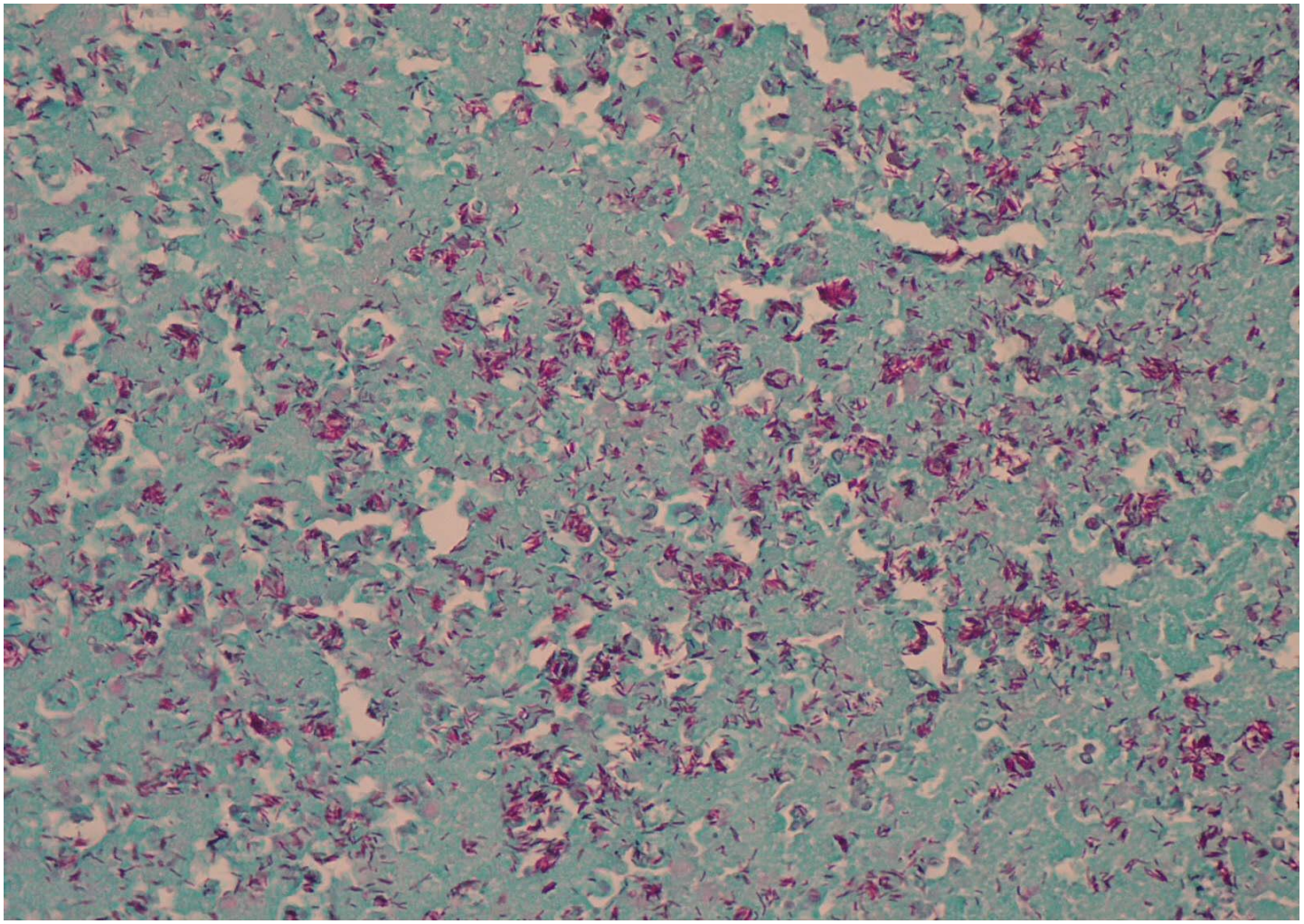
TUBERCULOSIS

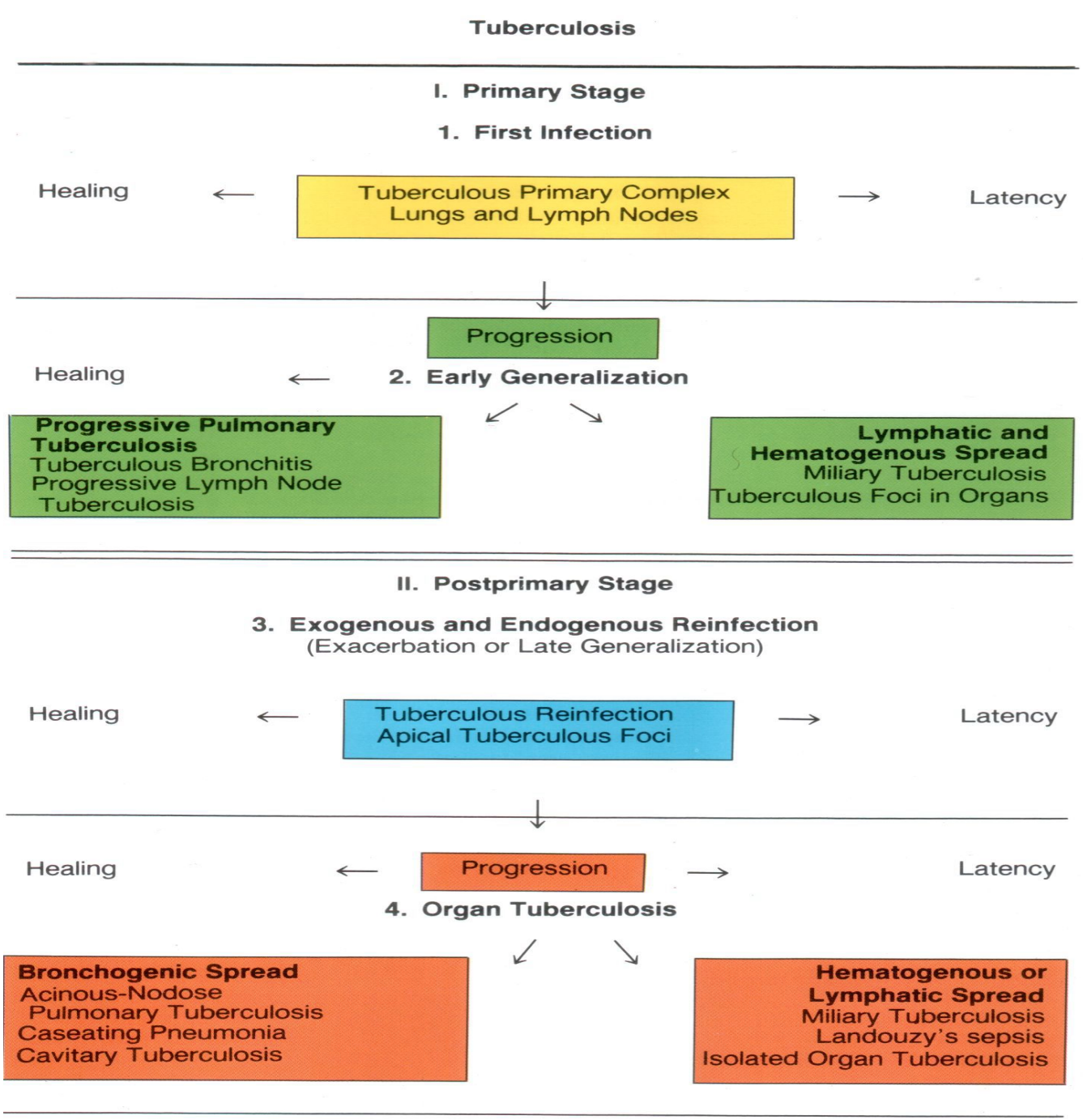
Tuberculosis is a chronic communicable disease with specific granulomatous inflammation caused by a variety of tubercle bacilli, especially *Micobacterium tuberculosis hominis* and *M. t. bovis.*

- *Mycobacterium tuberculosis (95 %)*
- *M. bovis (5 %)*



Mode of transmission

- By inhalation into the respiratory tract.
- Ingestion. Through ingestion into GI tract leads to development to tonsillar or intestinal tuberculosis.
- Inoculation. Through mucous membranes of mouth and throat, skin.
- Transplacental route results in development of congenital tuberculosis in fetus from infected mother.


Tuberculosis
I. Primary Stage
1. First Infection
Healing
Tuberculous Primary Complex
Lungs and Lymph Nodes
Latency
Progression
Healing
2. Early Generalization
Progressive Pulmonary Tuberculosis
Tuberculous Bronchitis
Progressive Lymph Node Tuberculosis
Lymphatic and Hematogenous Spread
Miliary Tuberculosis
Tuberculous Foci in Organs
II. Postprimary Stage
3. Exogenous and Endogenous Reinfection
(Exacerbation or Late Generalization)
Healing
Tuberculous Reinfection
Apical Tuberculous Foci
Latency
Healing
Progression
Latency
4. Organ Tuberculosis
Bronchogenic Spread
Acinous-Nodose Pulmonary Tuberculosis
Caseating Pneumonia
Cavitary Tuberculosis
Hematogenous or Lymphatic Spread
Miliary Tuberculosis
Landouzy's sepsis
Isolated Organ Tuberculosis

Features of Primary Tuberculosis

- Development of disease at the first getting of the activator into the organism.
- Sensibilization and allergy of HIT (Hypersensitivity of Immediate Type) .
- Prevalence of the exudative - necrotic changes.
- Tendency to hematogenous and lymphogenous generalization and also to chronic duration.
- Paraspecific reactions such as: vasculitis, nodous erythema, arthritis.
- Primary Tuberculosis used to be found most often in young children, but in industrialized countries it has become more common in the elderly and debilitated, in alcoholics, and in high-risk racial groups.

PRIMARY COMPLEX OF TUBERCULOSIS

"Ghon complex" consists of

I. Pulmonary component so called Primary affect or primary focus or Ghon's focus.

II. Lymphatic vessel component occurs by Tuberculous lymphangitis.

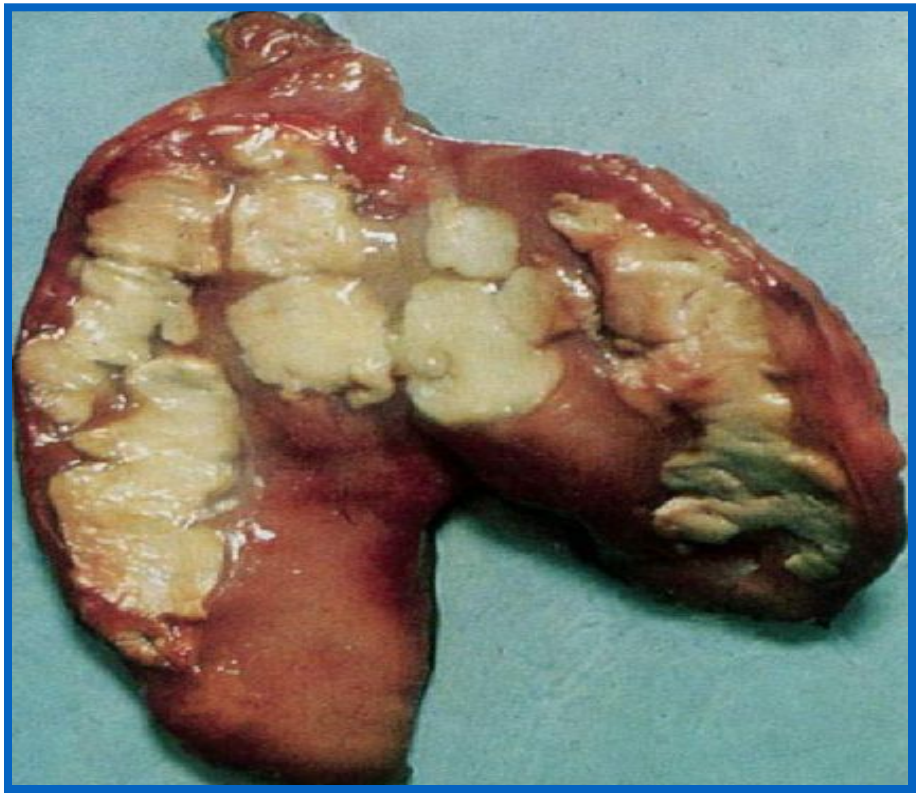
III. Lymph node component occurs by Tuberculous lymphadenitis.

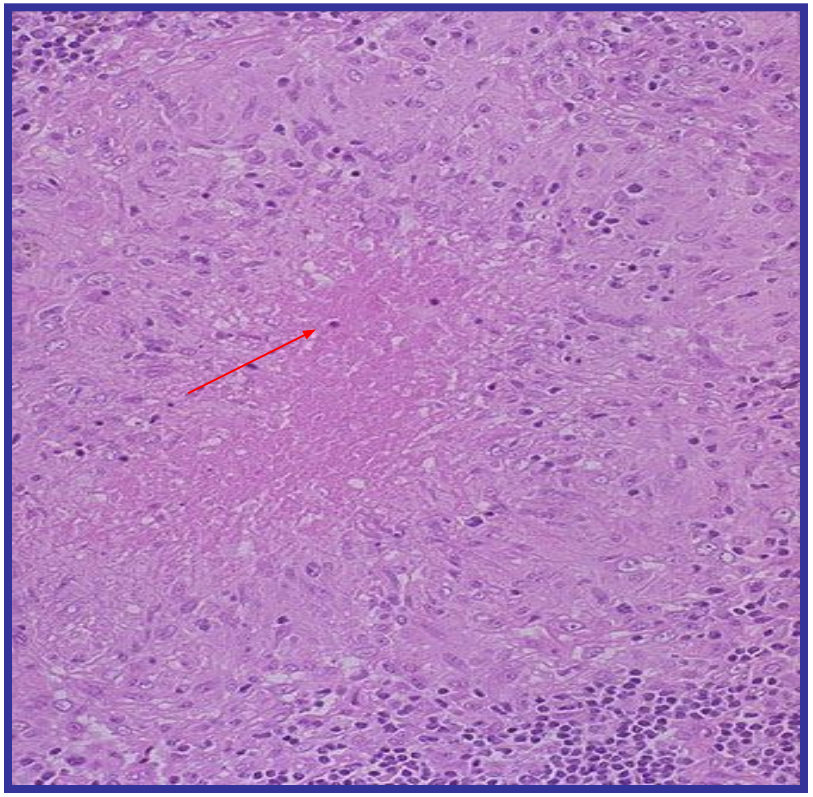
PRIMARY COMPLEX OF TUBERCULOSIS

There is small tan-yellow subpleural granuloma in the mid-lung field on the right (1). In the hilum is a small yellow tan granuloma in a hilar lymph node next to a bronchus (2).

