

**Aerogenic
infections.
Tuberculosis. AIDS.**

Aerogenic infections. Tuberculosis. AIDS.

I. Microspecimens:

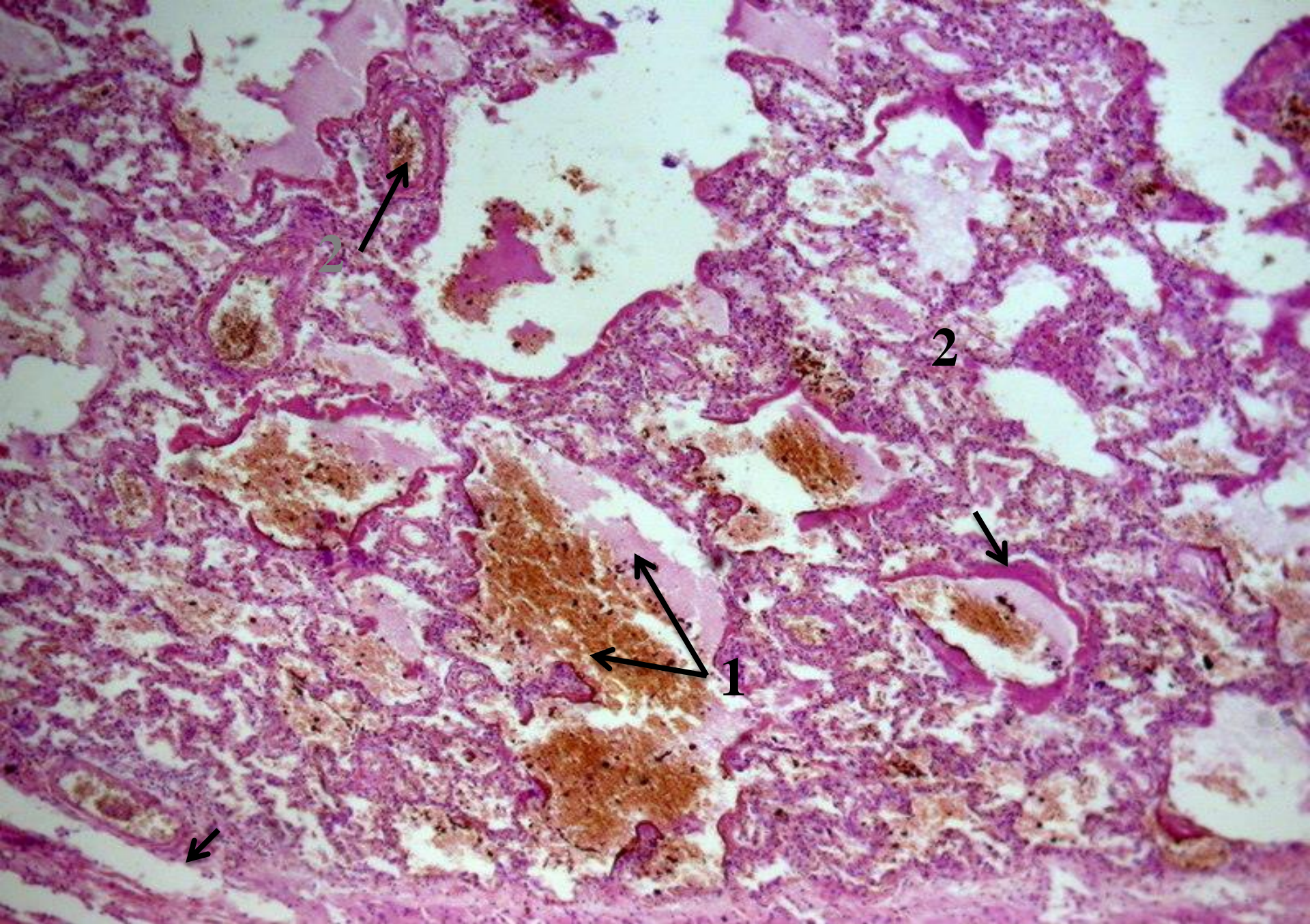
№ 106. Hemorrhagic pneumonia in influenza. (*H-E stain*).

Indications:

1. Inflammatory exudate into lumen of alveoli:
 - a. erythrocytes;
 - b. serous fluid.
2. Adjacent lung tissue with hyperemic vessels.

In the alveoli is present exudate, consisting of eosinophilic colored serous fluid and erythrocytes, in some alveoli the serous fluid predominates, in others - erythrocytes; in many alveoli the walls are covered with a homogeneous, eosinophilic membrane, consisting of fibrin and coagulated plasma proteins (hyaline membranes); the blood vessels are dilated and hyperemic.

Pneumonia develops in severe forms of the flu. The influenza virus exerts a cytopathic (cytolytic) action on the airway epithelium, causing degeneration, necrosis and desquamation, as well as vasopathic and vasoparalytic action with severe circulatory disorders (hyperemia, stasis, and hemorrhage). These peculiarities of the virus condition the sero-hemorrhagic character of influenza pneumonias. The alternation of foci of pneumonia with foci of compensatory emphysema and atelectasis gives the lung a mottled appearance, hence the name "big mottled lung in flu". The virus also has a pronounced immunosuppressive effect, which determines the association of the secondary infection. Possible complications: pulmonary edema, acute respiratory failure and abscesses development.



№ 106. Hemorrhagic pneumonia in influenza. (H-E stain).

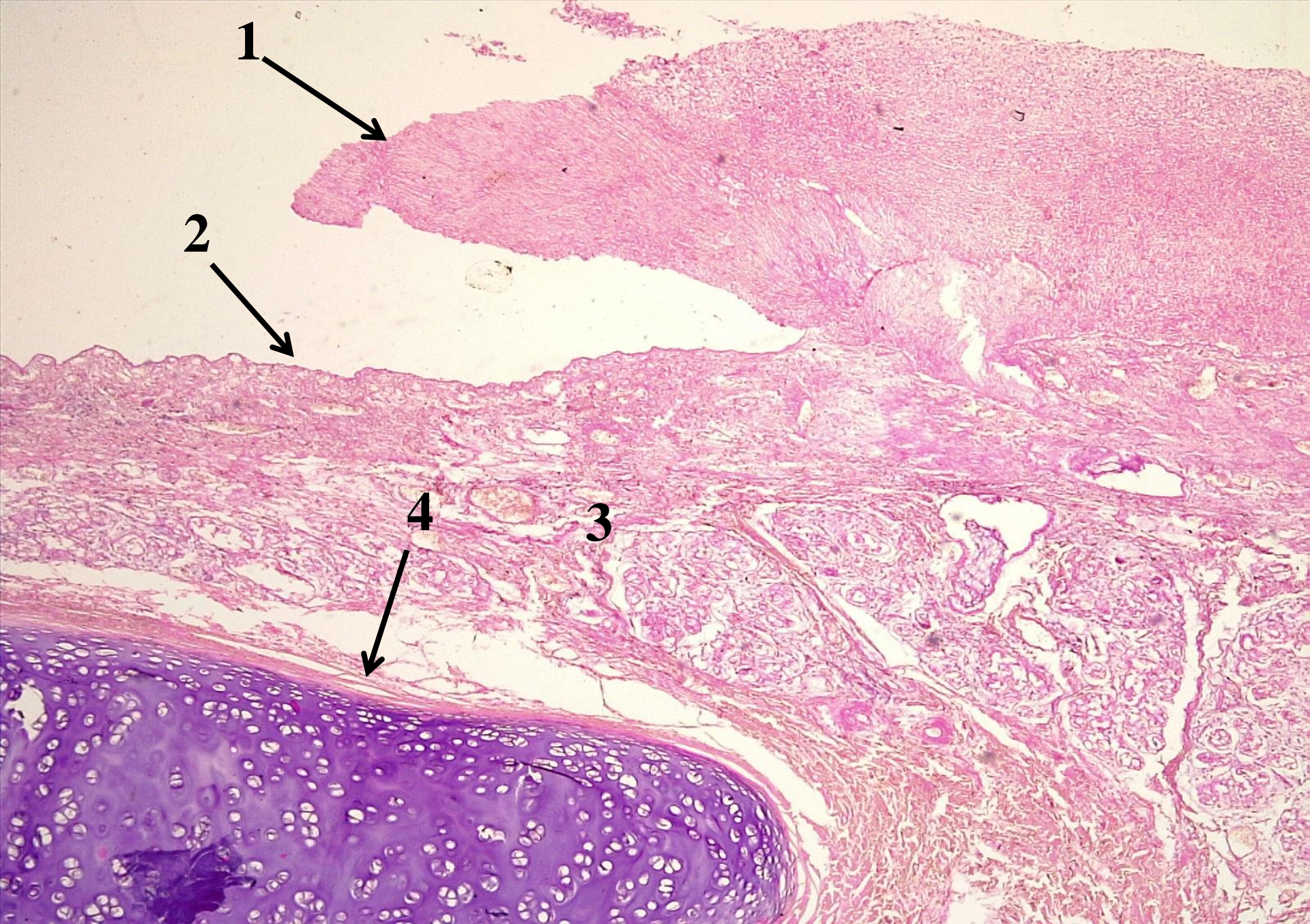
№ 99. Croupous tracheitis in diphtheria. (H-E stain).

Indications:

1. Fibrin deposits on the mucosa of the trachea.
2. Ulceration of the mucosa.
3. Edema and hemorrhage in submucosal layer.
4. Cartilaginous rings of the trachea.

The tracheal mucosa and submucosa are edematous, hyperemic, hemorrhagic foci are observed, the epithelium is sometimes necrotic and desquamated, forming ulcerative defects, covered with a layer of fibrin with a mixture of neutrophilic leukocytes and necrotic masses, which form a pseudomembrane.

Diphtheria is an acute infectious disease caused by the diphtheria bacillus - Corynebacterium diphtheriae, which eliminates exotoxin. The local effect of exotoxin consists of epithelial necrosis, extravasation of fibrinogen and the formation of pseudomembranes, consisting of fibrin and necrotic masses with a mixture of leukocytes, which macroscopically have a whitish-yellow color. Because the tracheal mucosa adheres loosely to the underlying connective tissue, the pseudomembranes are easily removed and expectorated by sputum (croupous fibrinous inflammation). Due to this fact in diphtheria, which affects the larynx, trachea and bronchi, no general intoxication is observed. There may be complications associated with the removal of pseudomembranes: laryngospasm, airway obstruction, pneumonia.



№ 99. Croupous tracheitis in diphtheria. (H-E stain).

№ 79. Pulmonary miliary tuberculosis. (*H-E. stain*).

Indications:

1. Tuberculous granuloma:
 - a. caseous necrosis in the center of granuloma;
 - b. layer of epithelioid cells;
 - c. giant cells Langhans;
 - d. lymphoid cell layer.
2. Adjacent lung tissue.

