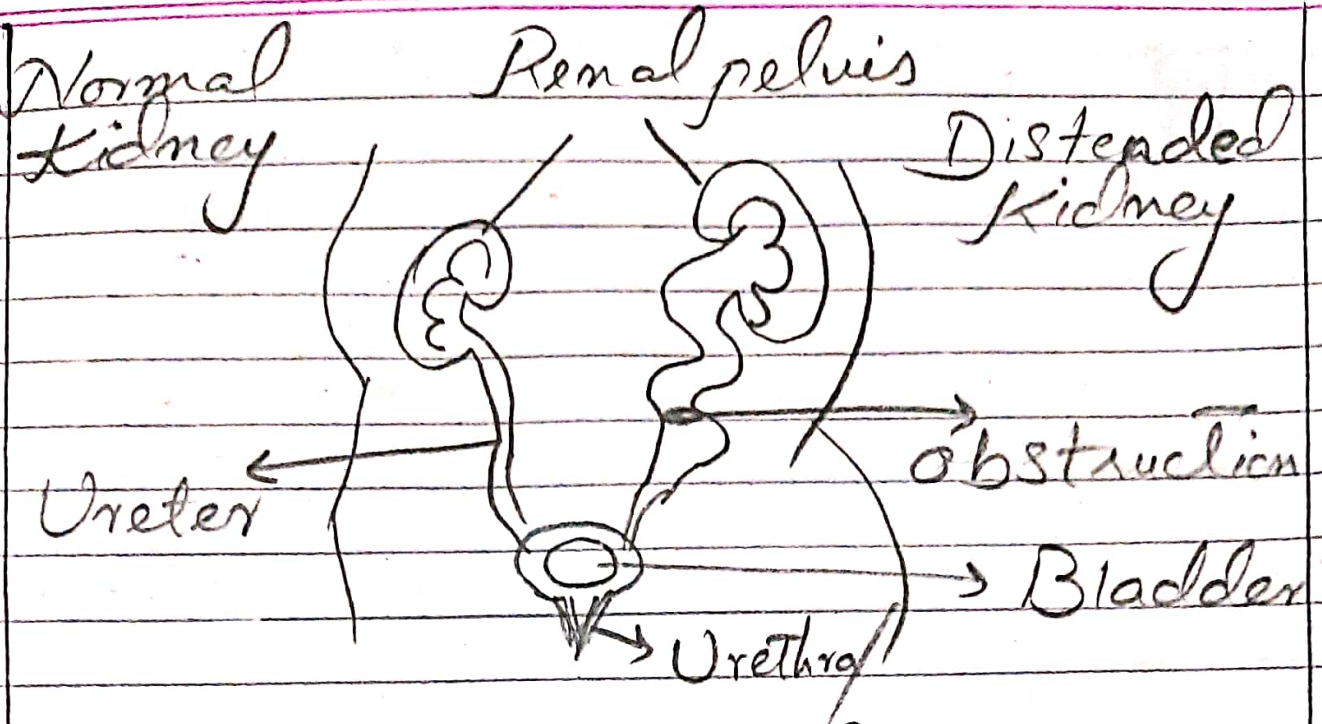
Q:- what is Hydronephrosis? Write in detail its causes, Pathophysiology, diagnosis and treatment?

Ans: Hydronephrosis:-

Hydronephrosis is the swelling of a kidney due to a build-up of urine.

It happens when the urine cannot drain out from the kidney to the bladder from a blockage or obstruction.

→ Hydronephrosis can occur in one or both kidneys. Usually due to partial obstruction to the outflow of urine.



● Etiology of hydronephrosis:-

(1) Primary hydronephrosis:-

- Intrinsic structure.
- PUI (Pelviureteric junction obstruction)
- nephroptosis
- extrinsic compression.
- Renal pelvis stone or tumor.
- Aberrant renal vessels
- Idiopathic retroperitoneal fibrosis.