Seen here in a **hilar lymph node** is a "caseating"
granuloma.
Granulomas have prominent caseous necrosis. Grossly, areas of caseation appear

Primary affect

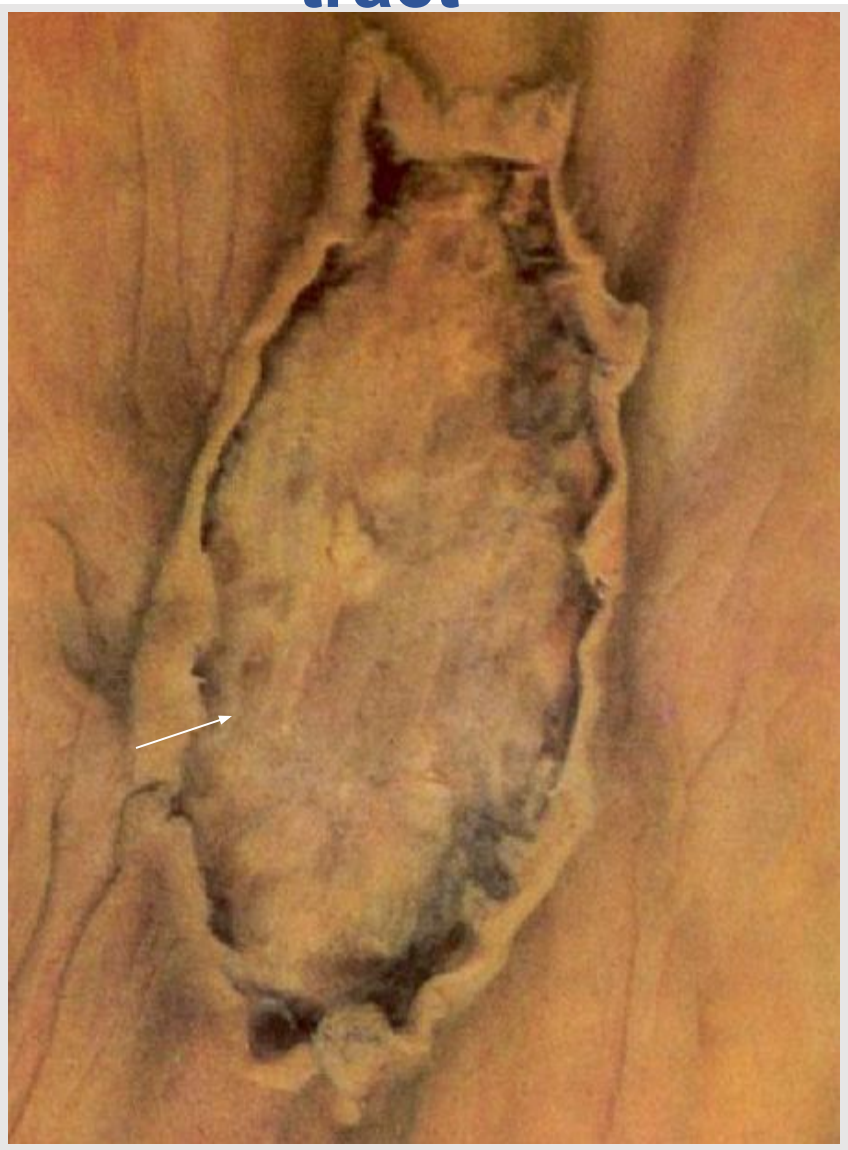




CASEATING LYMPH NODE TUBERCULOSIS

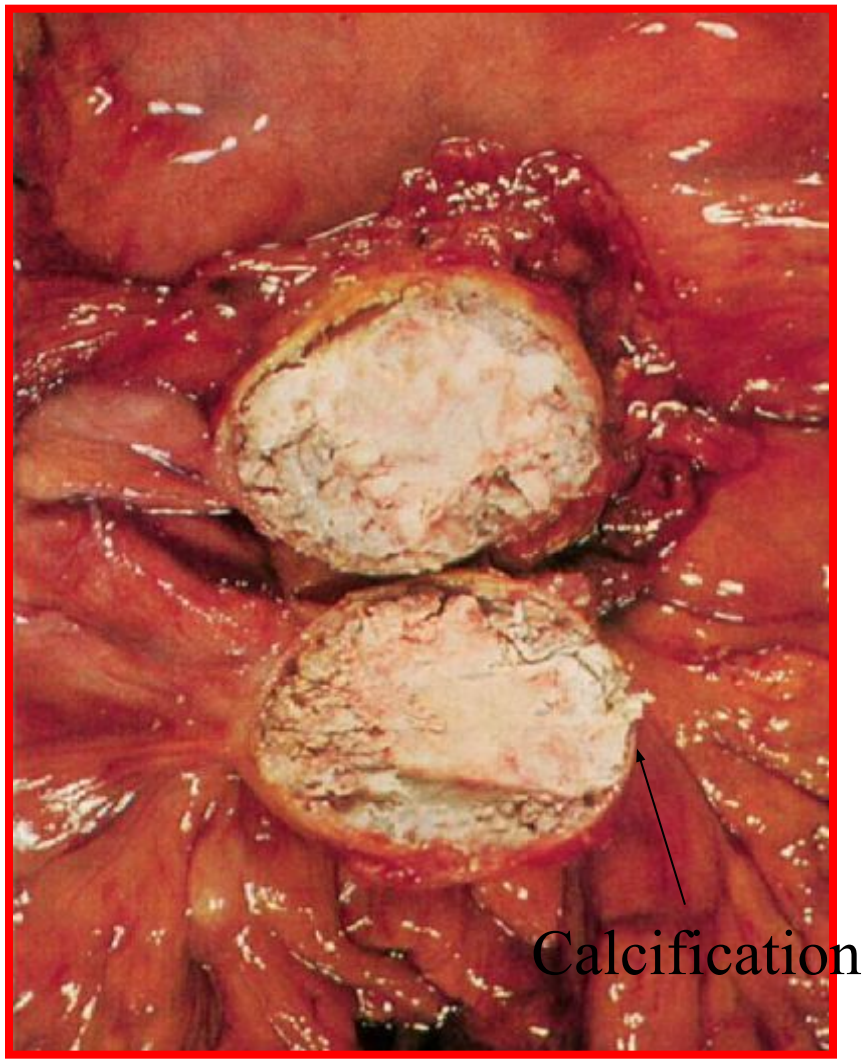
It is 1-2 cm solitary area of caseous pneumonia surrounding by perifocal serous inflammation. A central area of necrosis appears irregular, amorphous, and pink. Grossly, areas of caseation appear cheese-like.

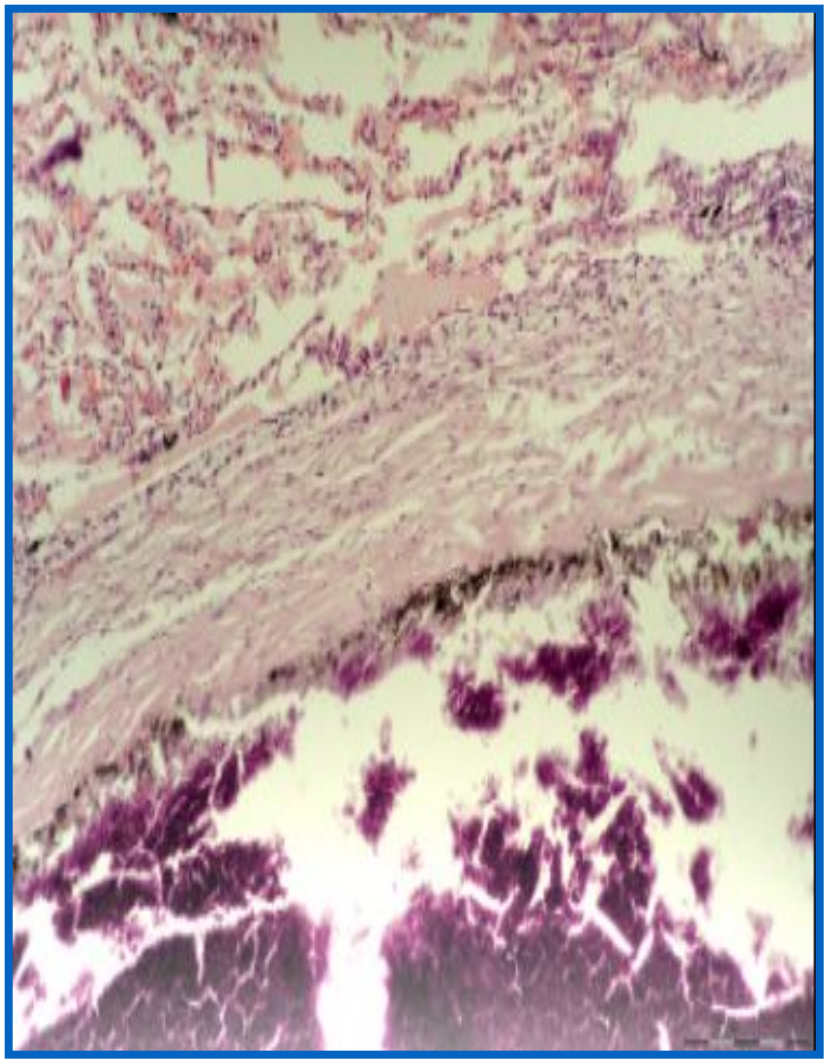
Primary tuberculosis of alimentary tract



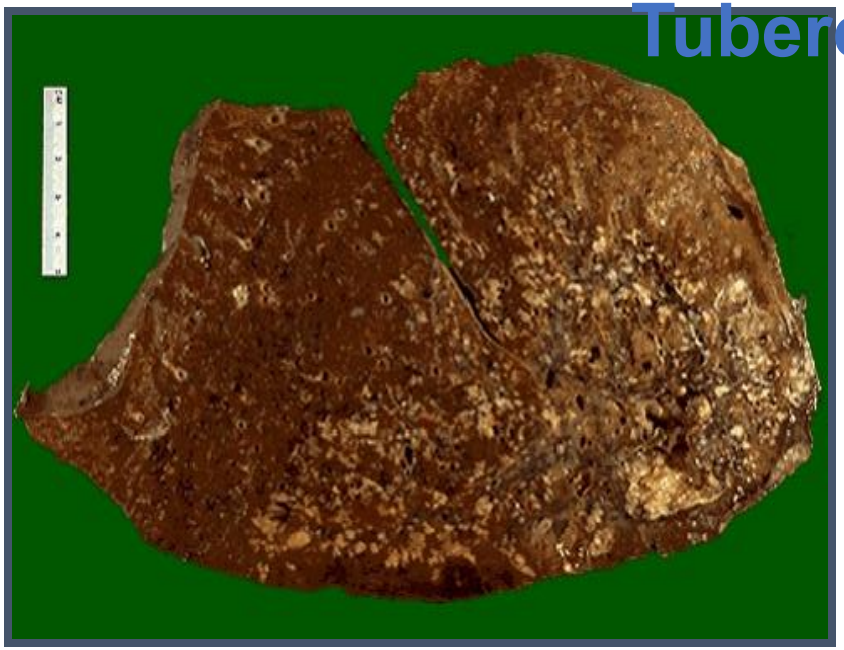
Tuberculous mesenterial

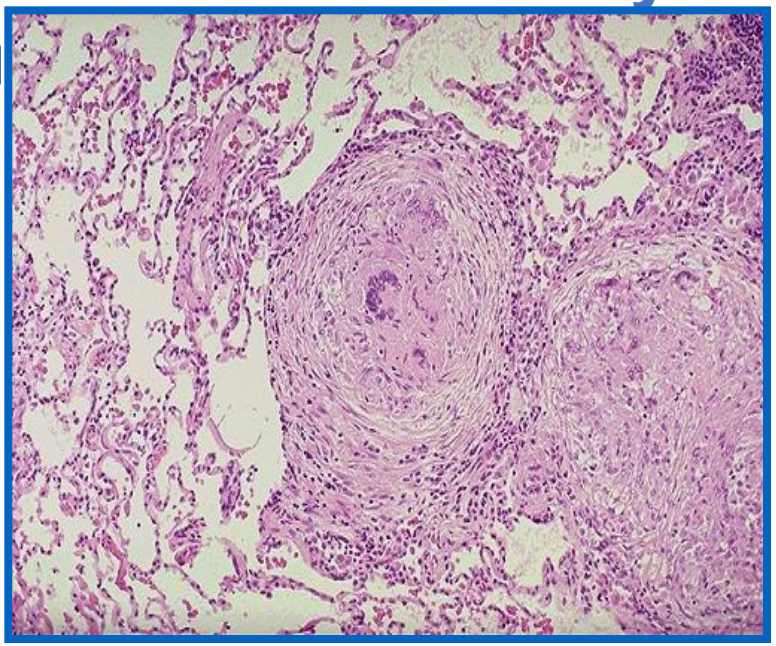
Calcified pulmonary lymph nodes in tuberculosis