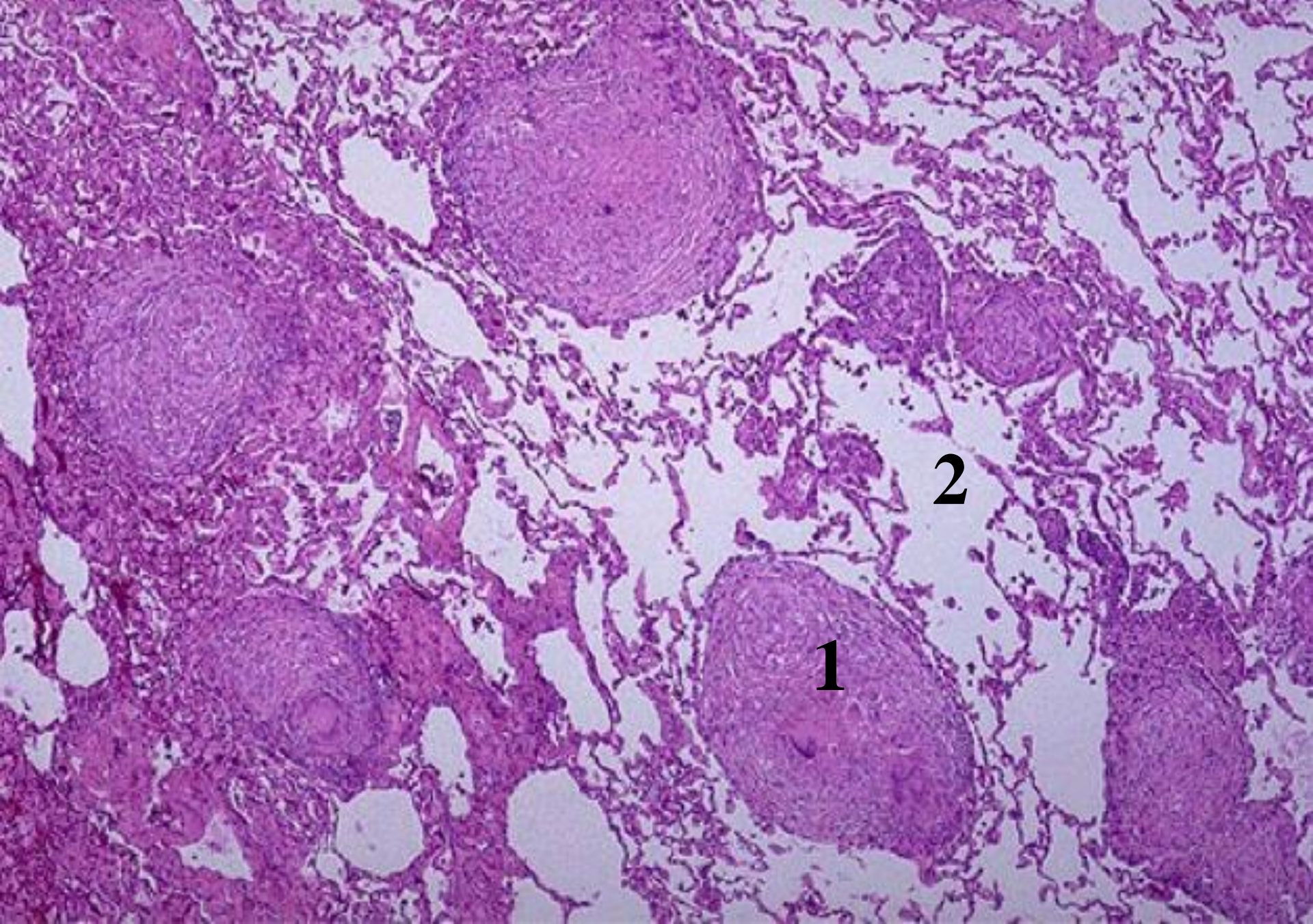
In the lung tissue there are multiple tuberculous granulomas at different stages of development, some with caseous necrosis in the center, which is intensely colored eosinophilic, surrounded by a cell cord, consisting of epithelioid cells with elongated, pale nuclei, arranged radially, "in the palisade"; among them are giant polynuclear cells Langhans with eosinophilic cytoplasm and nuclei placed in the shape of a horseshoe, circular along the membrane or 2 poles of the cell, and at the periphery - a layer of small lymphocytes, compactly placed, with round nucleus, hyperchrome and poor cytoplasm, which may include macrophages and plasma cells; around some granulomas are collagen fibers; other granulomas are in the fibrosis stage (replacement with fibrous connective tissue); In the lung parenchyma between granulomas, foci of emphysema are observed, some interalveolar septa are thickened, sclerosed.

№ 85. Caseous pneumonia. (*H-E. stain*).

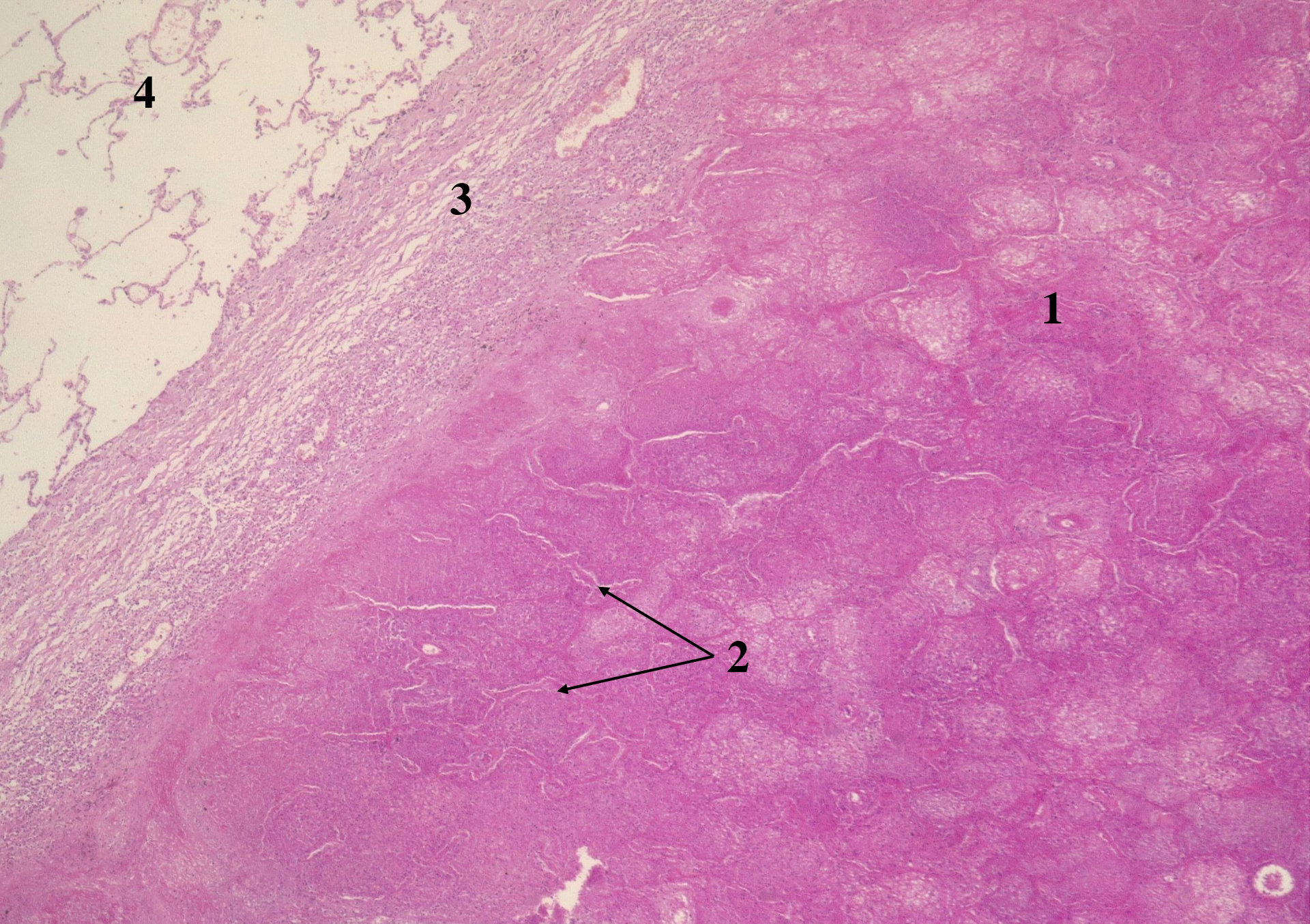
Indications:

1. Caseous necrosis area.
2. Interalveolar septa without nuclei (karyolysis).
3. Connective tissue infiltrated by lymphoid cells.
4. Adjacent emphysematous pulmonary tissue.

In the microspecimen there is an extensive area of necrosis of lung tissue, unventilated, the alveolar lumen contains intensely colored necrotic masses eosinophilic, fibrin, neutrophilic leukocytes, monocytes, disintegrated nucleus remains, necrotic interalveolar septa, devoid of nuclei with moderate lymphoid infiltration; in the adjacent lung tissue signs of emphysema.



№ 79. Pulmonary miliary tuberculosis. (*H-E. stain*).



№ 85. Caseous pneumonia. (*H-E. stain*).

II. Macrospecimens:

№ 43. Caseous pneumonia.

In the lung there are multiple foci of caseous necrosis, unventilated, of different sizes, white-yellow color, the necrotic masses have a friable, crumbly appearance, it resembles dry cow's cheese (lat. Caseum - cheese).

Caseous pneumonia is found in secondary tuberculosis, but can also be in primary tuberculosis. Initially, acinar, lobular caseous outbreaks appear, which can extend to the level of a segment or even of an entire lobe - lobar caseous pneumonia. It develops in patients with low immunity, malnourished. There are deposits of fibrin in the pleura. The curd masses can be subjected to purulent lysis and liquefaction with the appearance of decomposition cavities - caverns (cavernous tuberculosis).

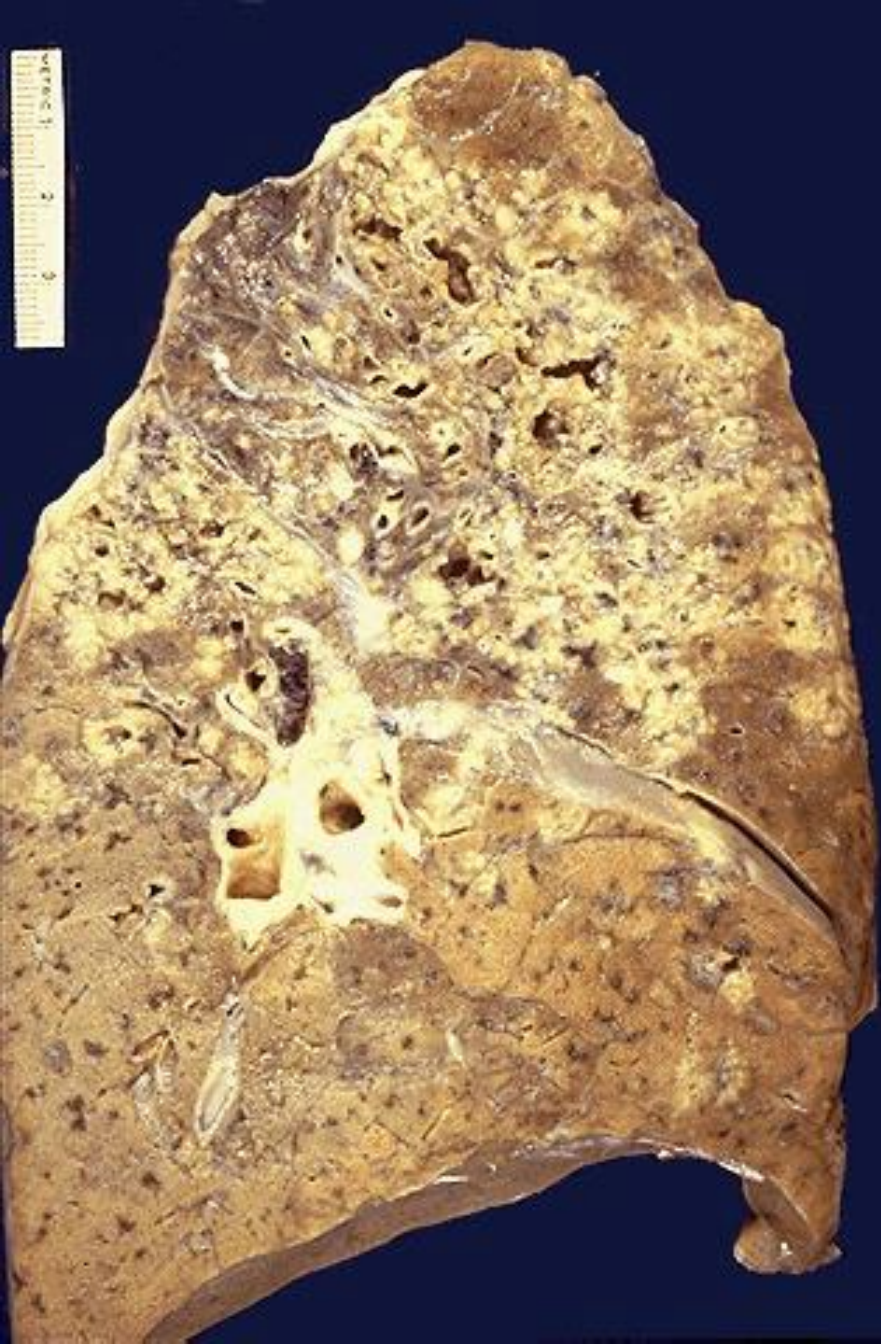


№ 43. Caseous pneumonia.