2. Secondary hydronephrosis

- Vesicoureteral reflux.
- Obstruction distal to the ureteropelvic junction:- Stone, tumor, extrinsic ureteral compression, ureterocele, ca of pelvic viscera
- bladder outlet obstruction:- BPH.
- urethral obstruction.
- Pregnancy.

● Pathophysiology:-

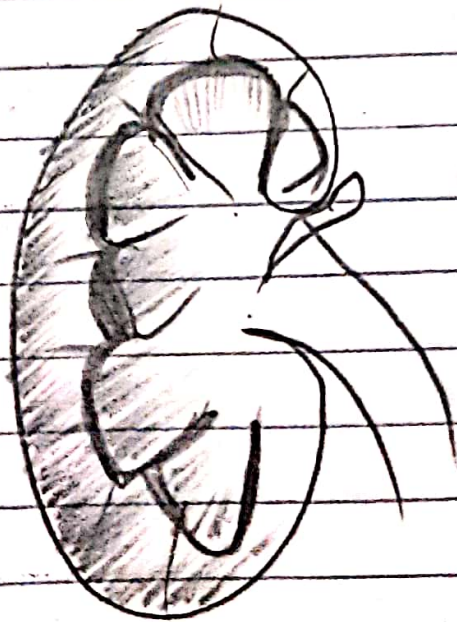
→ Dilatation of the renal pelvis and calyces.

• Types of hydronephrosis:-

- Pelvic type
- Renal type
- Pelvorenal type :- most common type, both the pelvis and calyces are equally dilated

Consequences of urinary tract obstruction:-

- Reduced glomerular filtration rate.
- Reduced renal blood flow (after initial rise)
- Impaired renal concentrating ability.
- Impaired distal tubular function.
- Postobstructive diuresis.



● Symptoms and signs of hydronephrosis:-

1. Asymptomatic (in some cases)
2. Pain is felt in the renal area
3. Hematuria.
4. Urinary infection, dysuria
frequency
5. Calculi
6. azotemia
7. Some large hydronephrosis
can be palpable.

● Diagnosis of hydronephrosis:-

1. Symptoms and signs.
2. Ultrasound
3. IVO
4. Cystourethrogram.
5. Cystoscopy
6. RGP
7. Delayed empty.
8. Isotope renography.
9. Urine culture.

● Treatment:-

Depends on the cause site duration, and the degree of kidney damage.

1. U.T.I Antibiotic therapy.
2. Prompt drainage
3. Corrected to the cause
4. Nephrectomy (tumor or non function kidney)

5. Relief of lower tract obstruction:-
catheter drainage, urinary diversion, including pigtail ureteral catheter.

Q2: Explain in detail the types, categories and pathophysiology of tuberculosis?