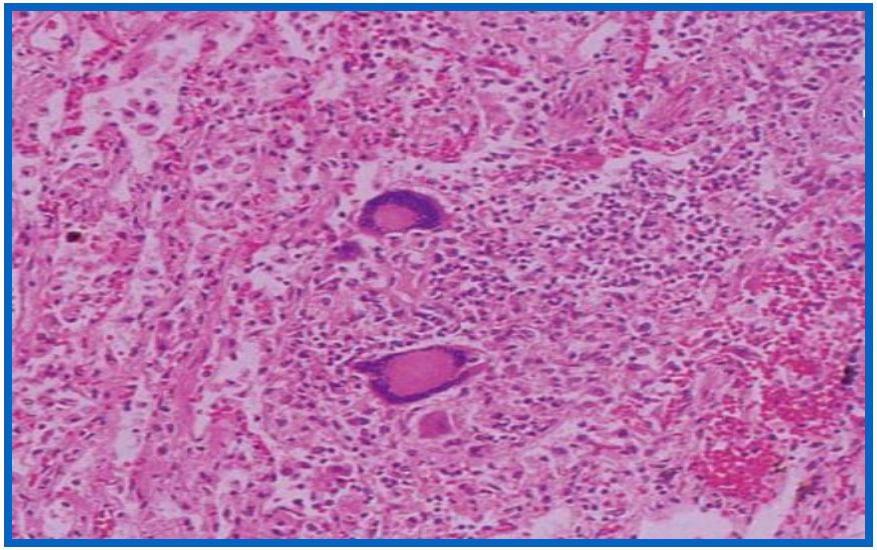


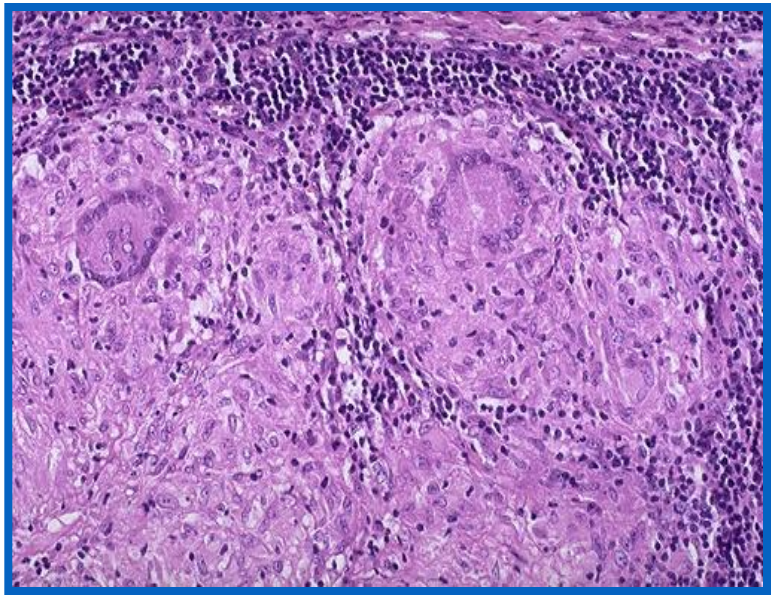


Hematogenous generalization of Primary Tubercu









Classifications of hematogenous tuberculosis

- ***Generalized hematogenous tuberculosis:***

a) The most acute tubercular sepsis.

b) Acute general miliary tuberculosis.

c) Acute general large-focal tuberculosis.

d) Chronic miliary tuberculosis.

- ***Hematogenous pulmonary tuberculosis:***

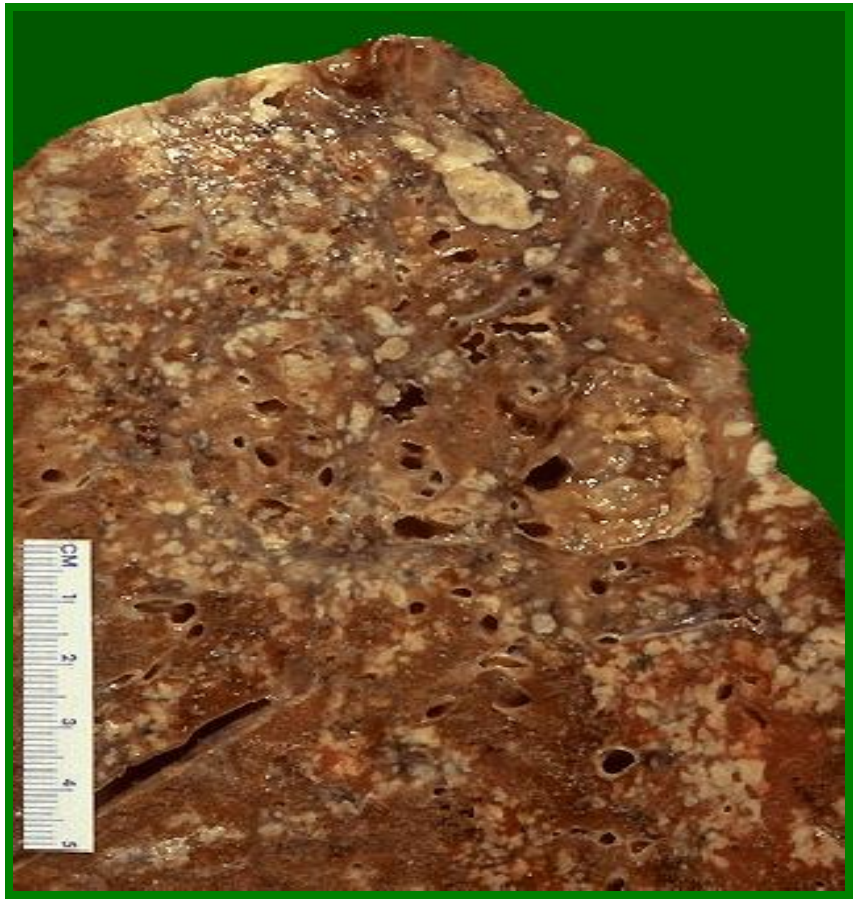
а) Acute miliary tuberculosis.

б) Chronic miliary tuberculosis.

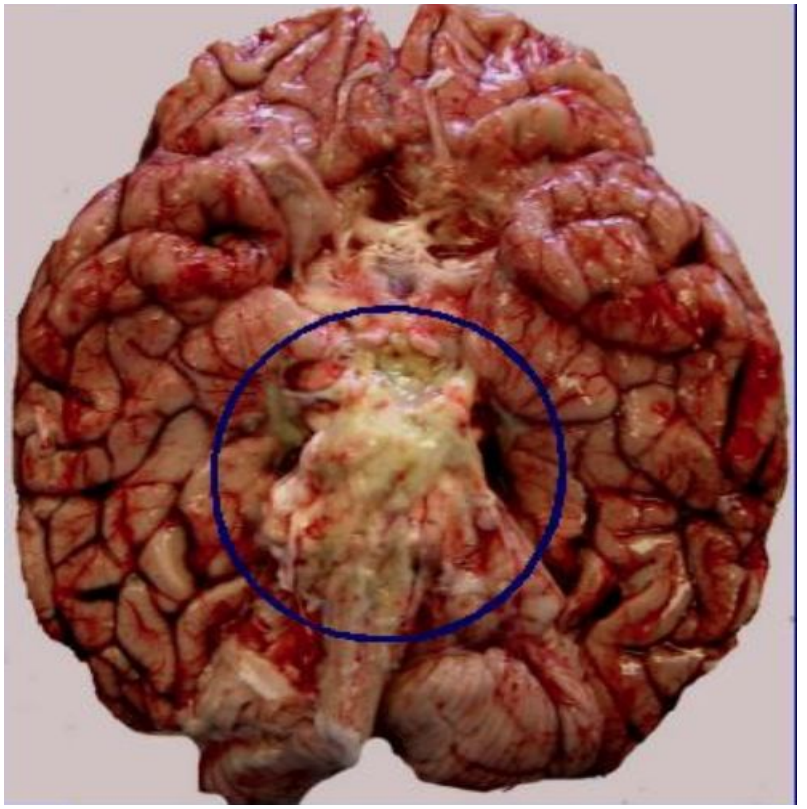
в) Chronic large-focal tuberculosis or hematogenous-disseminative.

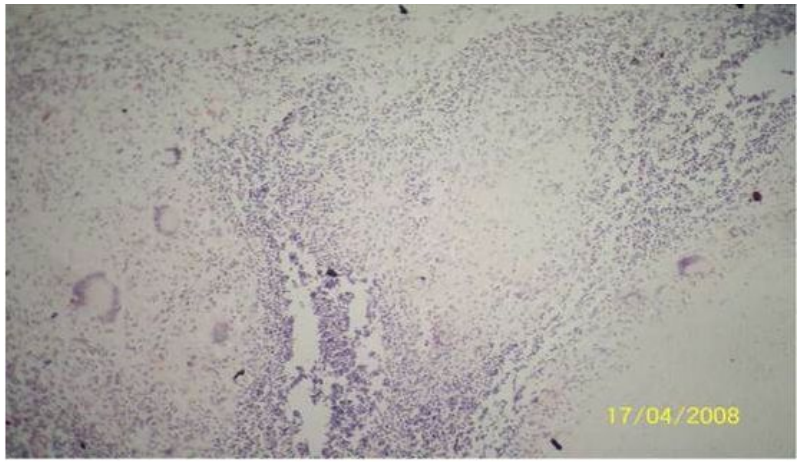
- ***Hematogenous tuberculosis with unpulmonary lesions or organic tuberculosis:***

Tuberculosis of the kidneys, of urinary- genital tract, of skin, of bone- articular, of endocrine organs and others .



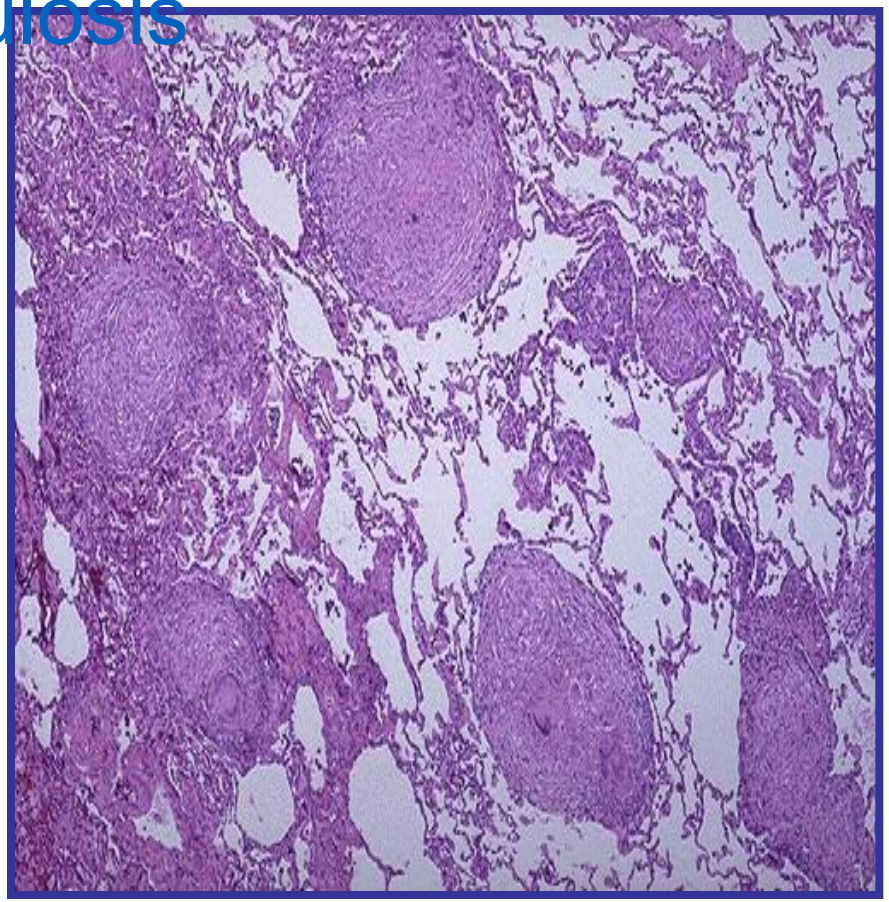
On closer inspection, the granulomas have areas of caseous necrosis with formation of the small cavernes. This is very extensive granulomatous disease. This pattern of multiple caseating granulomas primarily in the upper lobes is most characteristic of postprimary hematogenous (reactivation) tuberculosis.