№ 44. Fibrocavitary tuberculosis.

The lung is deformed, on the section are observed multiple cavities of destruction - caverns of irregularly shaped, different sizes with thickened, sclerosed walls, rough internal surface, covered with necrotic masses; in the adjacent lung tissue unventilated white-yellow areas of caseous necrosis, pneumosclerosis, thickened bronchial walls may be seen.

Fibro-cavitary tuberculosis is a form of secondary pulmonary tuberculosis. In general, caverns are much more common in secondary tuberculosis than in primary tuberculosis. The formation of cavities for the destruction of lung tissue begins in the apical areas of the right lung and extends in the apico-caudal direction through direct contact and bronchogenic in the middle and lower lobes. The apical caverns are older than the distal ones. They have different sizes, irregular shape, walls consisting of 3 layers: caseous necrotic masses infiltrated with neutrophilic leukocytes, tuberculous granulation tissue, mature connective tissue. If the cavern is drained and communicates with the bronchi, the curd contents extend bronchially into the contralateral lung. At the same time, endobronchial, endotracheal, laryngeal and intestinal tuberculosis can develop by ingesting sputum containing tuberculous bacilli. In cases, when the contents of the cavern are evacuated bronchially, it collapses and heals. Possible complications: respiratory failure, pulmonary hemorrhage, pulmonary heart, secondary amyloidosis; in patients with compromised immunity, lymphatic and hematogenous dissemination may occur with the development of miliary tuberculosis.



№ 44. Fibrocavitary tuberculosis.

№ 144. Tuberculosis of peribronchial lymph nodes.

The peribronchial lymph nodes are enlarged in size, dense, adhere closely to each other, forming bundles, conglomerates, on the section white-yellow color, dry cheese appearance.

Impaired lymph nodes are the most common manifestation of pulmonary tuberculosis. It is found primarily in primary tuberculosis as a component part of the primary tuberculous complex or the Gohn complex (primary affect, lymphangitis and lymphadenitis). In primary pulmonary tuberculosis, the hilar and bronchopulmonary nodules are affected, and in primary intestinal tuberculosis - mesenteric lymph nodes. In the initial period of secondary pulmonary tuberculosis, regional lymph nodes are much less affected due to the location of the tuberculous process in the apical areas of the lungs. Enlarged lymph nodes compress the nerves, blood vessels, neighboring organs, causing certain clinical manifestations. Viable tubercle bacilli may persist in the lymph nodes for several years, with the potential to reactivate the infection and develop secondary tuberculosis under conditions of decreased immunity.



№ 144. Tuberculosis of peribronchial lymph nodes.

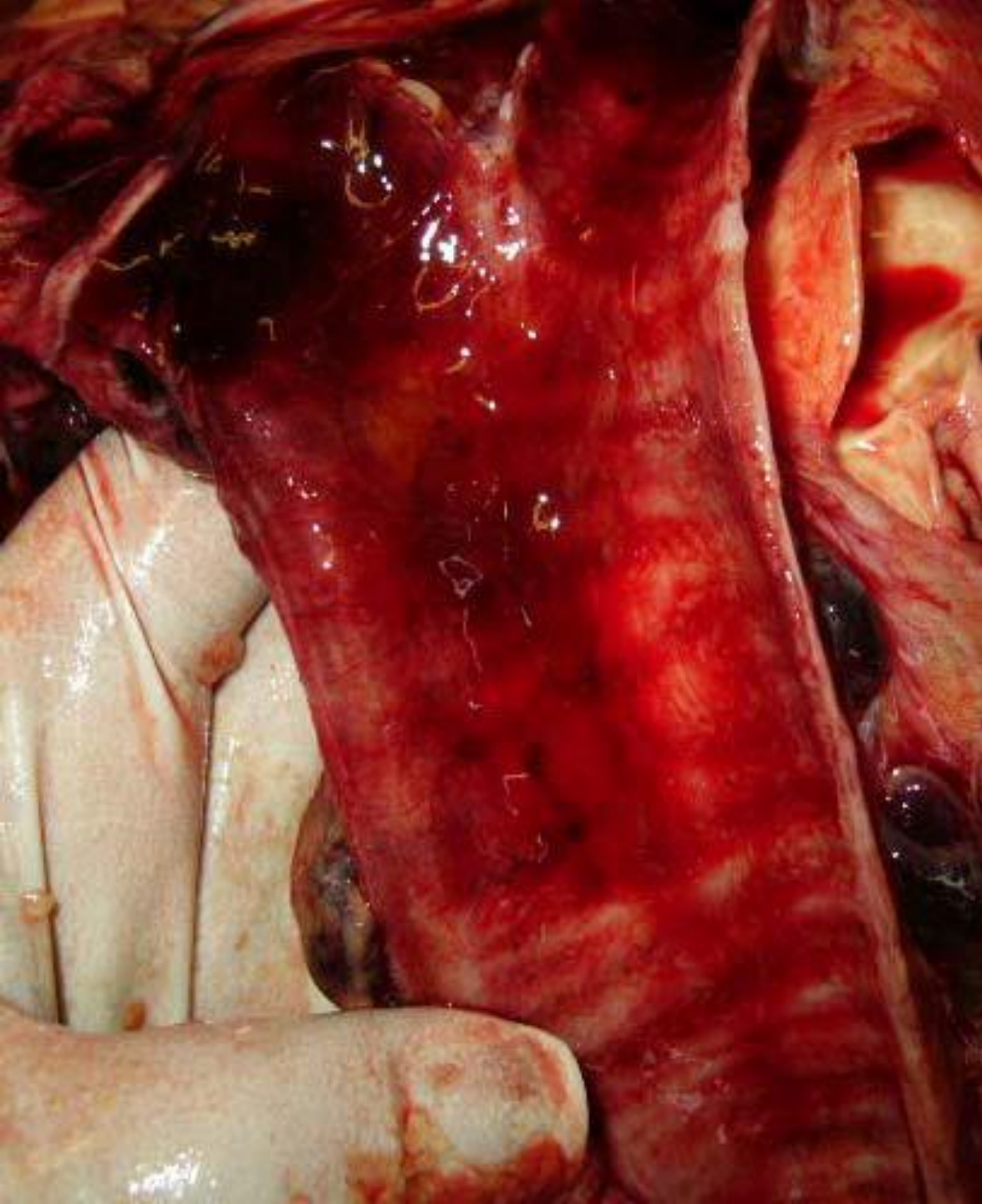
№ 153. Tuberculous spondylitis.

In the macrospecimen, there is a segment of the spine, the lumbar region, the deformation of the spine is observed, on the section the bodies of some vertebrae are destroyed, the apophyses are preserved, a cavity of destruction is outlined, the vertebrae are grown together.

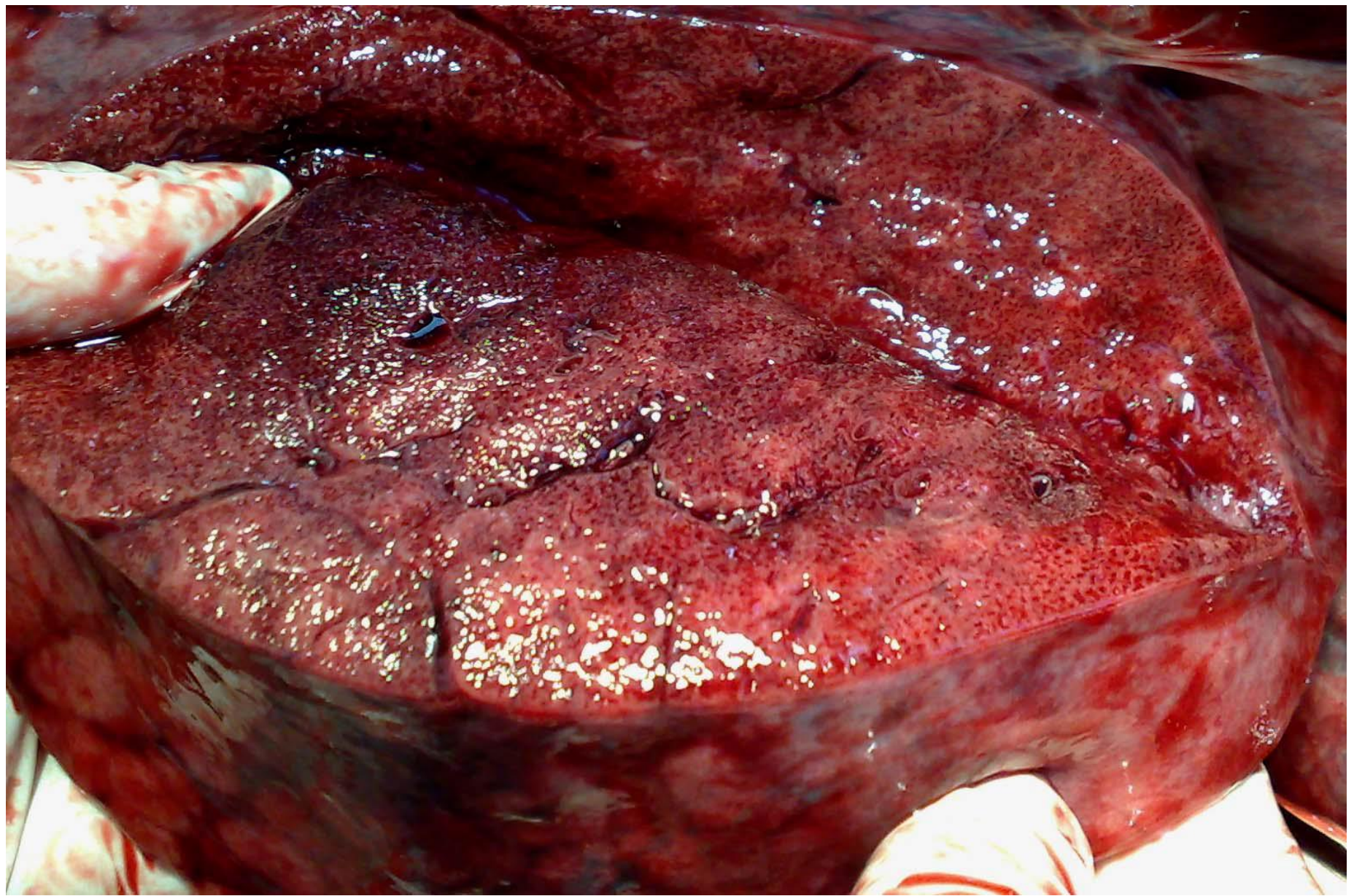
Spinal cord injury in tuberculosis (tuberculous spondylitis or Pott's disease) is found in miliary tuberculosis following the hematogenous spread of tuberculosis mycobacteria. It is more common in children and adolescents. It affects the bodies of the vertebrae, in which tuberculous osteomyelitis with caseous necrosis occurs, destruction of bone tissue and intervertebral discs, seizures are formed, filled with necrotic and purulent masses and consequently deformity of the spine occurs with the appearance of a convex curve in the region chest (kyphosis). Necro-purulent masses can spread to the soft paraspinal tissues forming "cold" abscesses, which can fistulate the skin by removing the contents of the abscesses. Chronic tuberculosis spondylitis can be complicated by secondary amyloidosis. At the same time, it can affect the coxo-femoral joint (tuberculous coxitis) and the knee (tuberculous gonitis).