● Tuberculosis (TB):-

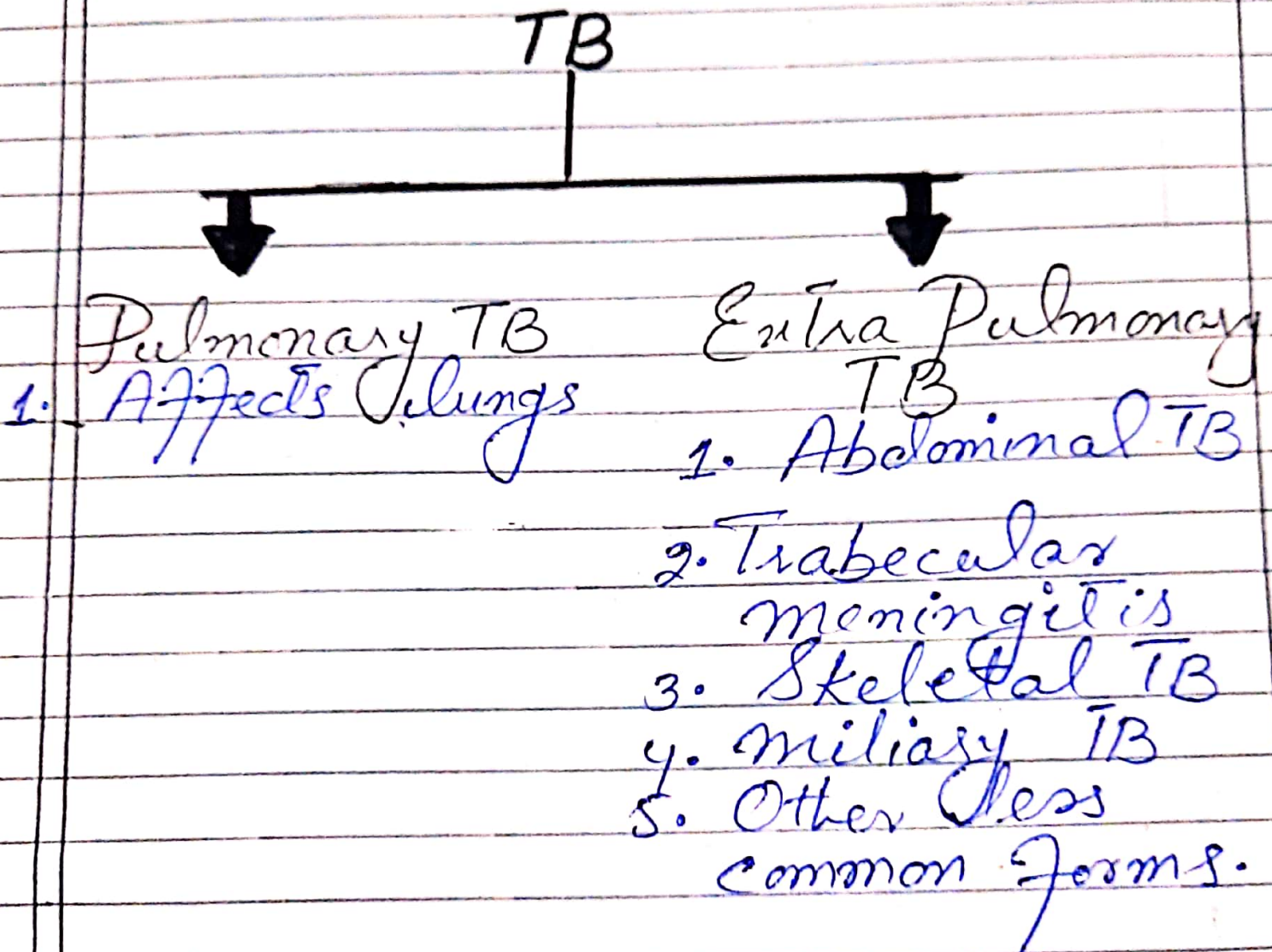
Tuberculosis (TB) is an infectious disease caused by a bacterium, called Mycobacterium tuberculosis. It often affects the lungs; however, it may involve any organ and may infect anyone at any age.

→ TB is a contagious/infectious disease which means that it spreads from person to person, usually through the air, when a person with an active disease coughs and sprays the bacteria into the air.

Tuberculosis is a public health problem worldwide, including in the United States - particularly among immune-

compromised patients.