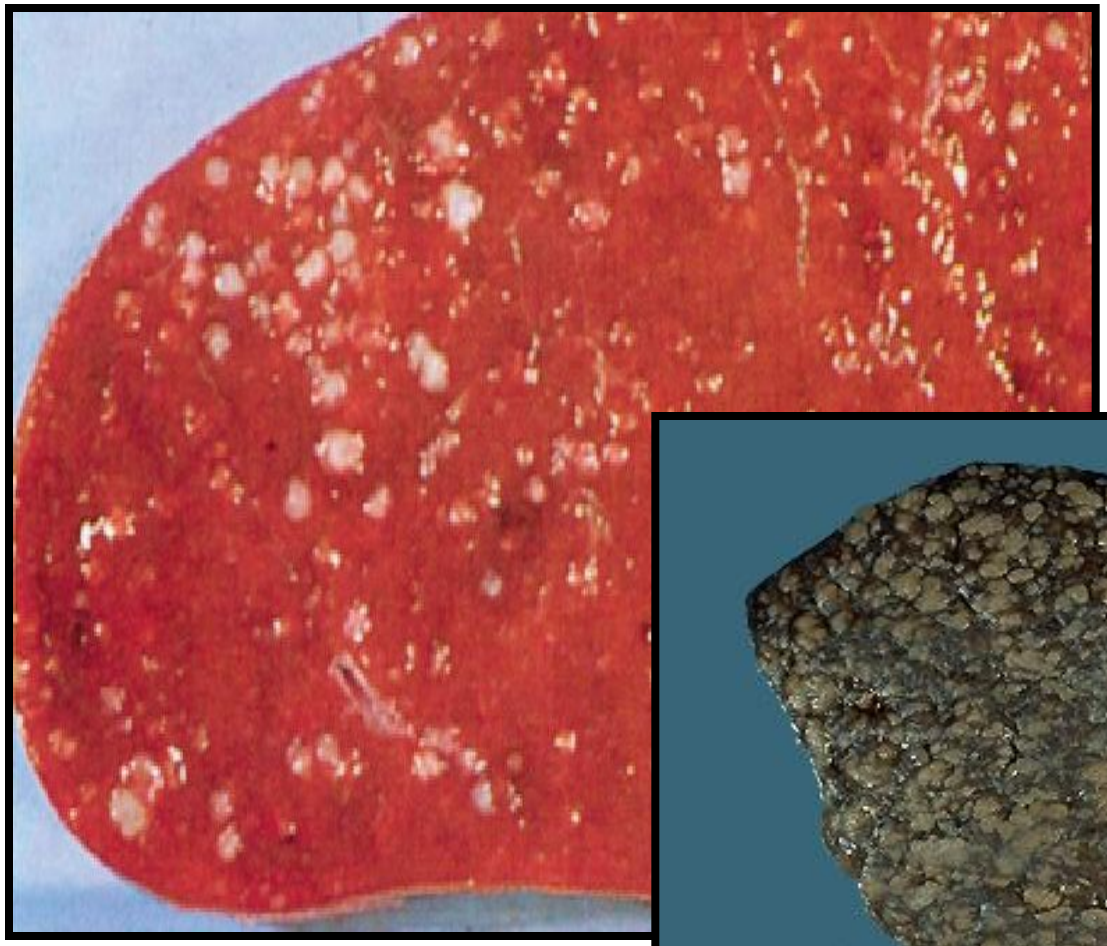
Tuberculous leptomeningitis

Miliary pulmonary tuberculosis

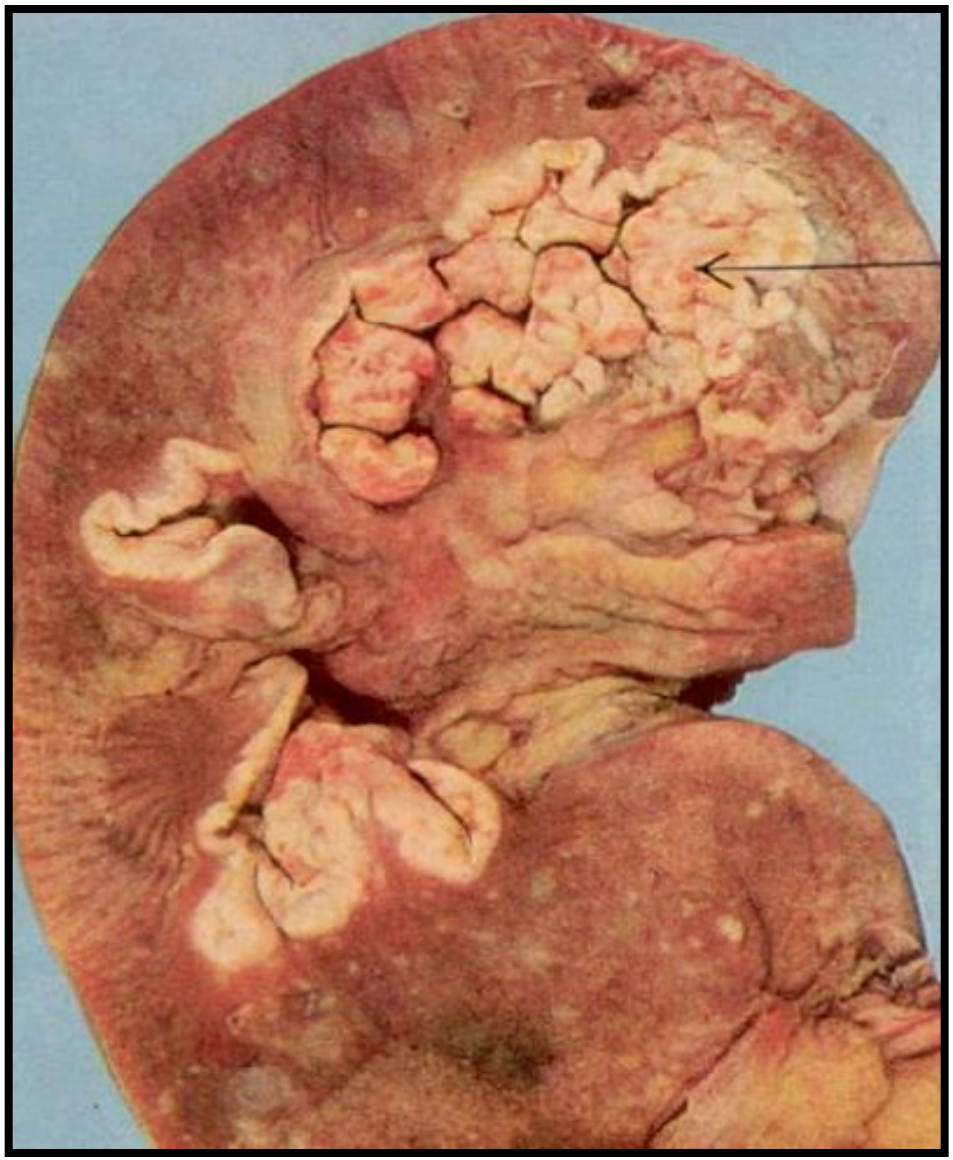


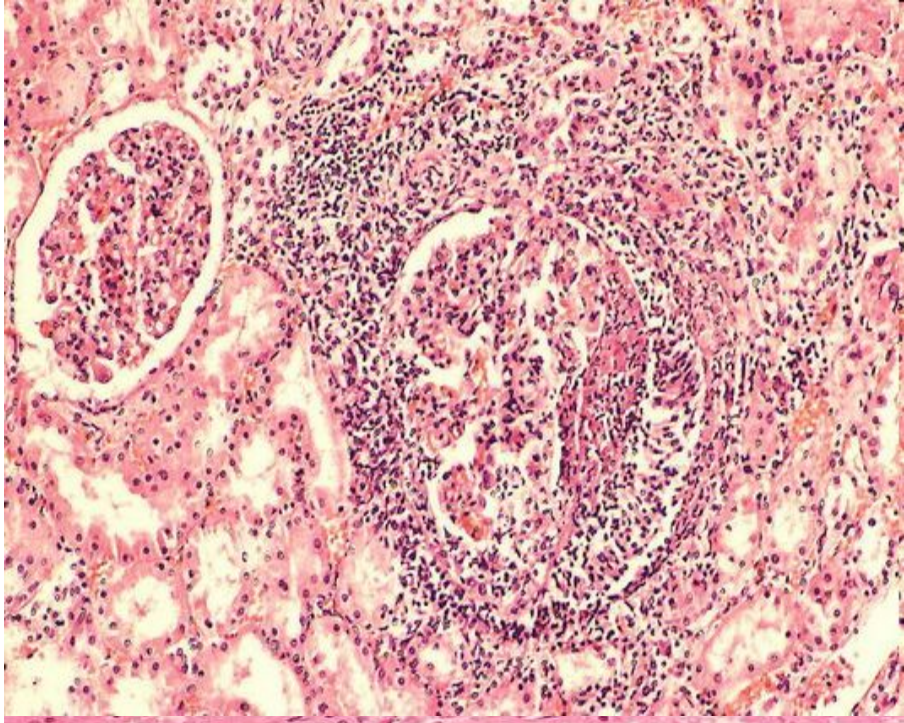
The focal nature of granulomatous inflammation is demonstrated in this microscopic section of lung in which there are scattered granulomas in the parenchyma.