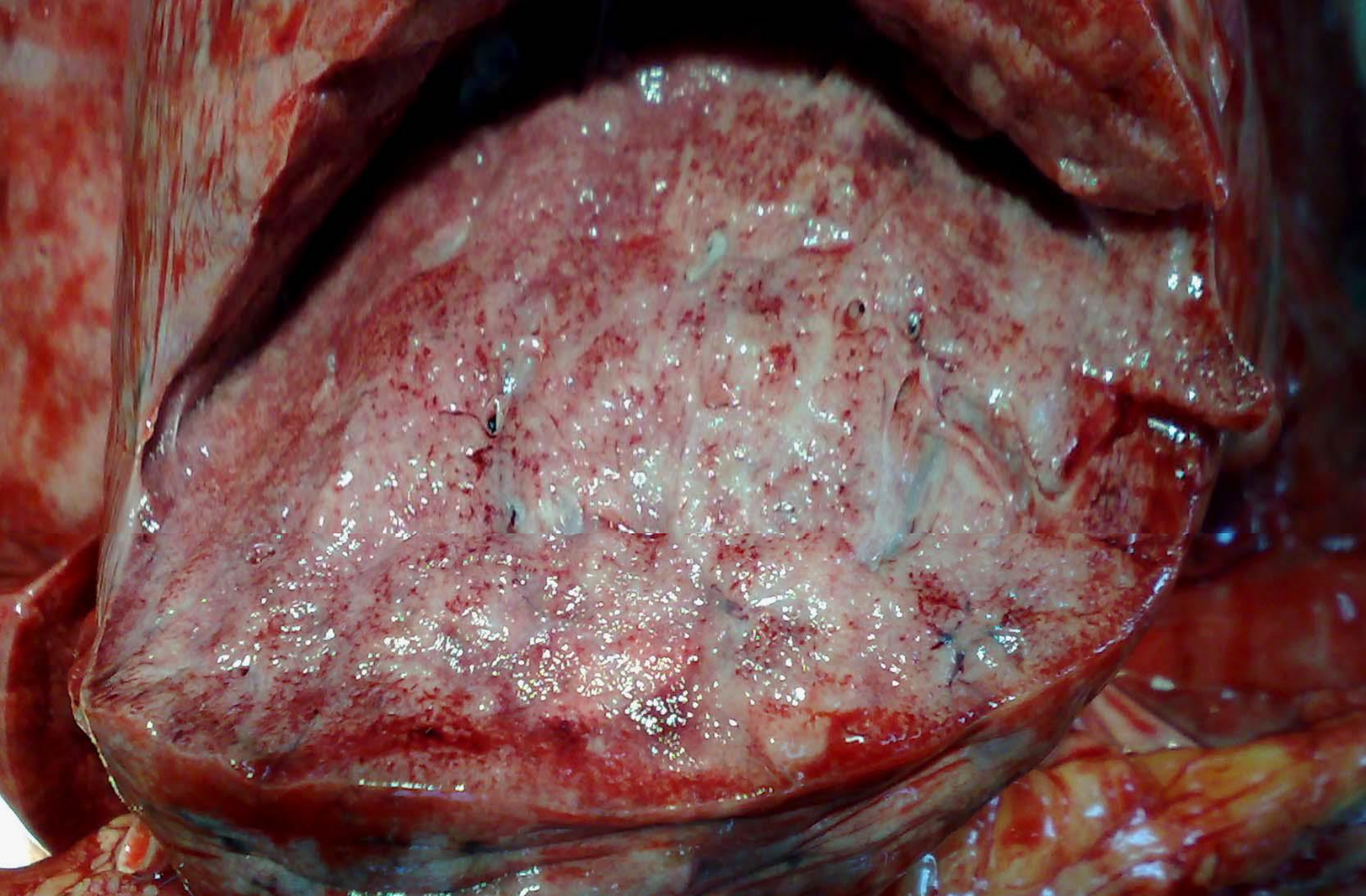
**№ 153. Tuberculous spondylitis.
(*Pott disease*).**



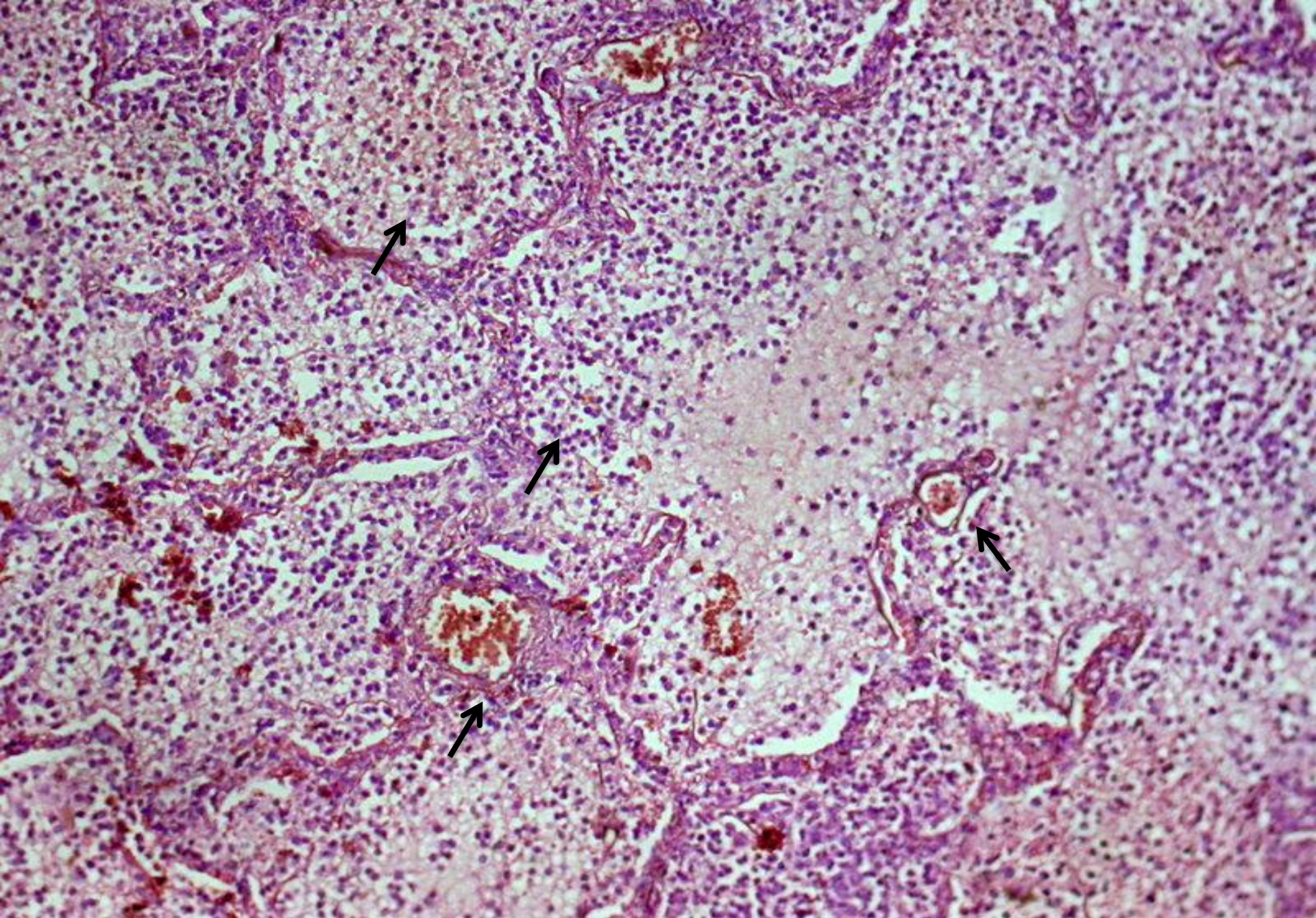
**Influenza
hemorrhagic
tracheobronchitis.**



Big mottled lung in influenza.



Lung in the proliferative stage of the diffuse alveolar lesion in influenza.



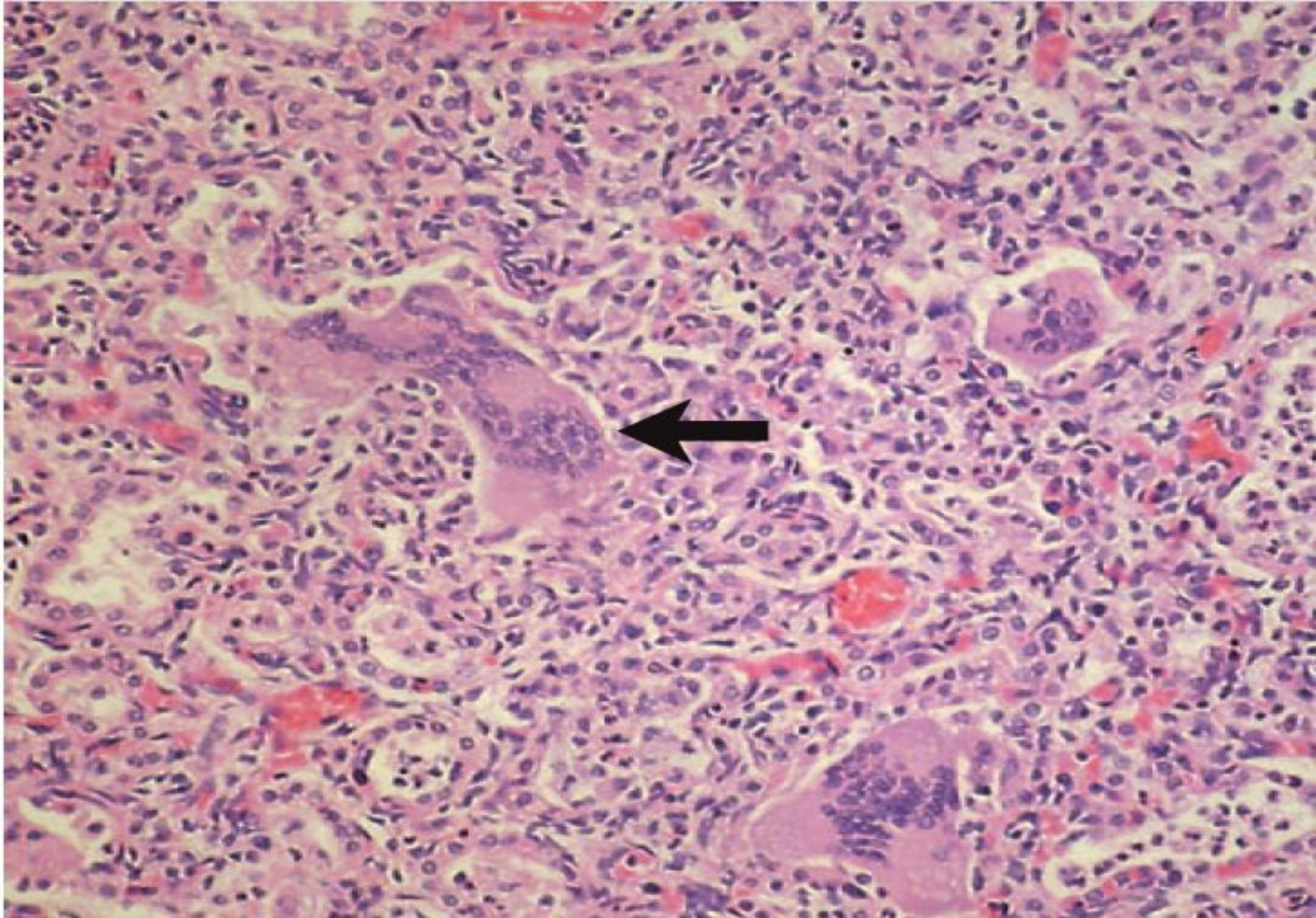
Influenza pneumonia associated with secondary infection.