Classification of TB:-



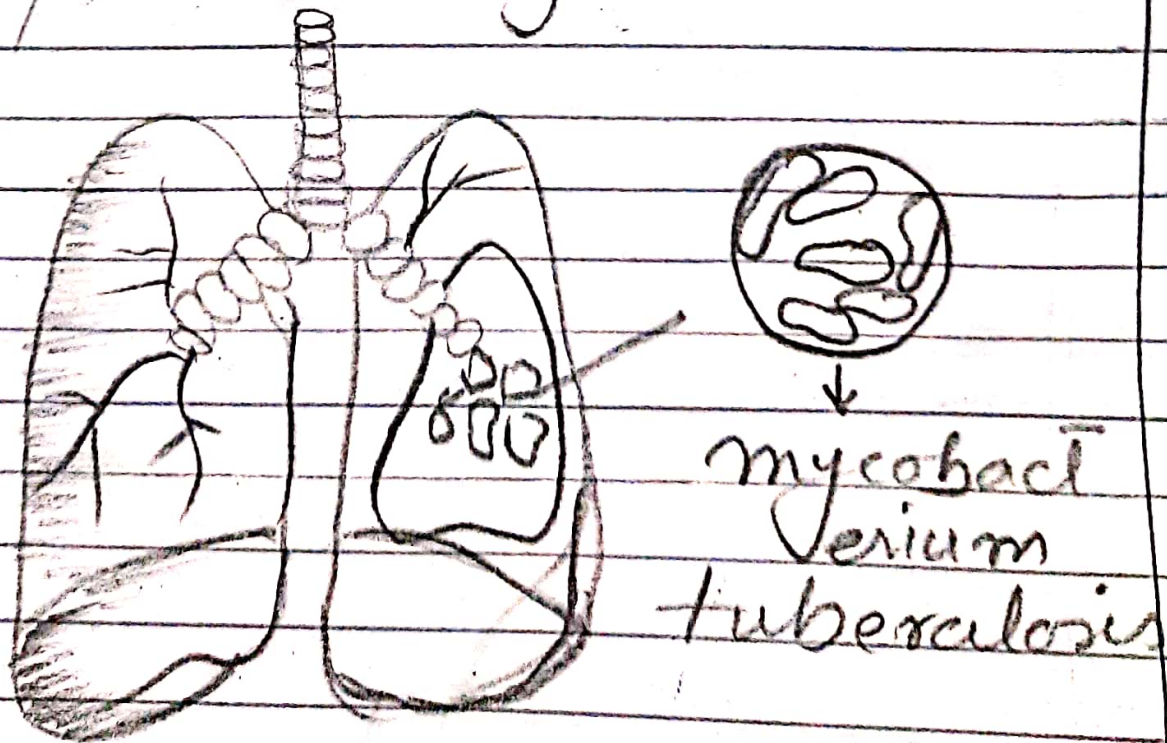
• Pulmonary TB and its types:-

• Pulmonary TB :-

It means when the bacterium *Mycobacterium tuberculosis* infection involves the lungs.

→ Pulmonary TB occurs by breathing in air droplets from a cough or sneeze of a infected person.

Infected lungs with TB



● Extra-pulmonary TB :-

1. TB Lymphadenitis :-

TB Lymphadenitis is a most common type of extra-pulmonary TB and involves the lymph nodes.

→ It tends to affect the cervical lymph nodes, which are the lymph nodes in your neck. But any lymph node can be infected.

2. Genitourinary TB :-

It is the second most common type of extra-pulmonary TB. It can affect any part of the genital or urinary tract, but the kidneys are the most common sites.

→ It usually spreads to the area from the lungs through the blood or lymph nodes.

3. Abdominal TB :-

It is a type of TB that can affect the gut, the peritoneum, abdominal lymph nodes and more rarely solid organs in the abdomen like (liver, pancreas and spleen)

● Tubercular meningitis or TB meningitis :-

when the membranes surrounding the brain and spinal cord are infected by bacteria.

● Skeletal TB :-

Skeletal TB or bone TB is TB that spread to the bones from the lungs or lymph nodes. It can affect any of the bones, including the spine and joints.

● TB Categories :-

- Active TB
- Latent TB
- Miliary TB

● Active TB :-

It is an illness in which the TB bacteria are rapidly multiplying and invading different organs of the body.

- A person with active pulmonary TB disease may spread TB to others by airborne transmission of infectious particles coughed into the air.
- Active TB is contagious and causes symptoms.
- The most common form of active TB is lung diseases but it can may invade other organs so called "Extra-pulmonary TB".

Latent TB:-

Latent TB occurs when a person has the TB bacteria within their body, but the bacteria are present in very small numbers and do not develop diseases.

- Latent TB doesn't cause symptoms and it's contagious.
- However, people with latent TB have a normal chest x-ray and negative sputum test which is often known as someone has latent TB because they have had a TB test such as TB skin test.
- There is an on going risk that the latent infection may turn into active disease.
- The risk increased by the other illnesses such as HIV or medication which compromise the immune systems.

• Military TB:-

It is a rare form of active disease that occurs when TB bacteria finds their way into the blood stream.