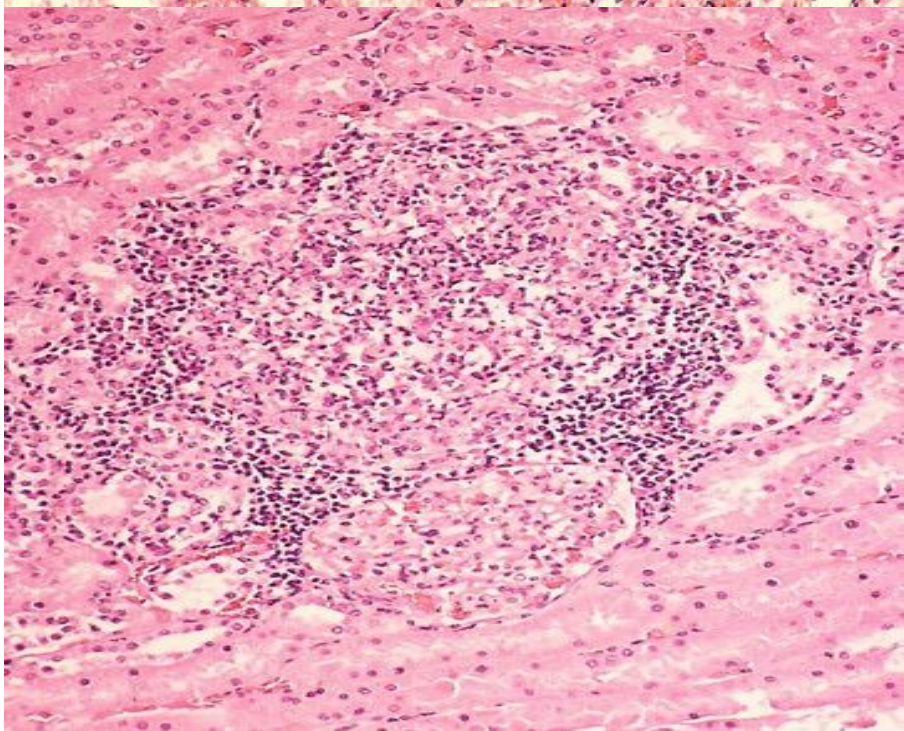
Miliary tuberculosis of the spleen



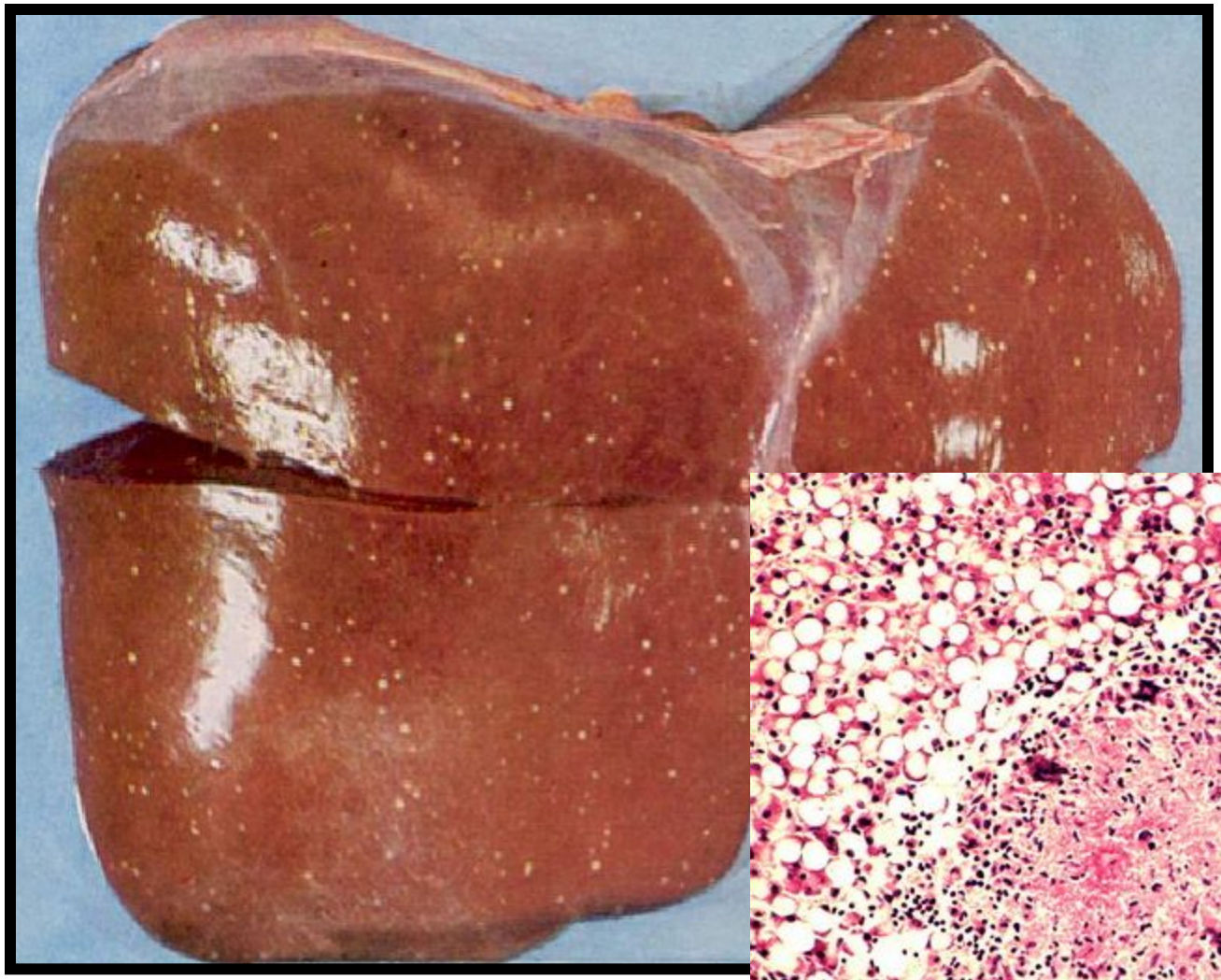
RENAL TUBERCULOSIS

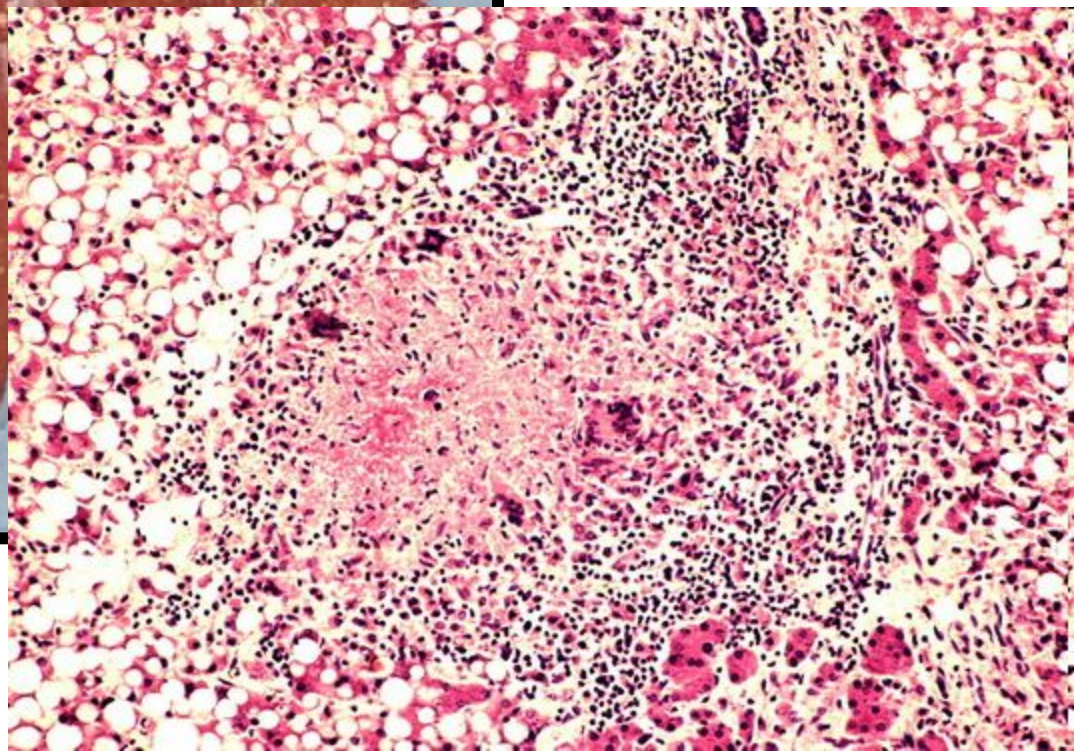






MILIARY TUBERCULOSIS IN LIVER



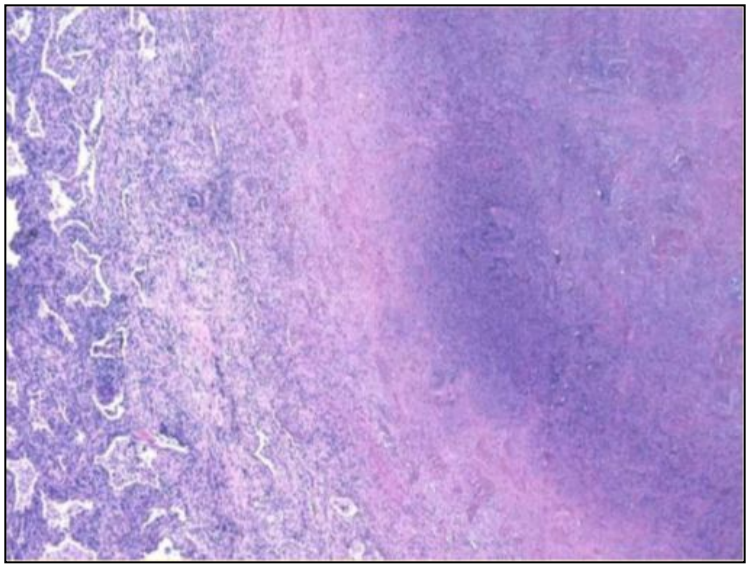


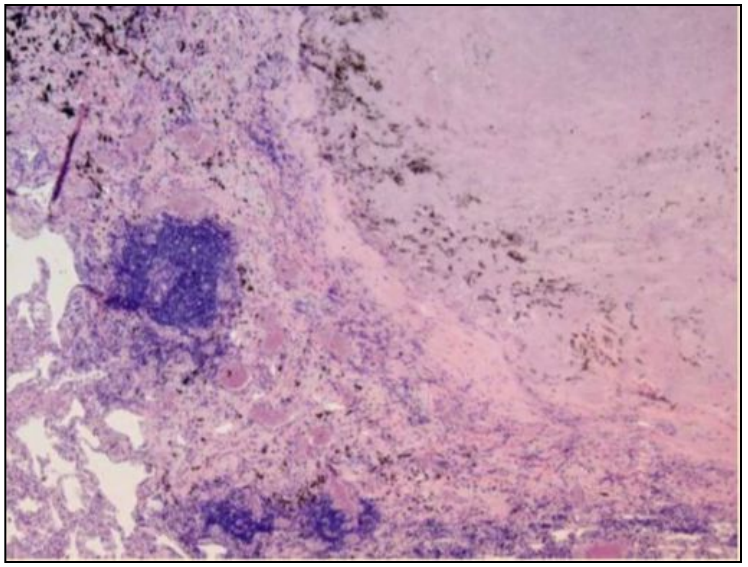
Forms or stages *of the secondary tuberculosis:*

1. Acute local tuberculosis.
2. Fibrous-local tuberculosis.
3. Infiltrative tuberculosis.
4. Tuberculoma.
5. Caseous pneumonia.
6. Acute cavernous tuberculosis.
7. Fibrous – cavernous tuberculosis.
8. Cirrhotic tuberculosis.

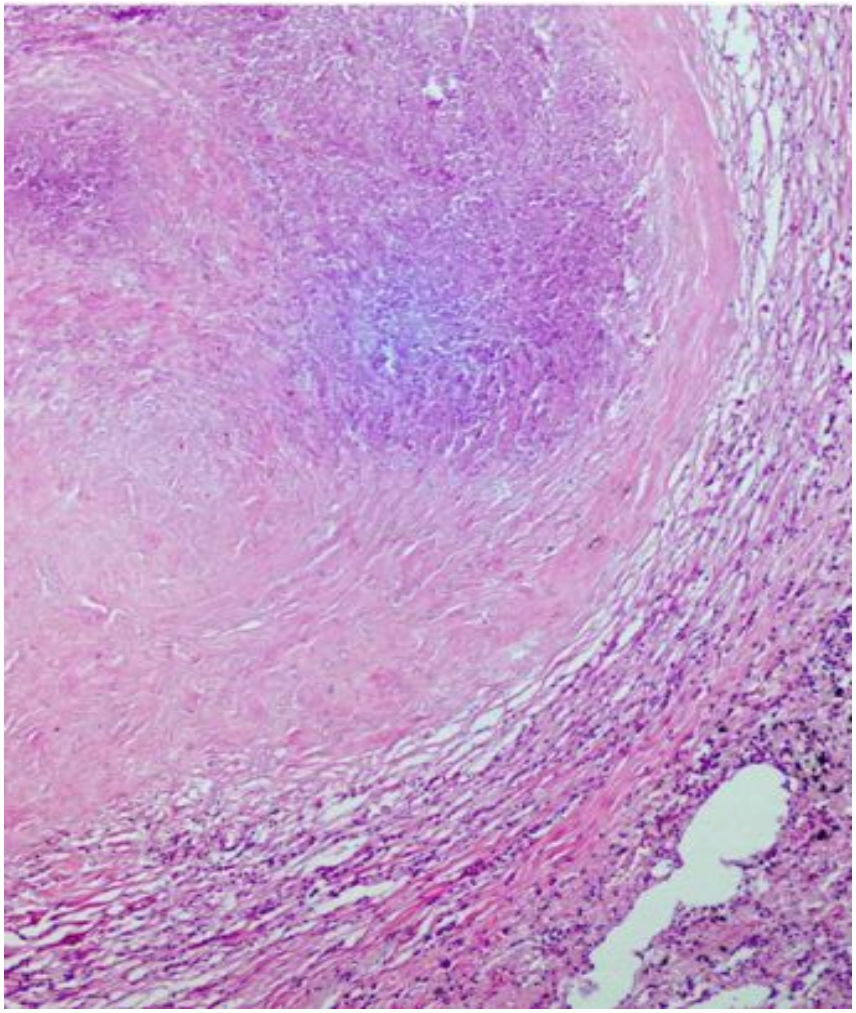
Acute local tuberculosis

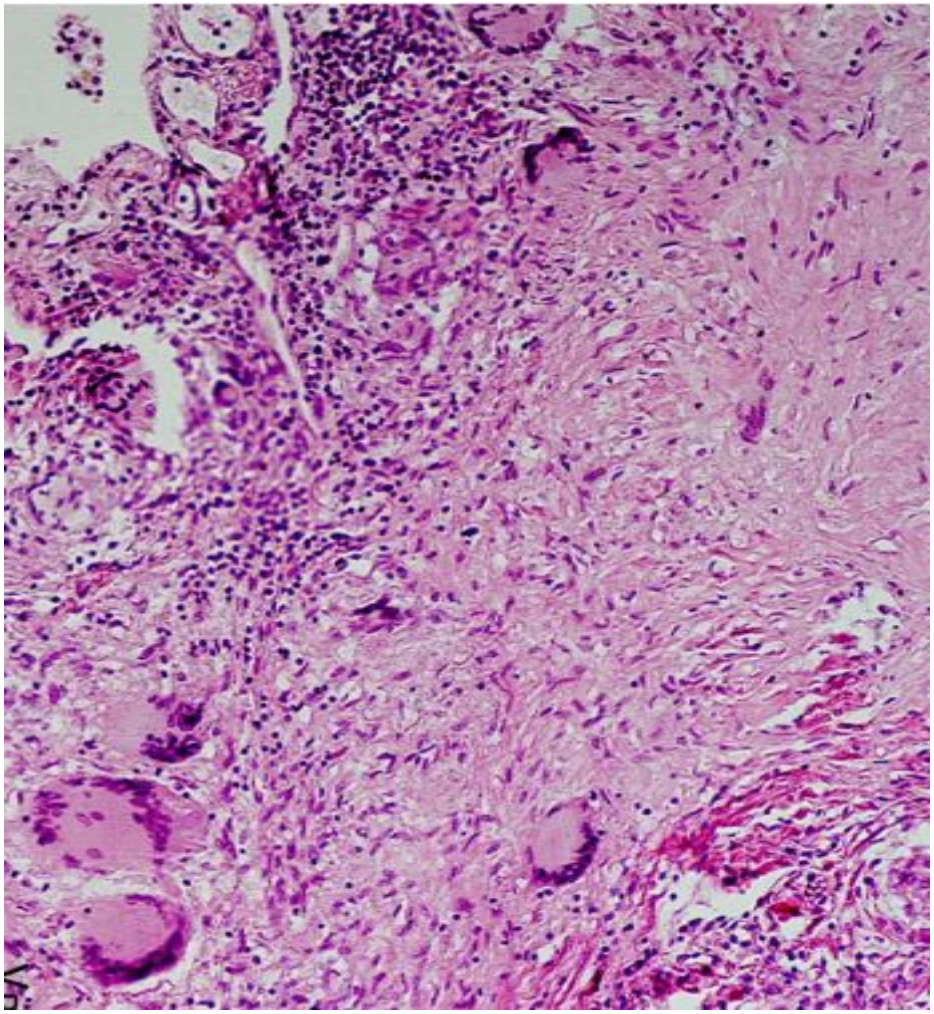
There are several 1 cm diameter, partially calcified foci (dry, crumbly, and white) that are surrounded by slaty, indurated scar tissue.