Measles: Rash, conjunctivitis, and rhinitis





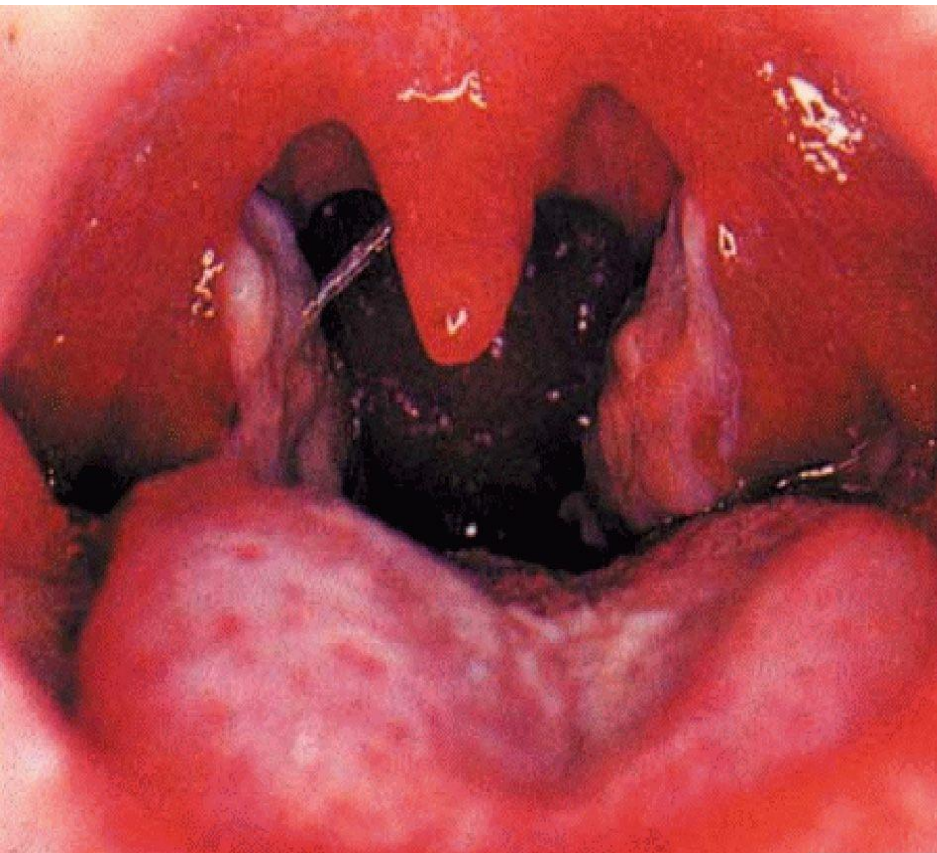
Measles enanthem (whitish spots on the mucosa of the oral cavity).



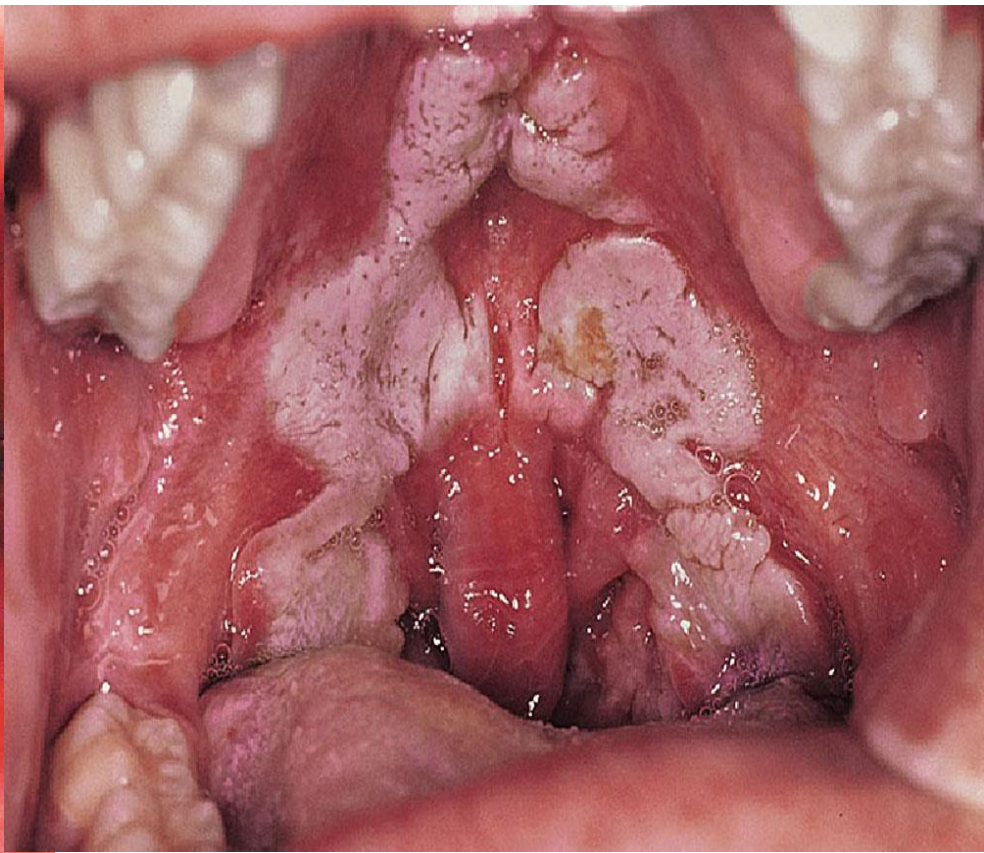
Giant cells pneumonia in measles. (*H-E stain*).



Diphtheritic (croupous) tracheitis.



1



2

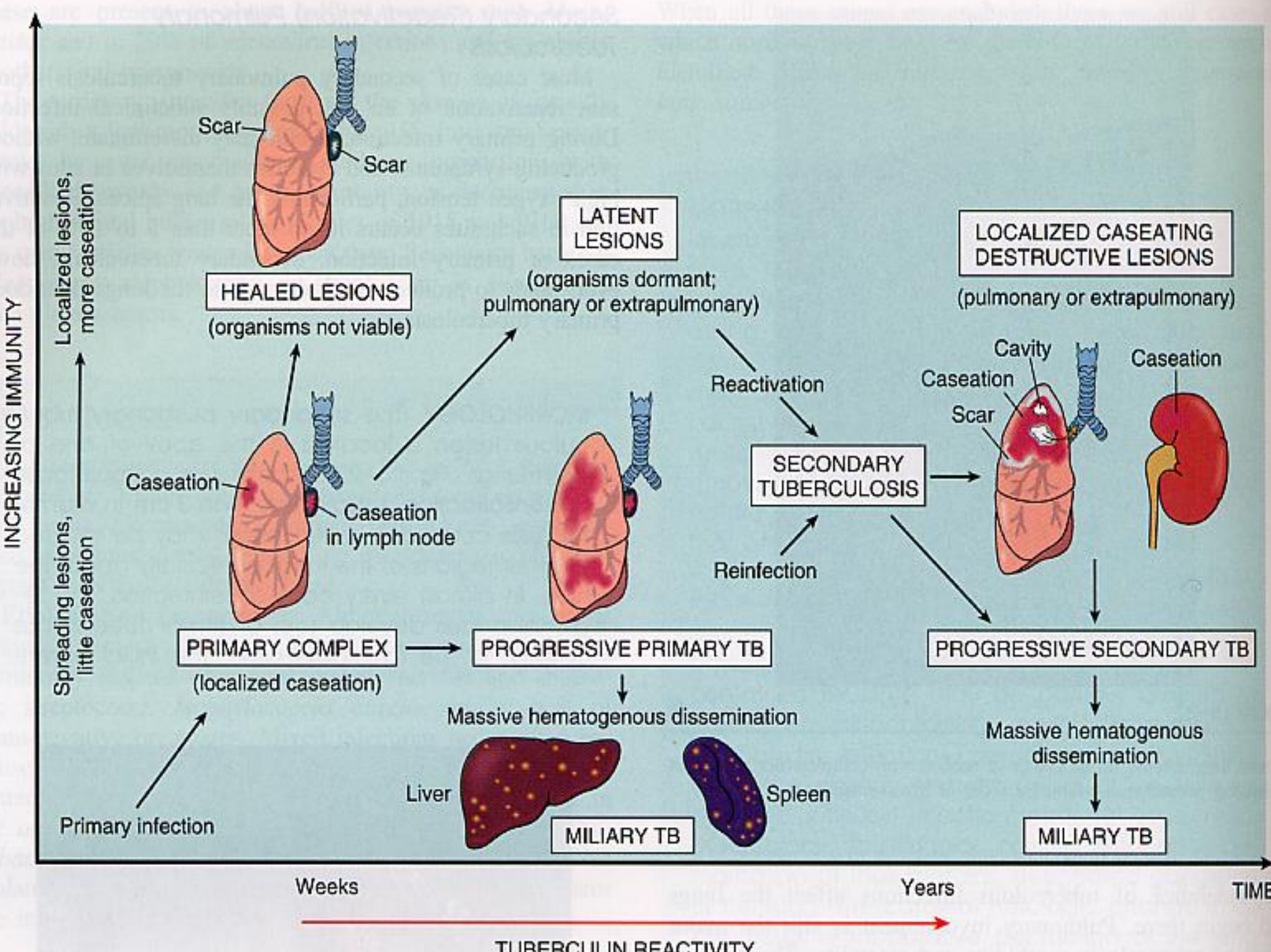
Pharyngeal diphtheria (1- localized form, 2 - toxic form)

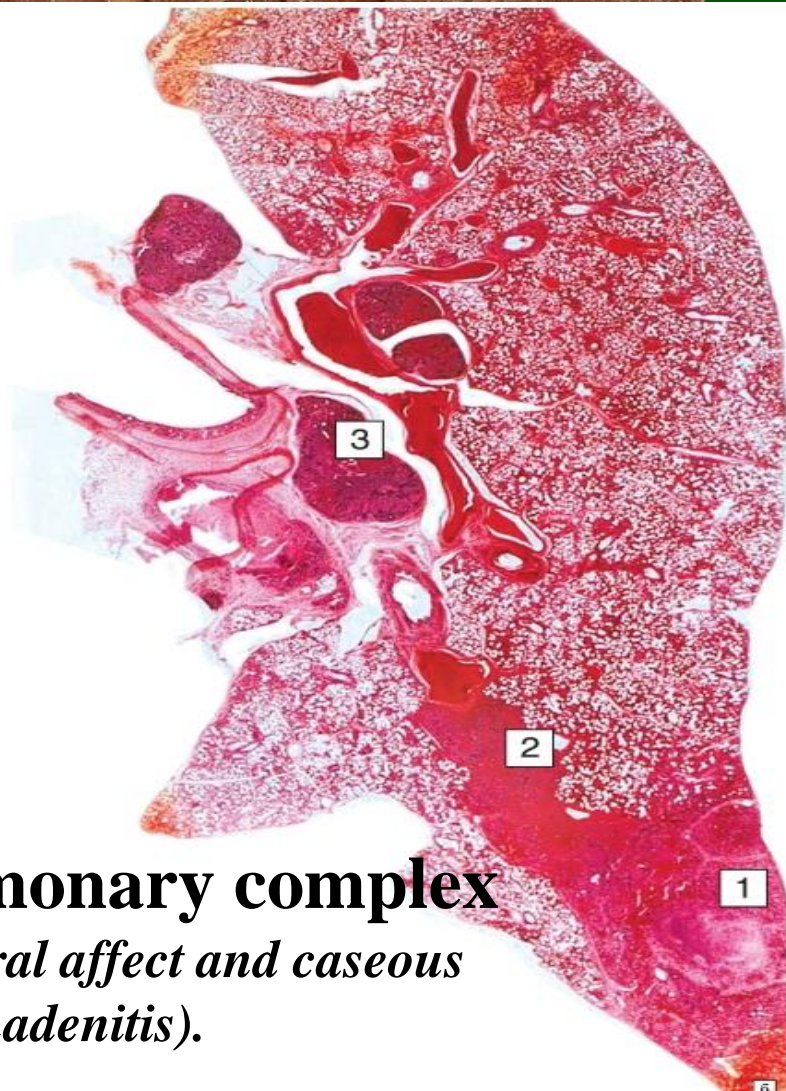
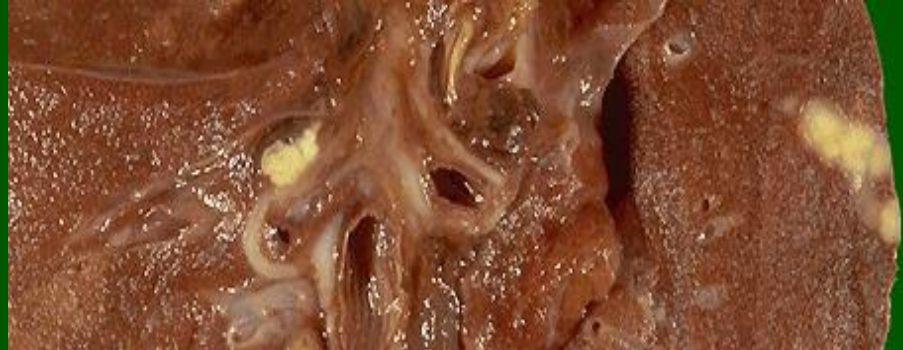


Scarlet fever, absence of rash around the lips.