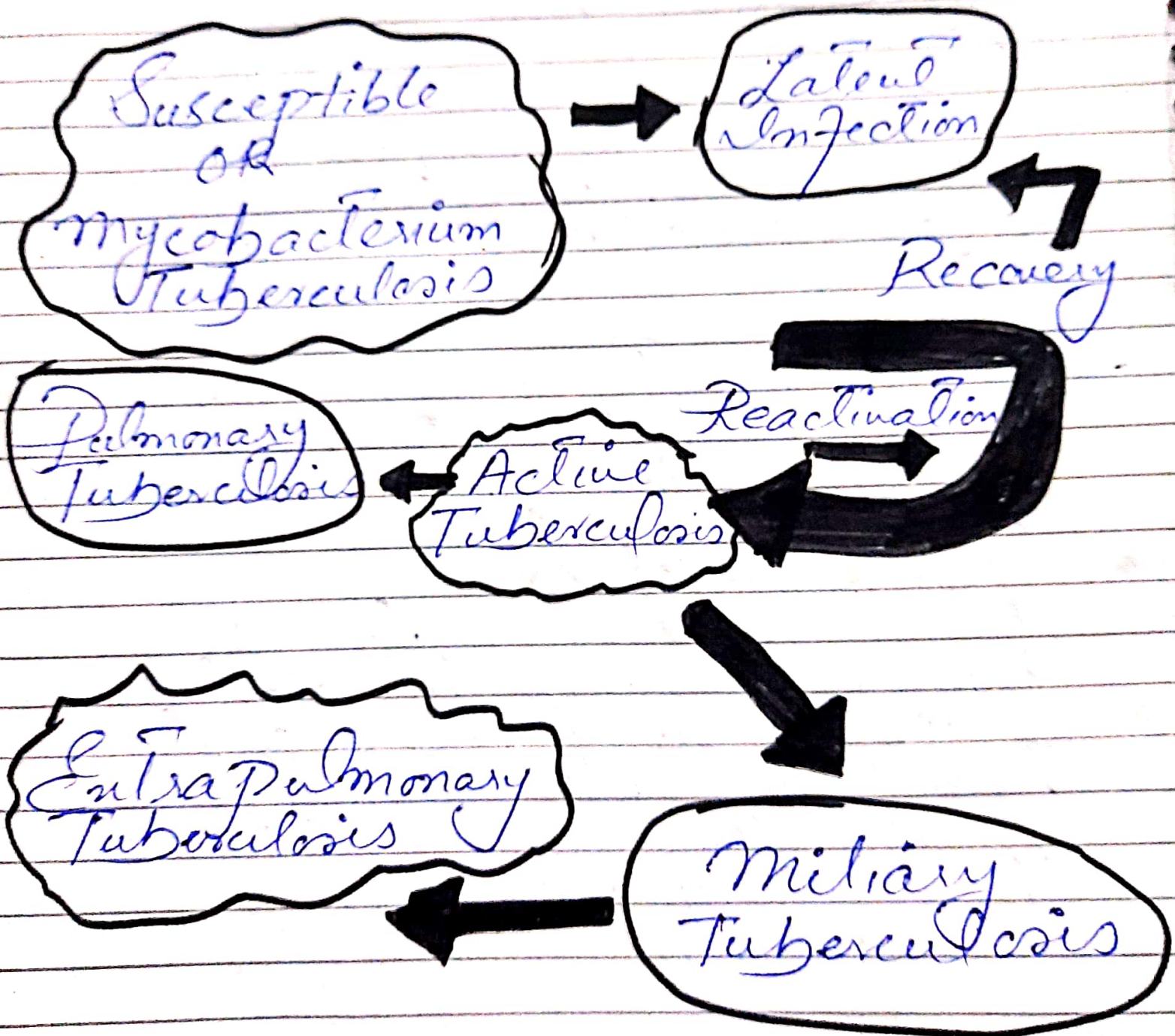
In this form the bacteria quickly spreads all over the body. in tiny nodules and affect multiple organs at once.