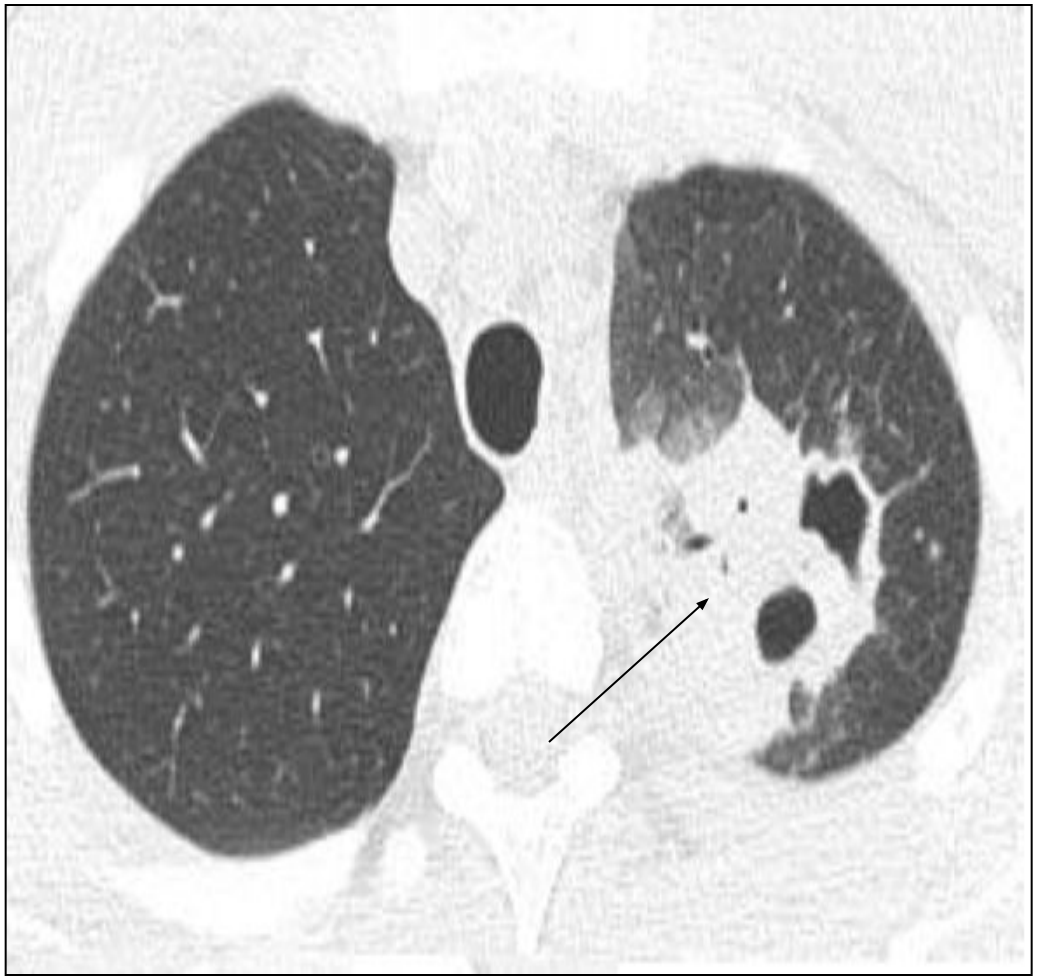


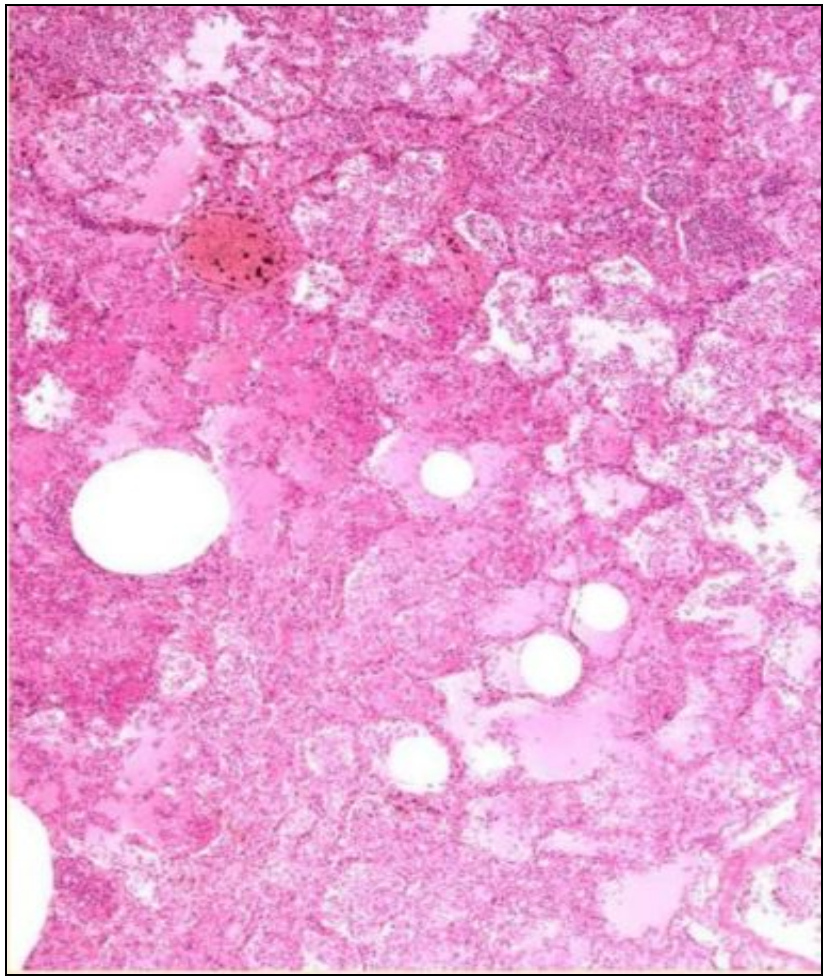
Fibrous-local tuberculosis



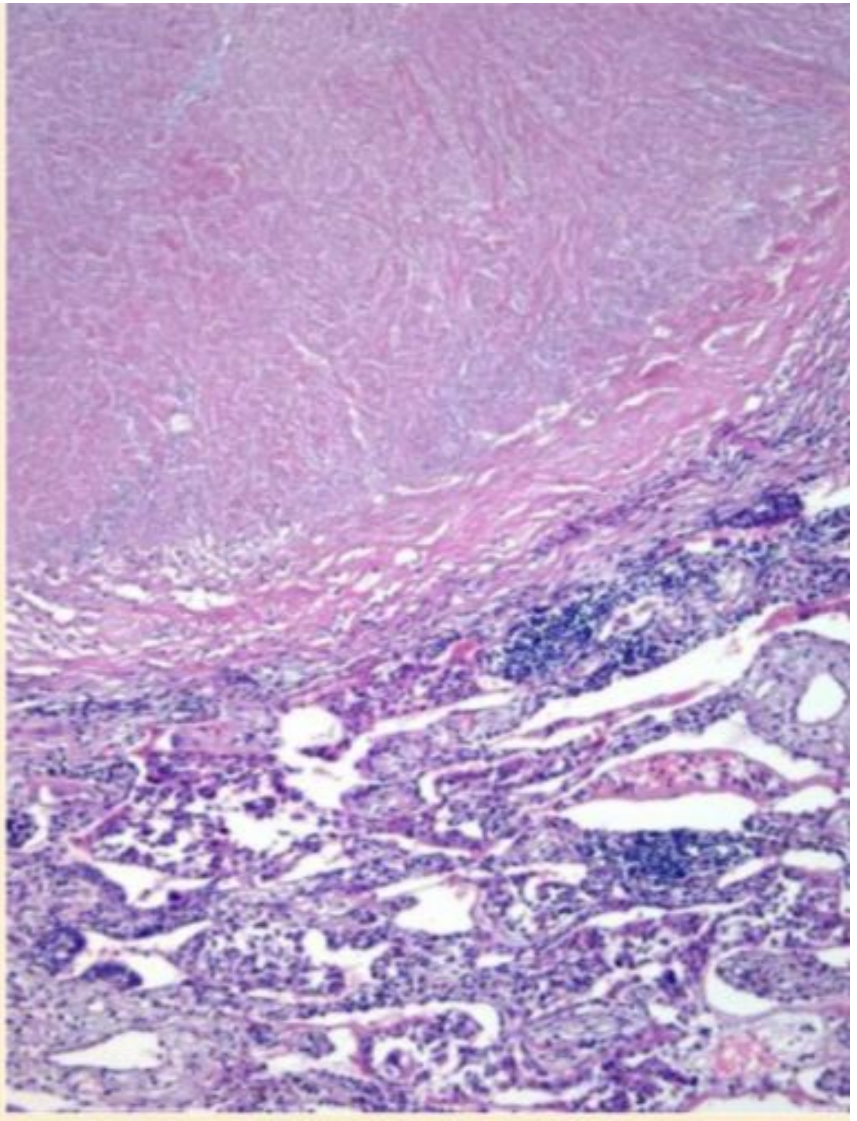


Infiltrative tuberculosis

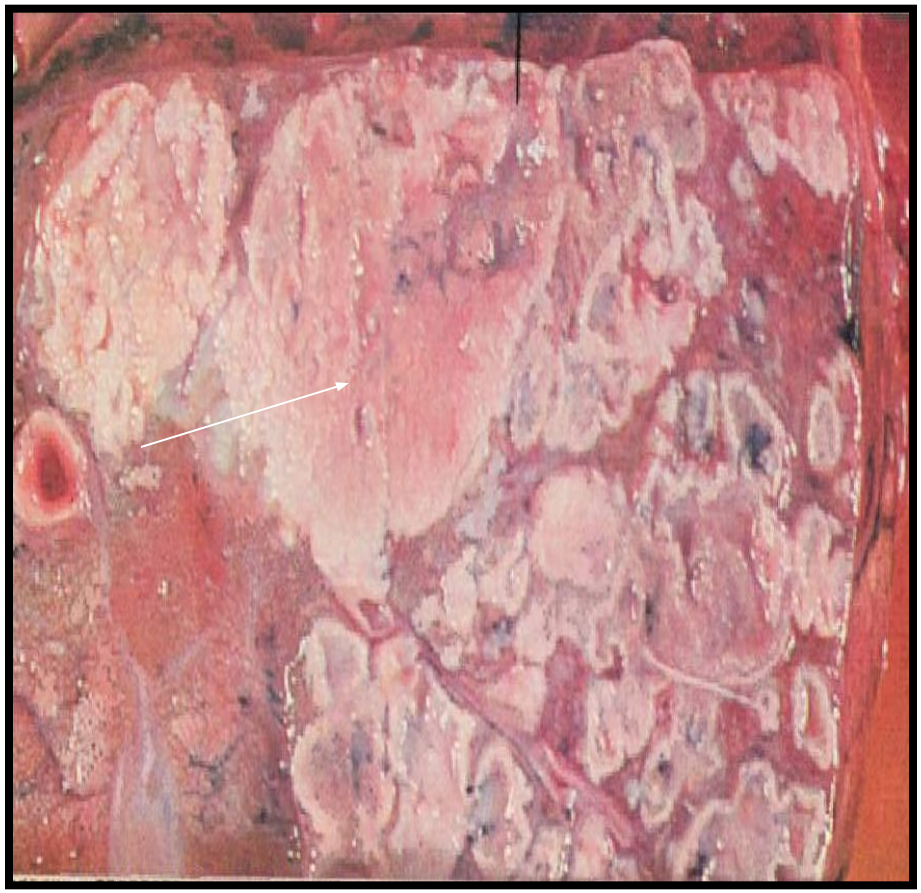


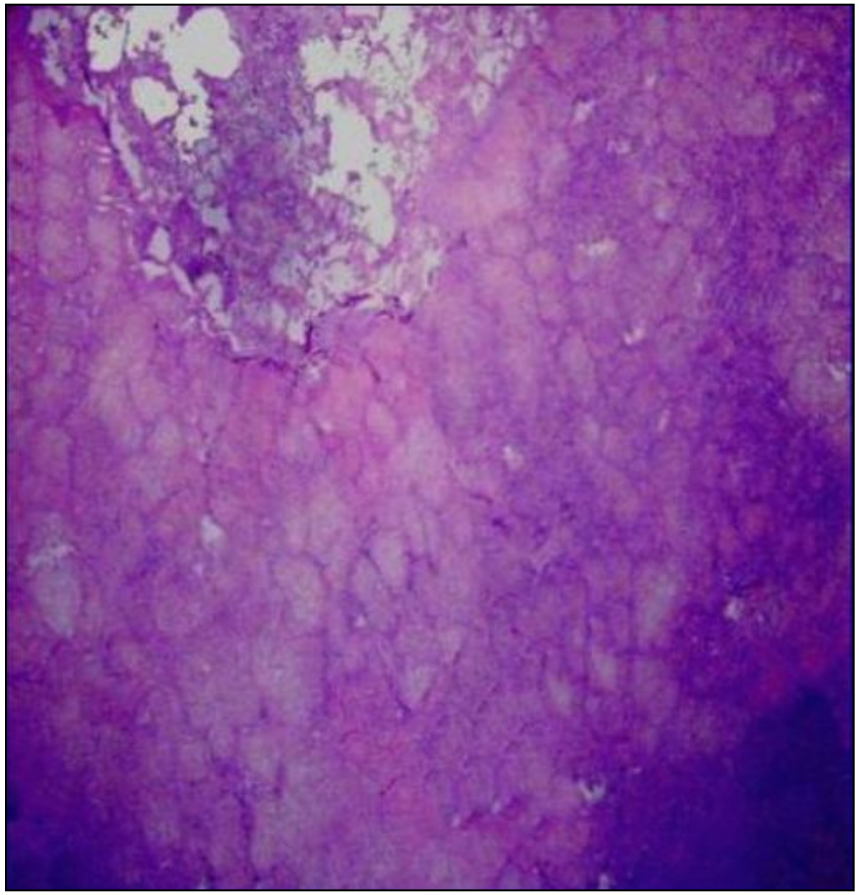


Tuberculoma