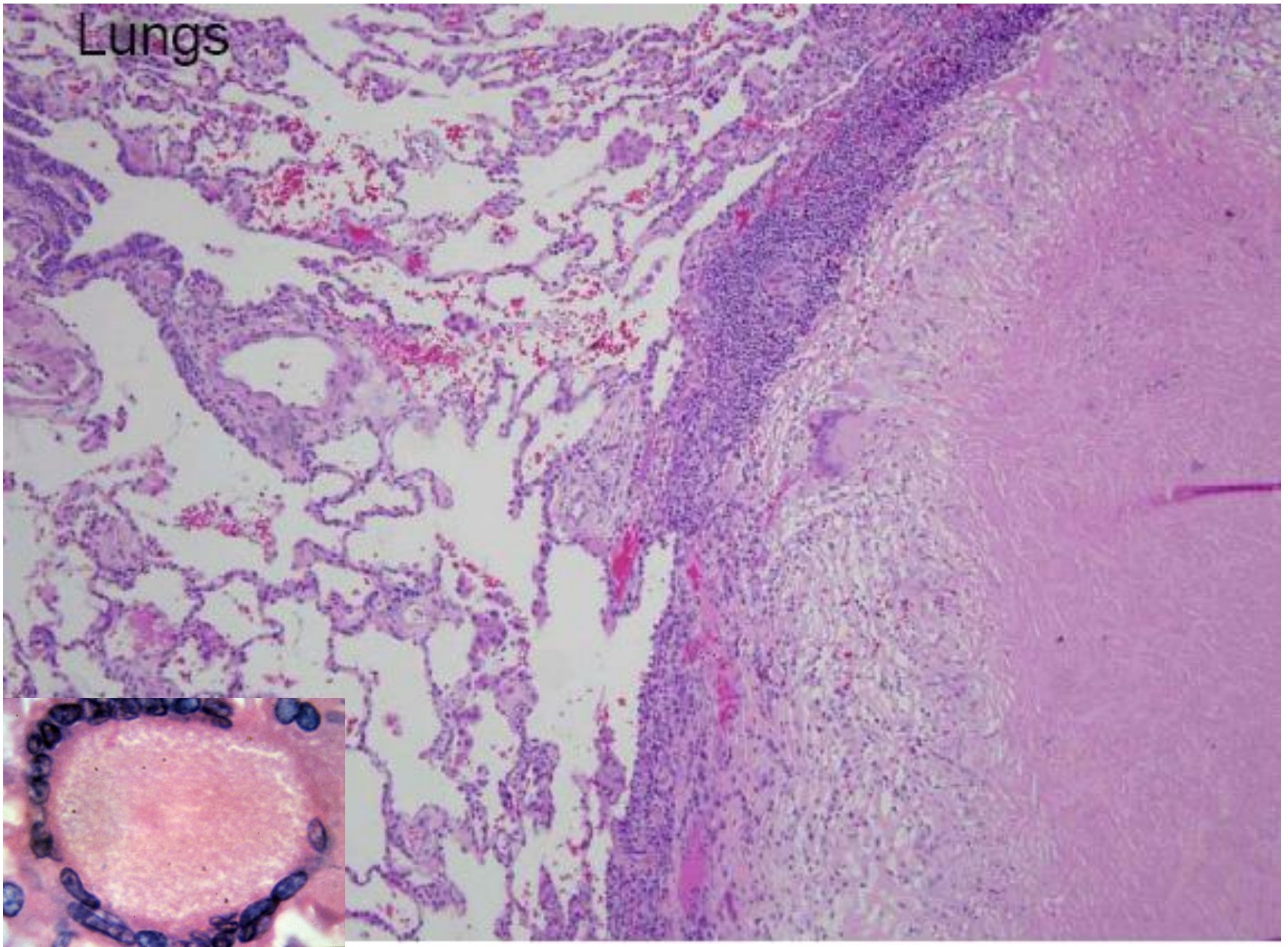
Strawberry tongue in scarlet fever.



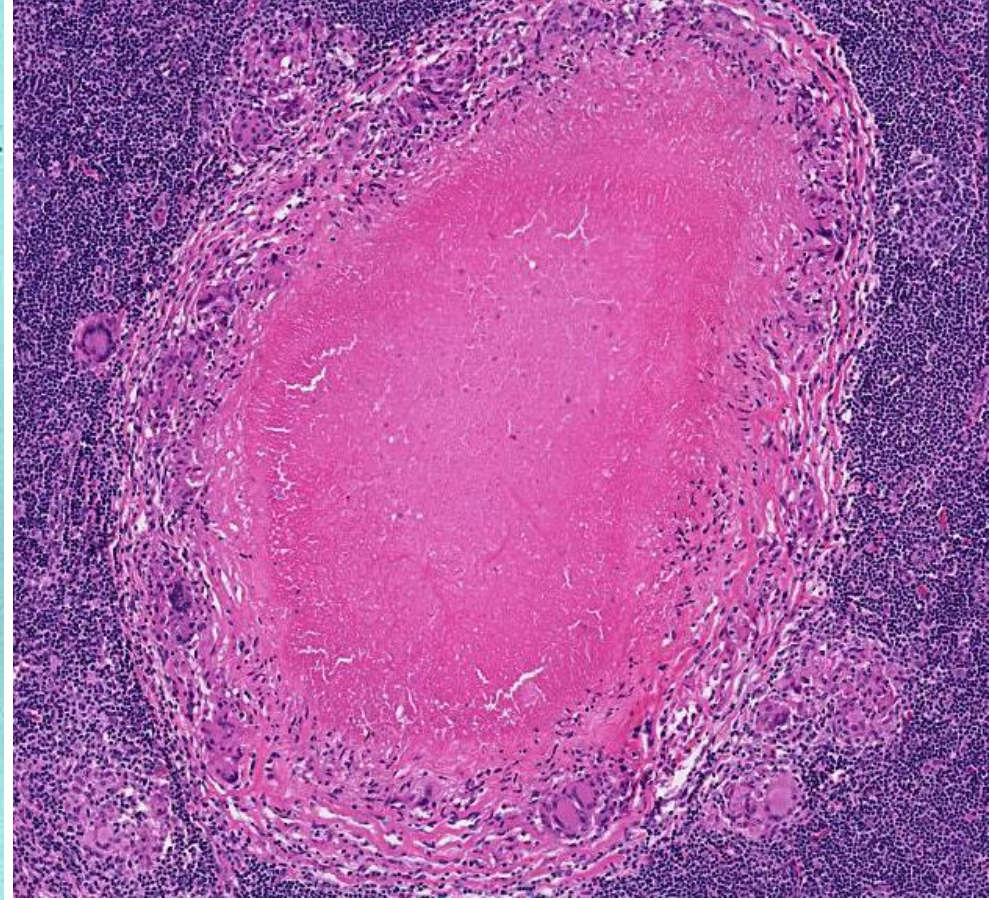
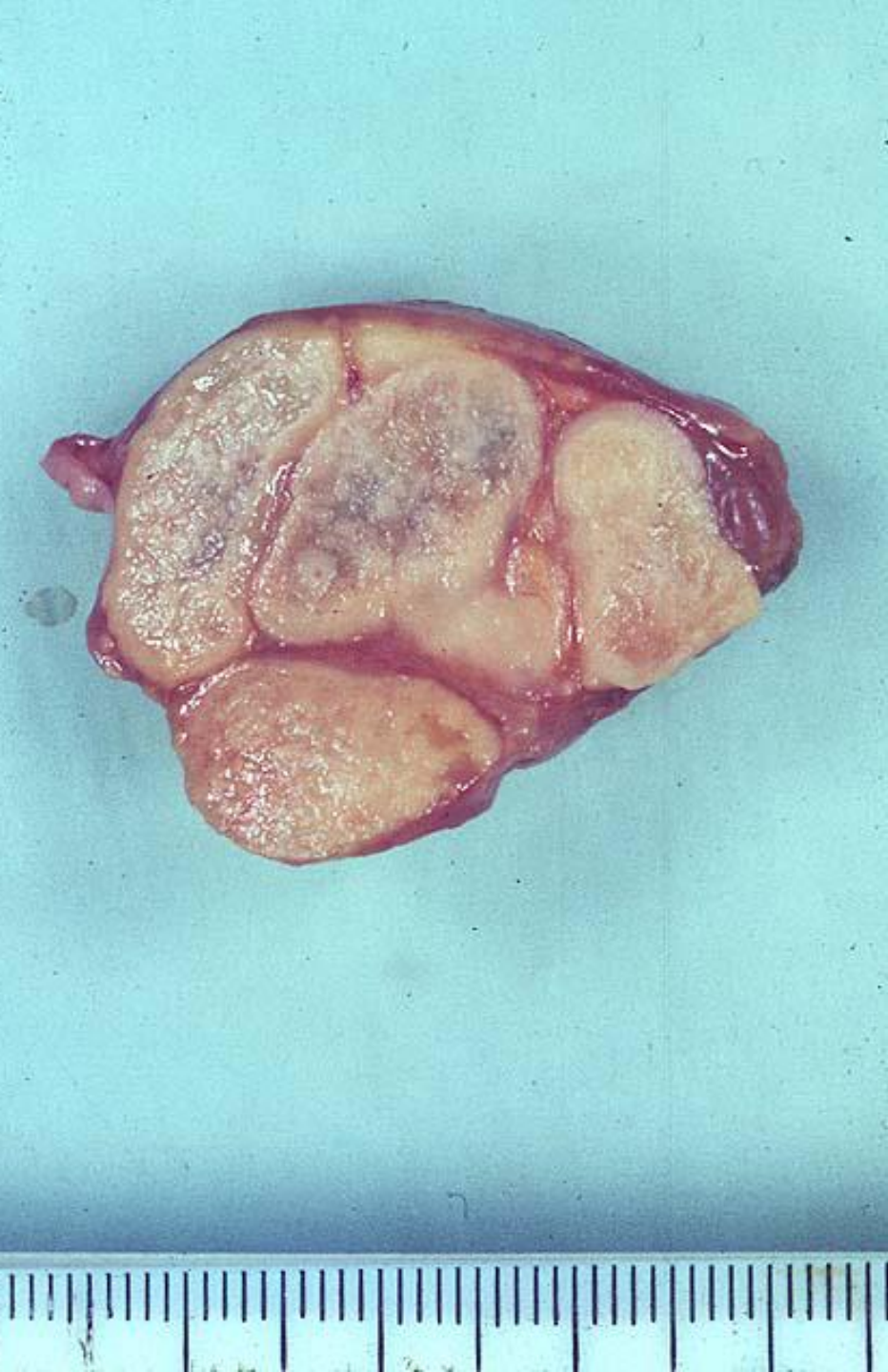


Primary pulmonary complex
(*primary subpleural affect and caseous lymphadenitis*).

Lungs



Primary pulmonary affect.



Tuberculous lymphadenitis.