→ Military TB causes general active TB symptoms in addition to other symptoms.

• For example:-

If the bone marrow is infected so a person may have a low red blood cells count or a rash. This form of TB can be rapidly fatal.

Pathogenesis



● Pathophysiology:-

- (Initial infection or primary infection)



Entry of micro organism through droplets nuclei



Bacteria is transmitted to alveoli through airways



Deposition & multiplication of bacteria



Bacilli are also transported to other parts of the body with blood stream and phagocytosis by neutrophils and macrophages.

Mycobacterium

↓
Pulmonary alveoli

↓
Immune system has lodged
in (Alveolar Macrophages)

↓
Detects presence of Pathogen
and enough of the bacteria

↓
Mycobacterium bacteria inhibits
the Macrophages
(Phagosome + Lysosome) to
form phagolysomes & remain
protected inside the
Macrophages.

↓
Starts replication inside
Macrophages

↓
Primary infection occurs

↓
Cell mediated Immunity gets
activated surrounds the cells
to form granuloma (3 weeks)

↓
Leads to necrosis of tissues
at infection site (Terminus
Gone focus)

↓
Involve nearby lymph nodes
(case complex)

↓
Calcification of case complex
(Latent TB)

Q3:- How are renal stones formed and what are different types of renal stones? Which radiological procedure is most suitable for diagnosing renal stones.

● Renal stones:-

Nephrolithiasis is a condition in which hard masses (kidney stones) form within the urinary tract.

● Formation of kidney stones:-

Kidney stones may occur when:-

- The urinary concentration of crystal forming (e.g. calcium phosphate, uric acid) is high.
- The urinary concentration of substance that inhibits stone formation (e.g. citrate) is low.

● Types of renal stones:-

1. Calcium Oxalate Stones:-

The most common type of kidney stone is a calcium oxalate stone.

The result when the urine contains low levels of citrate and high levels of calcium, and either oxalate or uric acid.

Calcium oxalate stones are linked with foods high in oxalate, which is a naturally occurring substance in plants and animals.

These include beets, black tea, chocolate, nuts, potatoes and spinach.

2. Calcium Phosphate

Stones:-

Calcium phosphate kidney stones are caused by abnormalities in the way the urinary system functions.

→ Doctors may order a series of blood and urine tests to determine whether the urinary or kidney problems could be causing this type of stone.

3. Struvite Stones:-

Most common in women, struvite forms as a result of certain type of urinary tract infection.

These stones tends to grow quickly and become large, sometimes occupying the entire kidney.

Left untreated, they may cause loss of kidney function.

4. Uric Acid Stones:-

More common in men. Uric acid stones tends to occur in people who don't drink enough water or have a diet high in animal protein. More likely occurs in people who have Gout. This type of kidney stone in those who had chemotherapy.

5. Cystine Stones:-

They are caused by a hereditary genetic disorder called cystinuria that can lead to excessive amounts of the amino acid cystine collecting in the urine.

This can result in the formation of stones in the kidneys, bladder and ureter which transport urine from kidneys to the bladder.

Diagnosing Kidney Stones:-

- (1) Blood Tests
- (2) Urine Tests
- (3) Ultrasounds
- (4) Intravenous Pyelogram (IVP)
- (5) Retrograde Pyelogram
- (6) Kidney-Ureter-Bladder X-ray.

These are the diagnosing kidney stones tests but the most radiological procedures suitable for the diagnosing renal stones are MRI, CT scans and Ultrasounds.

→ Diagnosis of kidney stones is best accomplished using an ultrasound, (IVP) and CT scan.

Qy. - Briefly describe the types, causes, diagnosis and treatment of goiter.