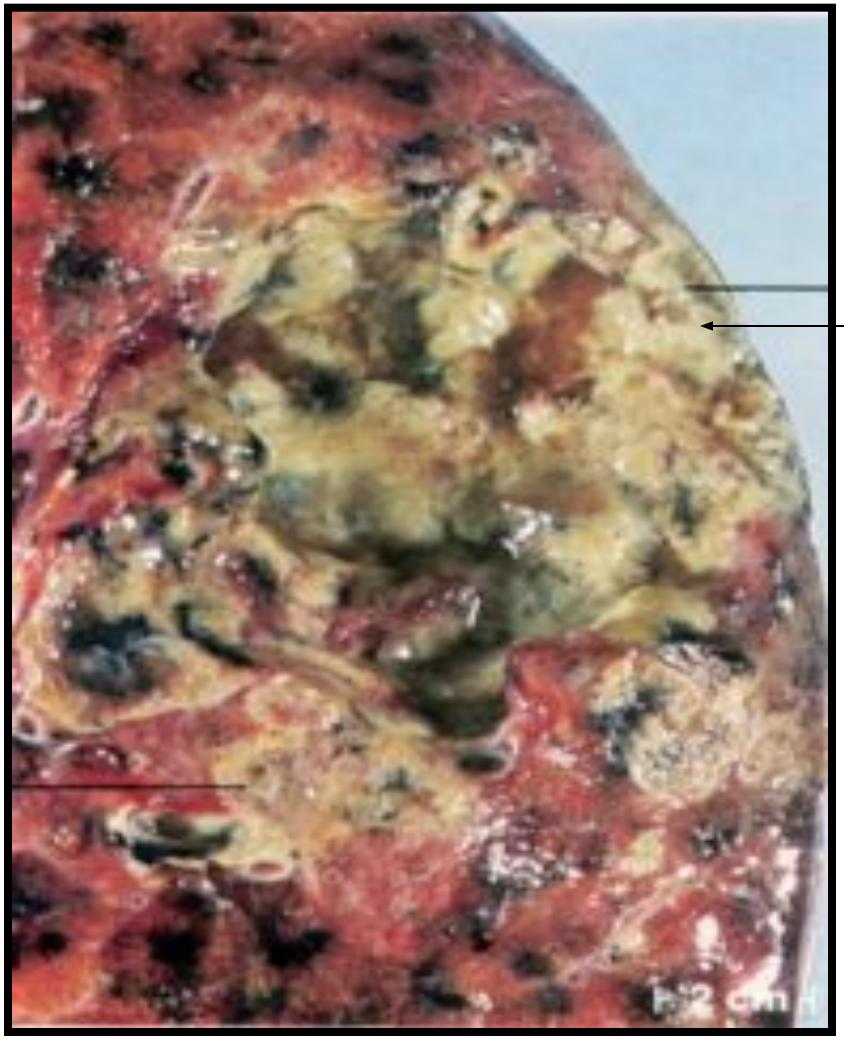


Caseous pneumonia

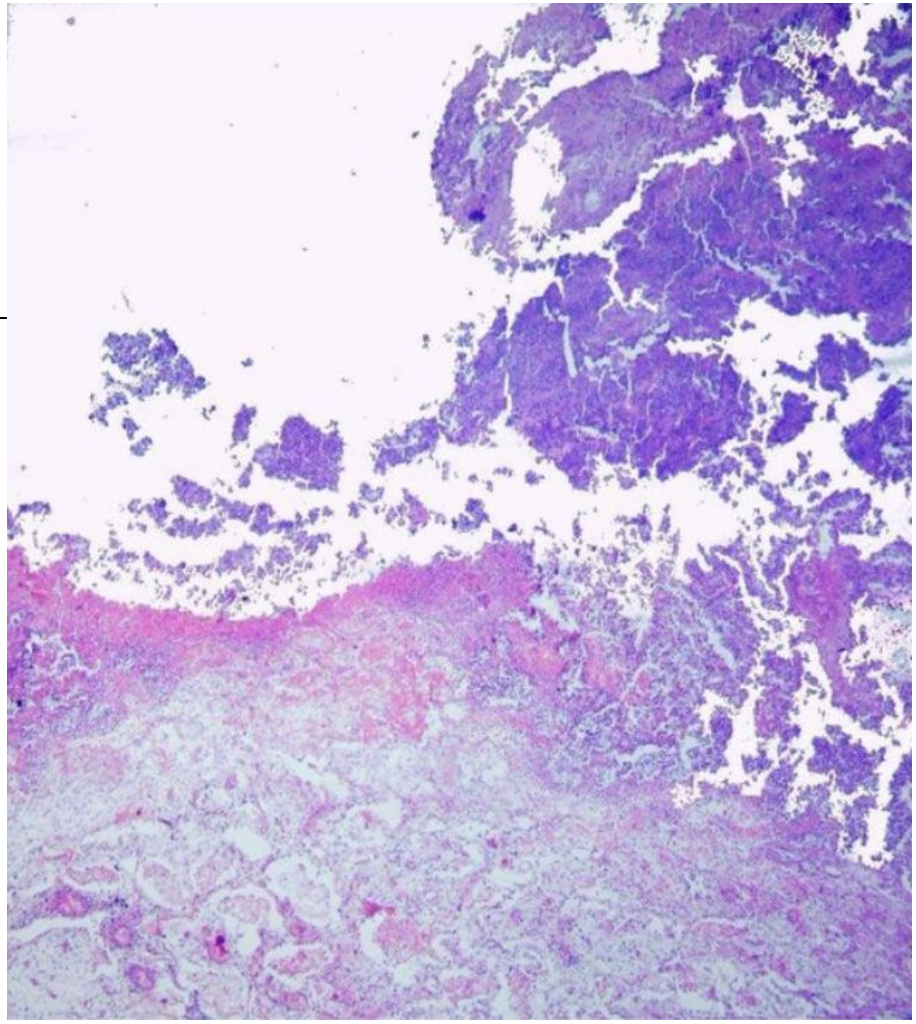




Acute cavernous tuberculosis

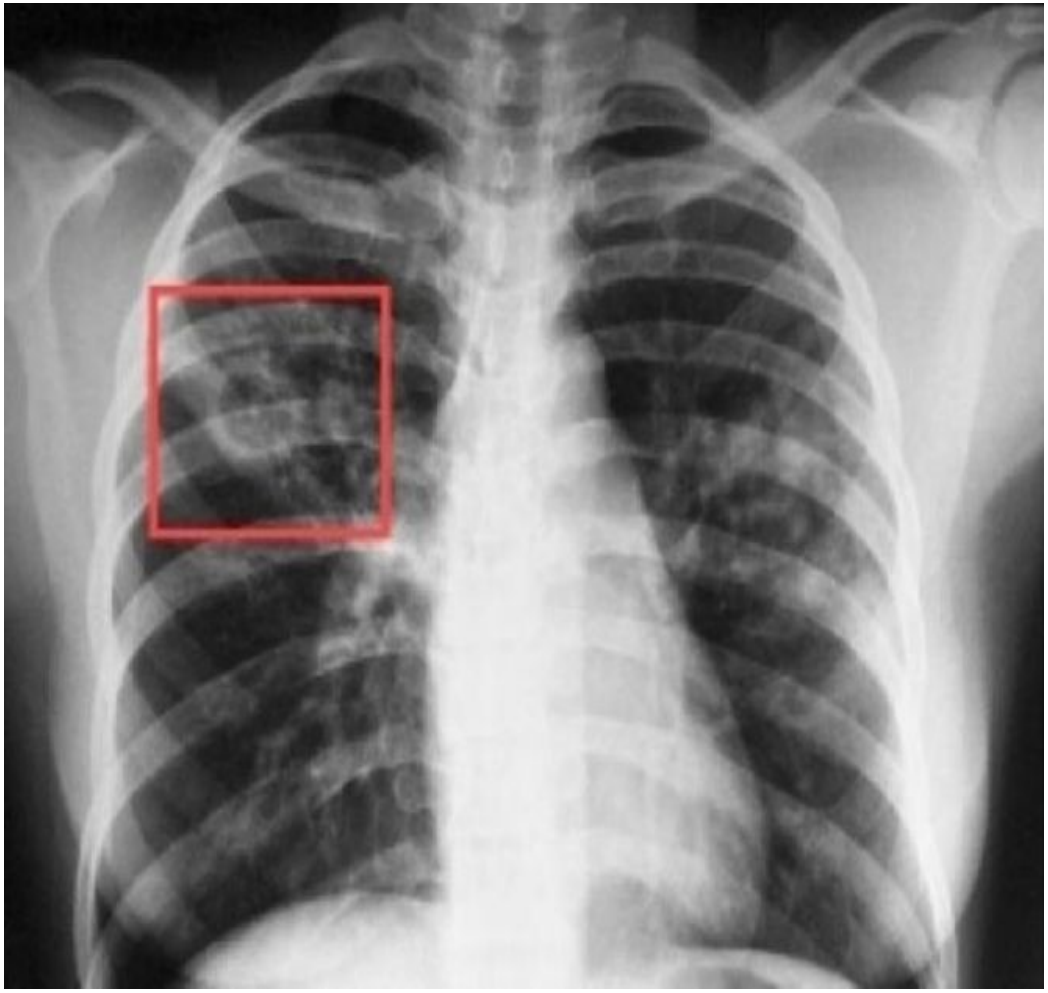


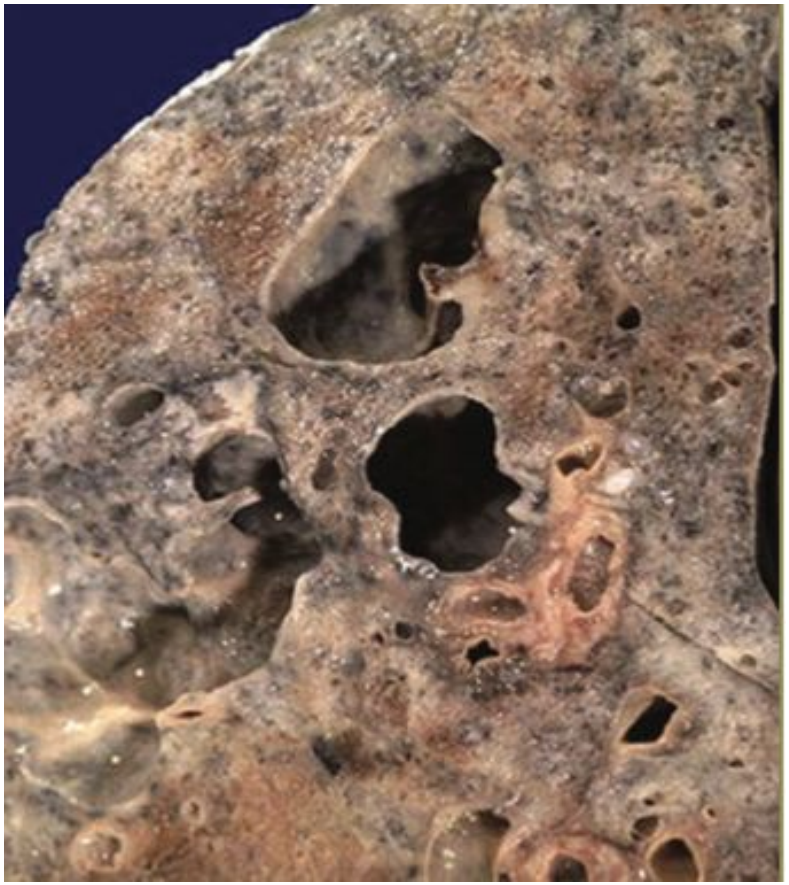
Greyish-white wall of the cavity 2 to 3 mm thick