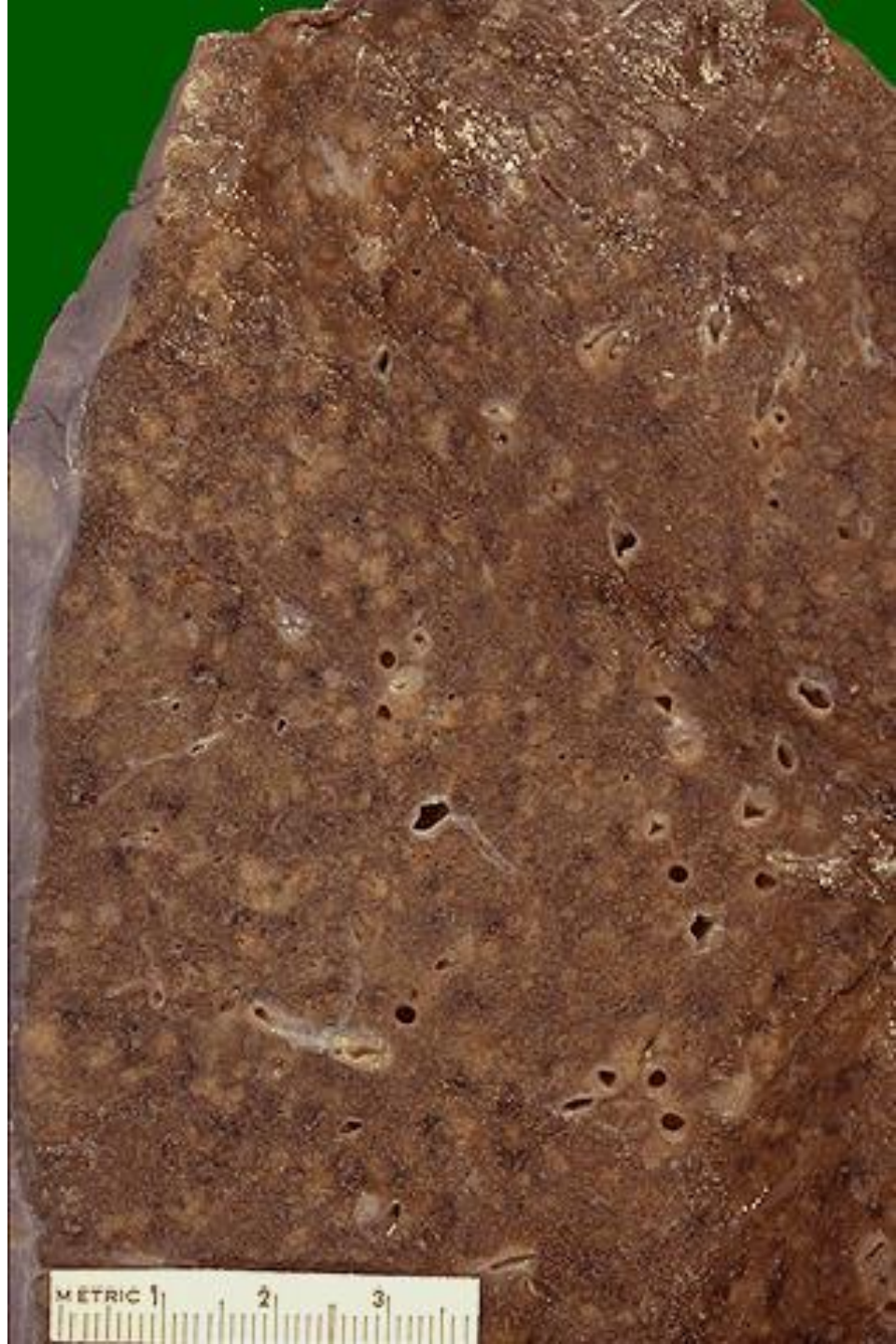
**Primary intestinal
complex.**

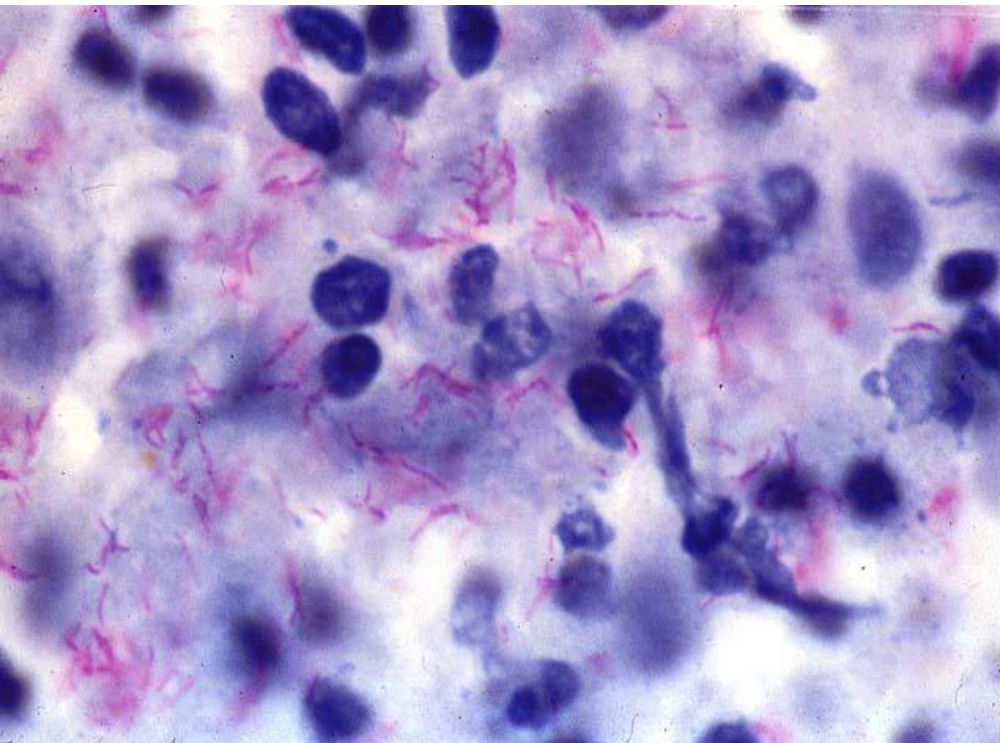
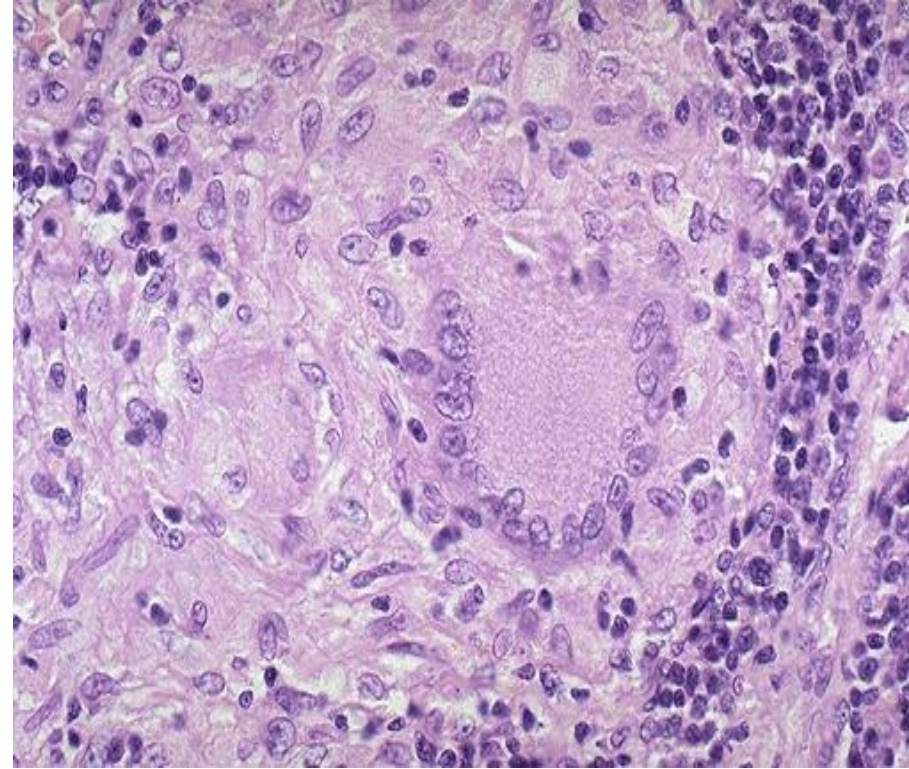
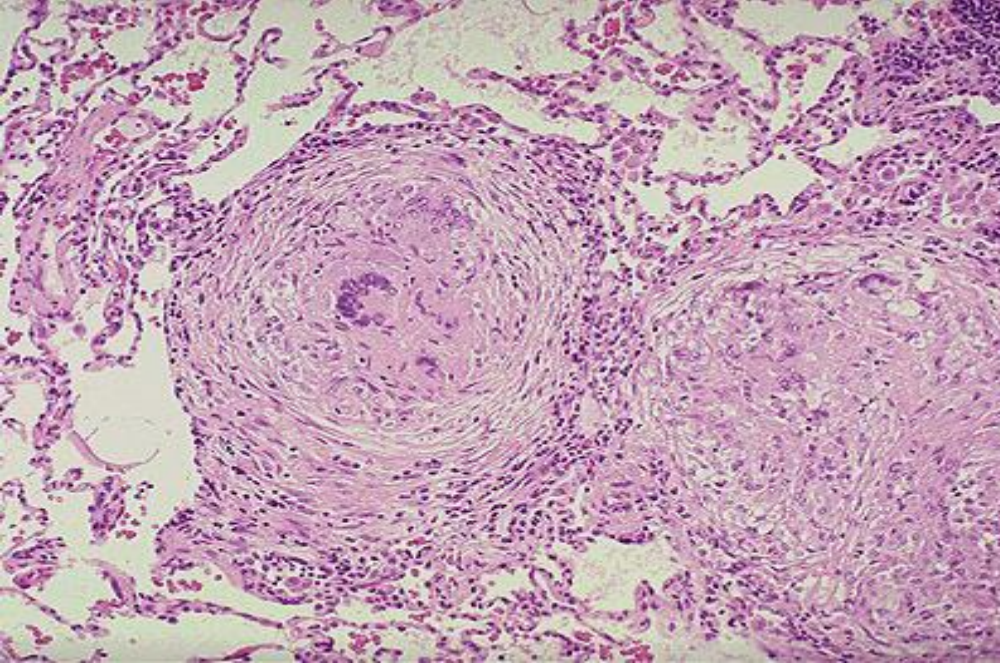


Healed primary complex
(sclerosis of the primary
affect and calcinosis of lymph
nodes).



Pulmonary miliary tuberculosis.