Ans. - **Goiter:-** A condition that increases the size of thyroid is called a goiter -

A goiter may develop in anyone, but is more common in women. Sometimes it affects the way to thyroid functions -

● Types of Goiter:-

Goiters have many causes as a result there are different types. These include

- 1) Colloid Goiter (Endemic)
- 2) Nontoxic (Sporadic)
- 3) Toxic Nodular or Multinodular Goiter -

Causes:-

Iodine deficiency is the main cause of goiters. Other causes include the following:-

- (1) Graves' Disease
- (2) Hashimoto's Disease
- (3) Inflammation
- (4) Nodules
- (5) Thyroid Cancer
- (6) Pregnancy

Diagnosis:-

Doctors will check if the neck is swelling or not. There are numbers of diagnostic tests that include these below:-

- (1) Blood Test
- (2) Thyroid Scan
- (3) Ultrasound
- (4) Biopsy

Treatment:-

The treatment is based on the condition and size of goiter. Also based on the health problem that contributed to the goiter. Goiter can be treated by the following treatment:-

- (1) Medication
- (2) Surgeries
- (3) Radioactive Iodine
- (4) Home Care

Q5. - Write a detail note on
Atelectasis, Bronchiectasis,
& Pneumonia.

● Bronchiectasis:-

Abnormal and Permanent dilation of bronchi.
Bronchiectasis is a permanent dilation of bronchi and bronchioles due to destruction of the muscles and elastic supporting tissue resulting from a associated with a chronic nonhealing infection. It is a secondary disease due to persistent infection or obstruction.

● Etiology:-

Bronchiectasis is the result of chronic infection with resulting parenchymal destruction. Fibrosis further conditions leads to the following:-

- 1) Long lasting bronchial obstruction (It is due to bronchial tumors or foreign body)
- (2) Congenital or hereditary condition
- (a) Cystic fibrosis:-
Bronchial obstruction and infection due to abnormally thick mucus which plugs the smaller bronchi.

• Diagnosis:-

It can be ~~caused~~ diagnosed by

- (1) Clinical
- (2) Radiology:-
Chest XR:-
May be non-specific mild disease
CT scan bronchial thickening
- (3) Sputum Culture:-
Pseudomonas aeruginosa
H. influenzae.

Treatment:-

- (1) Eliminate cause
- (2) Improve tracheo bronchial clearance
- (3) Control Infection
- (4) Reverse air flow obstruction
- (5) Chest physical therapy
- (6) Bronchodilators
- (7) Antibiotics:- Short course, prolonged course, inhalation

Atelectasis:-

Partial or complete collapse of lungs is called atelectasis. May involve the entire lung, a lobe, segment or subsegmental.

There are four mechanisms

(1) Obstructive

(2) Non-Obstructive:-

due to loss of contact typically between the parietal & visceral pleura.

Symptoms :-

(2)

Pleurisy (chest pain with trouble breathing
inspiration)

(3)

Cough

(4)

Fever

It is the consequences of complete obstruction in the air ways. It is the most common type of disease - It results from the blockage of airways. Such types of Atelectasis are -

(1)

Obstructive (Resorptive) Atelectasis

(2)

Non-obstructive Atelectasis

(3)

Passive (Relaxation)

(4)

Compressive Atelectasis

(5)

Adhesive

(6)

Cicatrization Atelectasis

Pneumonia:-

Pneumonia is an inflammation of the lung parenchyma (alveoli rather than the bronchi) of the infective origin. It is the most common infectious cause of death. It is usually characterized by consolidation, which is a pathological process in which the alveoli are filled with a mixture of inflammatory bacteria and WBC.

Classification:-

These are 2 types of classification

- (1) Type 1 (Morphological classification)
- (2) Type 2 (Clinically - Classification)

(1) Type 1 (Morphological Classification)

It includes:-

- (1) Lobar pneumonia
- (2) Bronchopneumonia

(2) Type 2 (Clinically Classification)

It includes:-

- (1) Community-acquired pneumonia (CAP)
- (2) Hospital-acquired (HAP)

Clinical diagnosis:-

- (1) History
- 2 Signs & Symptoms
- 3 Chest X-rays
- 4 CT scans

• Complication:-

Possible include:-

- (1) Acute respiratory distress syndrome (ARDS)

It may

- (2) Fluid around the lungs
(Pleural effusion)
- (3) Lung abscesses
- (4) Respiratory failure
- (5) Sepsis which may lead
to organ failure.