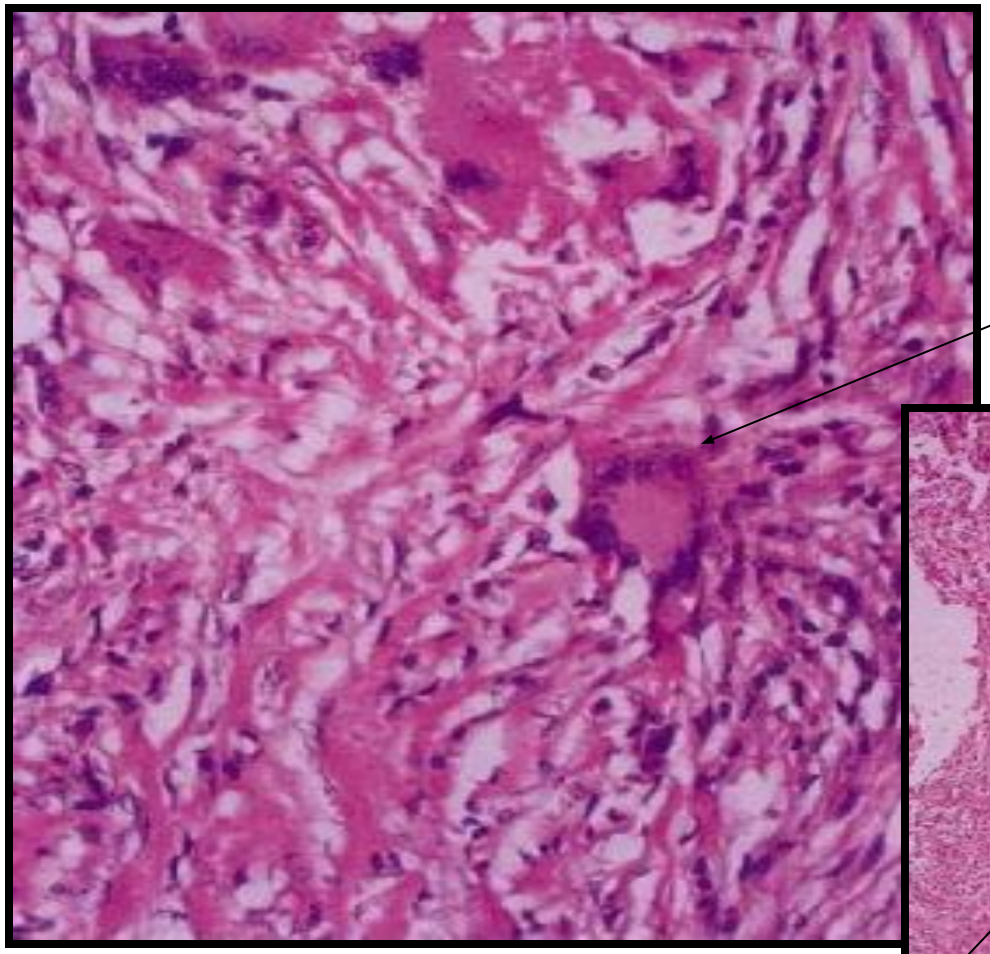


Wall of acute pneumoniogenic cavity

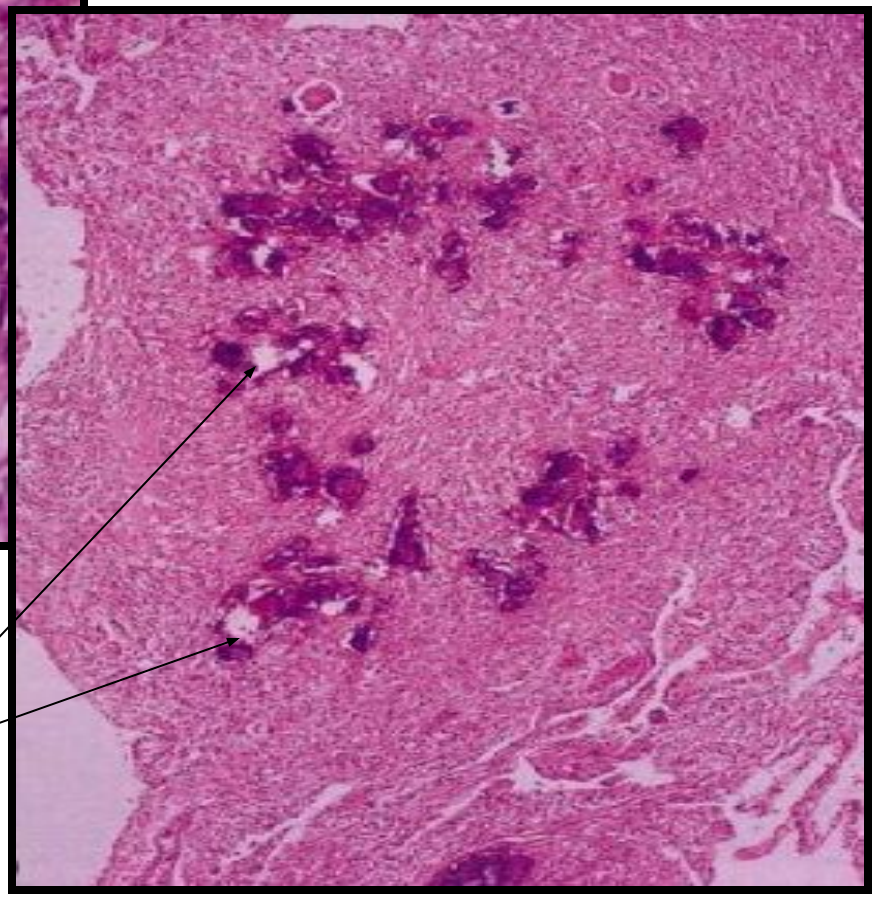
Fibrous – cavernous tuberculosis







Fibrotic scar in the wall of tuberculous cavity consists of fibroblast, collagen, and scattered Langerhans giant cells



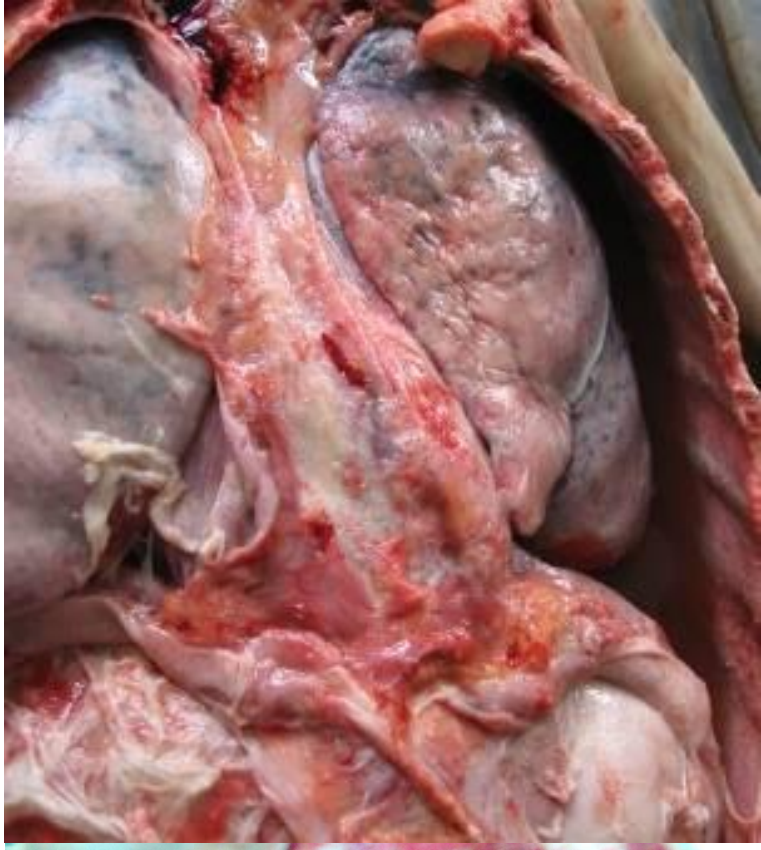
The wall of tuberculous cavity contains foci of calcification replacing the caseating granulomas

Cirrhotic tuberculosis

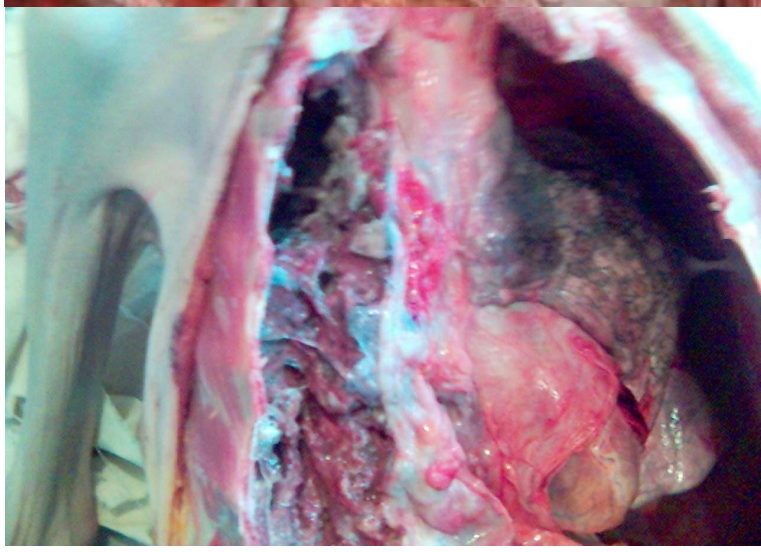
Complications and causes of death

- Scarring and calcification.
- Pneumothorax.
- Empyema.
- Pleural fibrosis and adhesions, with associated pleurisy, sharp pleuritic pain, and shortness of breath.
- Chronic respiratory-cardiac insufficiency due to development “cor pulmonale”.
- Acute hemorrhage due to erosion of vessels.
- Chronic renal insufficiency due to development of amiloidosis of kidneys.
- Intoxication.

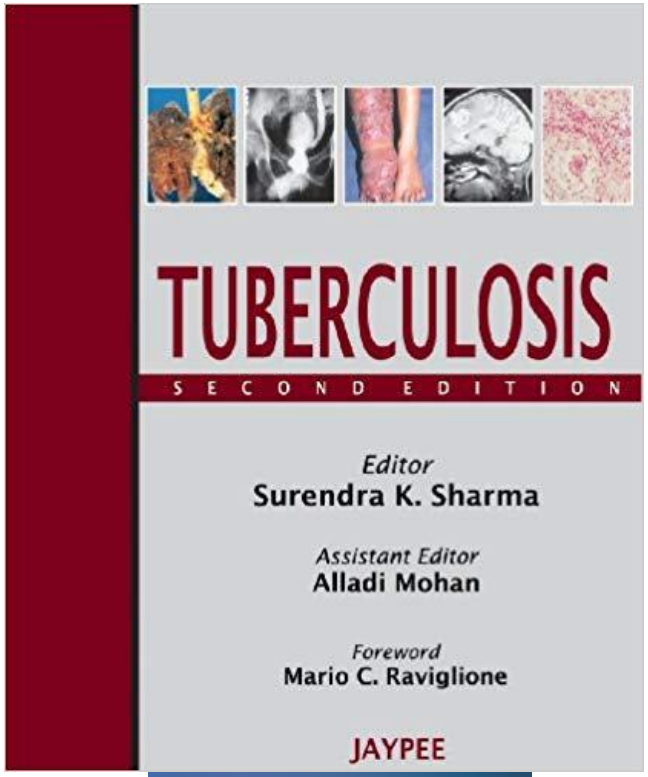
Pleural fibrosis and adhesions, with associated pleurisy, sharp pleuritic pain, and shortness of breath.



Pneumothorax



Acute hemorrhage due to erosion of vessels.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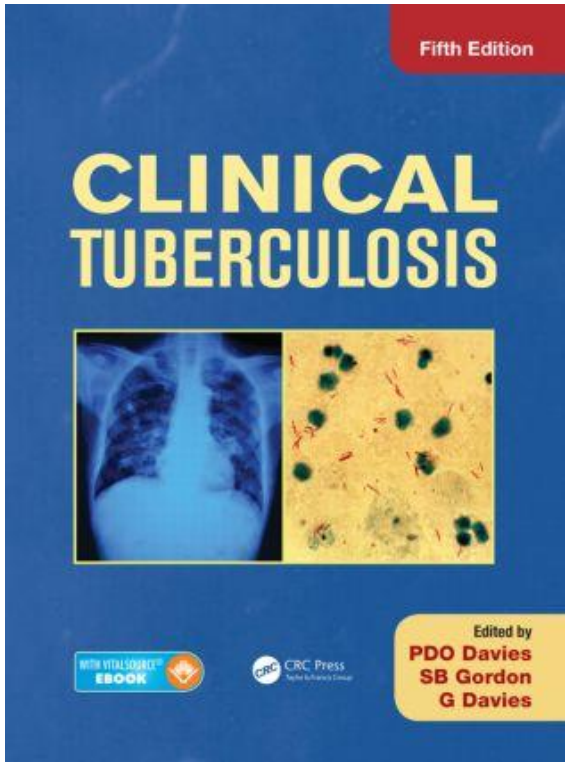
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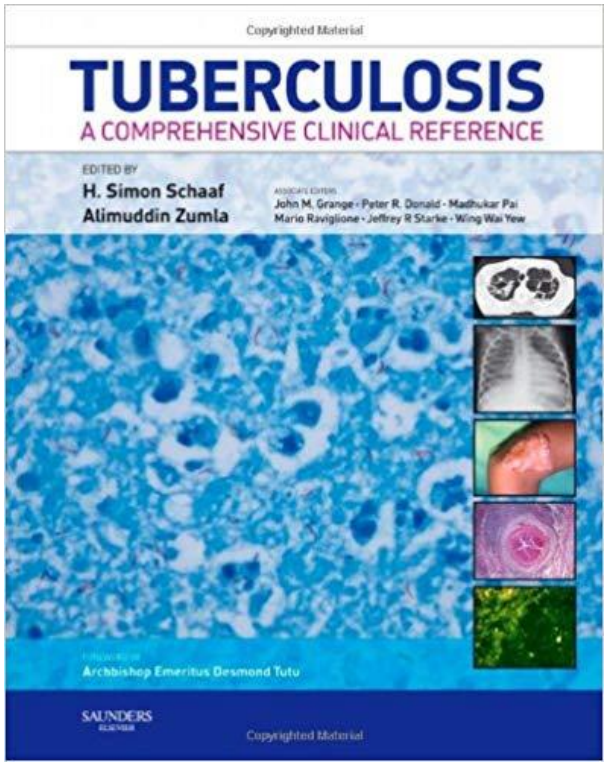
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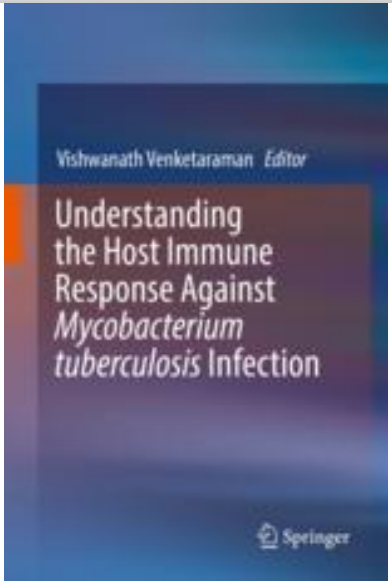
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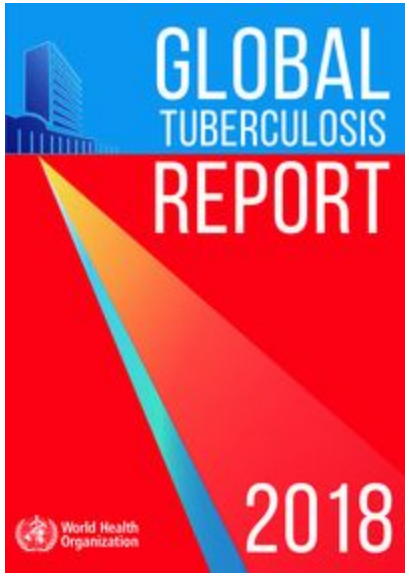
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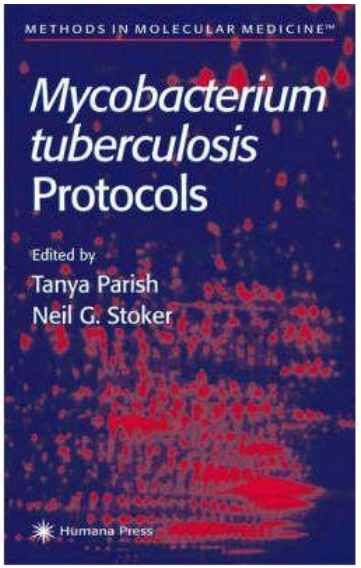
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