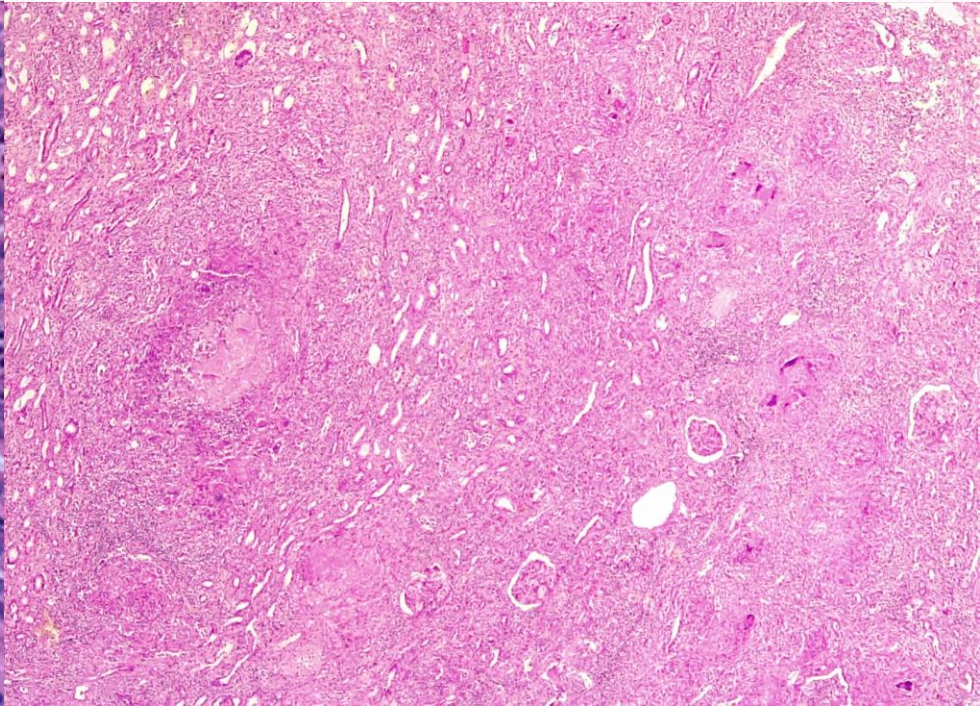
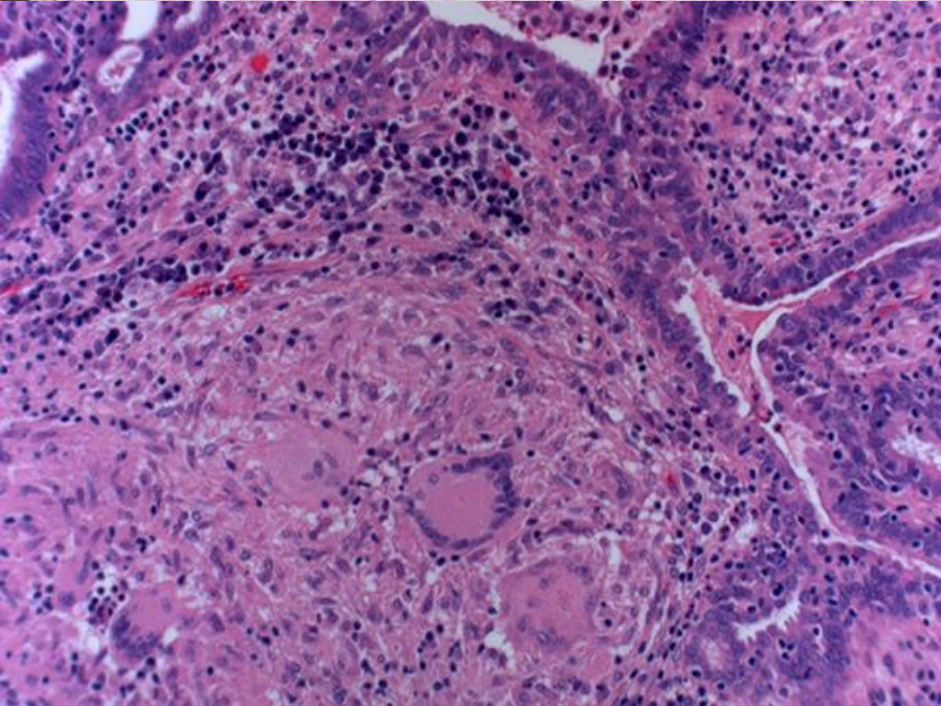


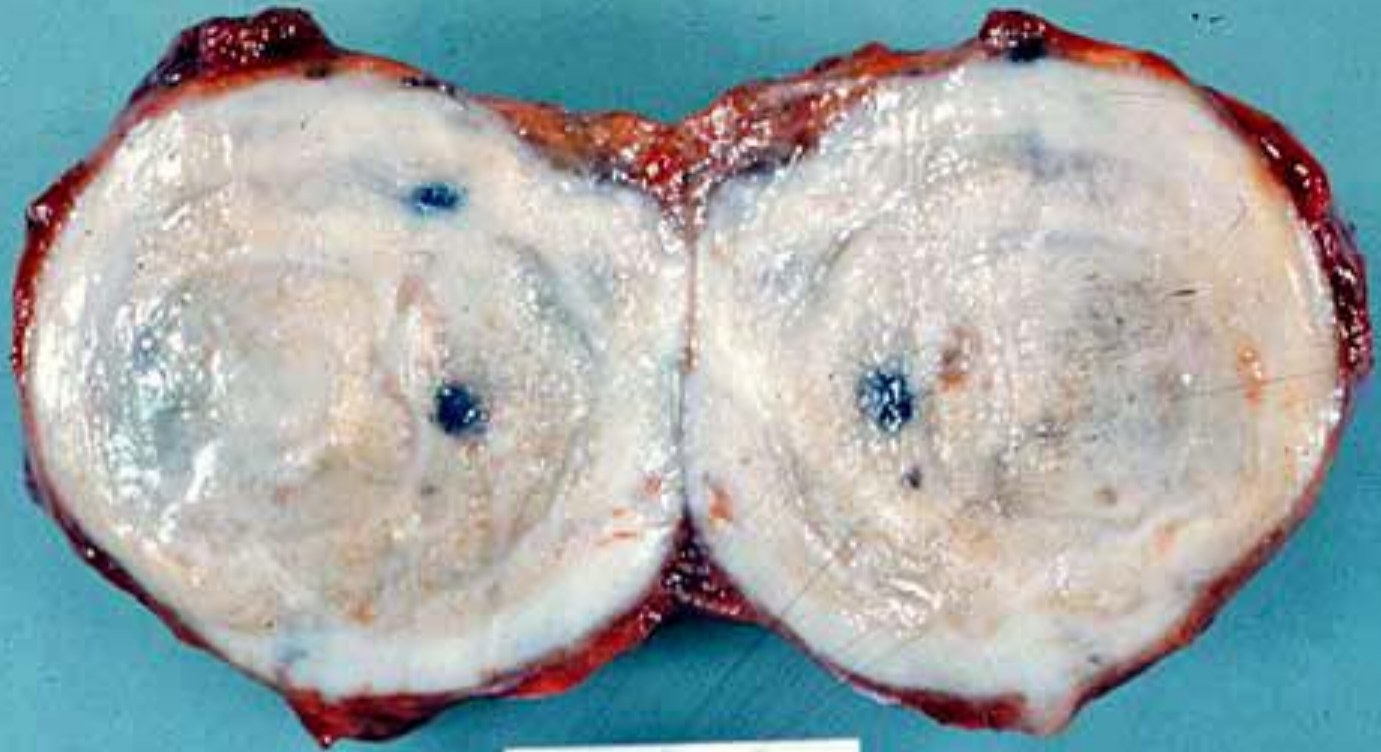
**Tuberculous granulomas
with giant Langhans cells,
mycobacteria.
(*Ziehl-Nielsen stain*).**

Liver

Adrenals

Secondary tuberculosis, granulomas in the liver, adrenal glands, salpinges and kidneys.

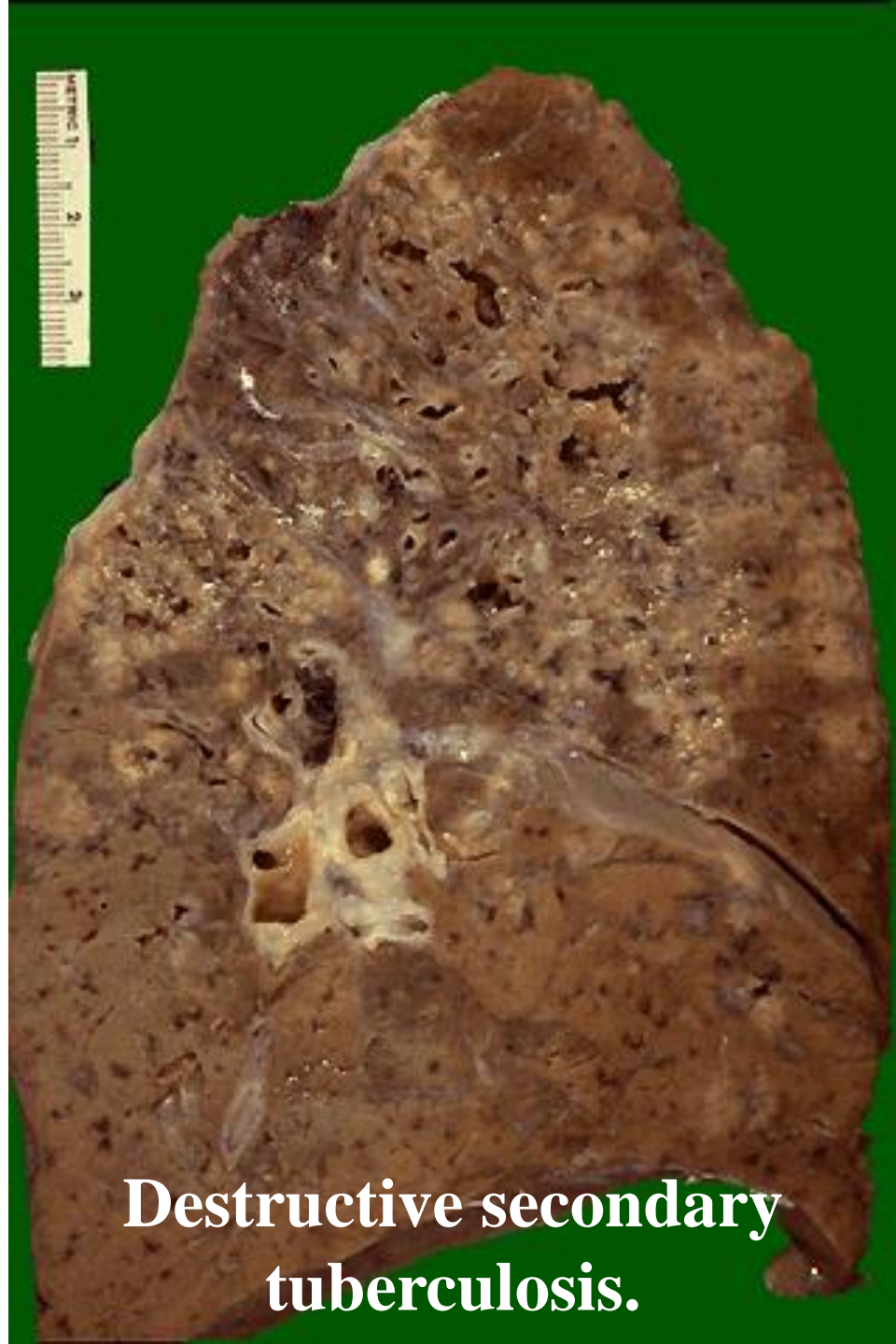




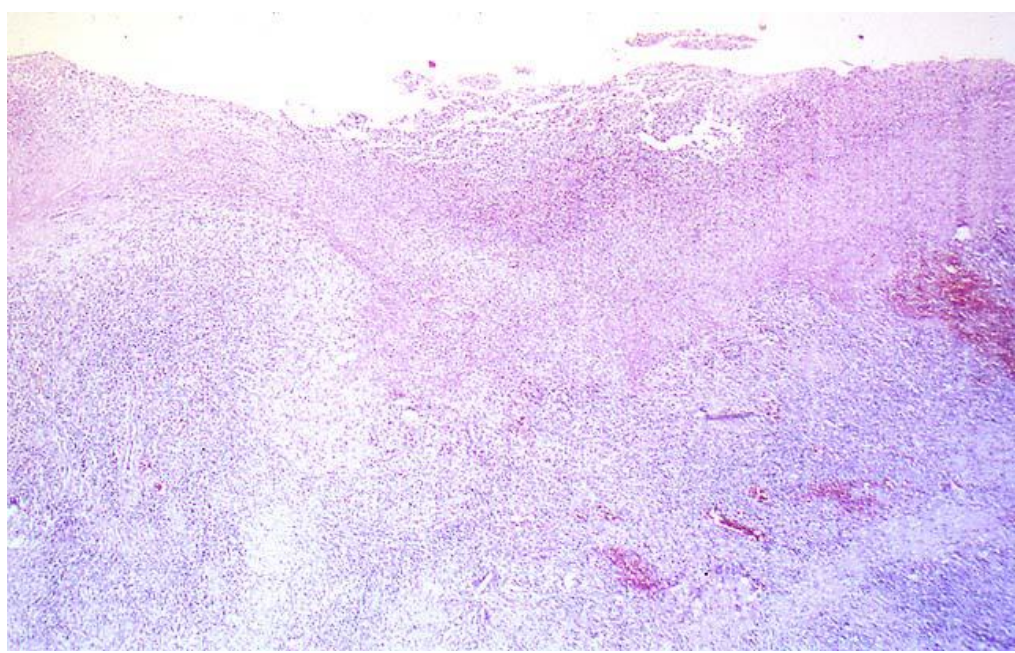
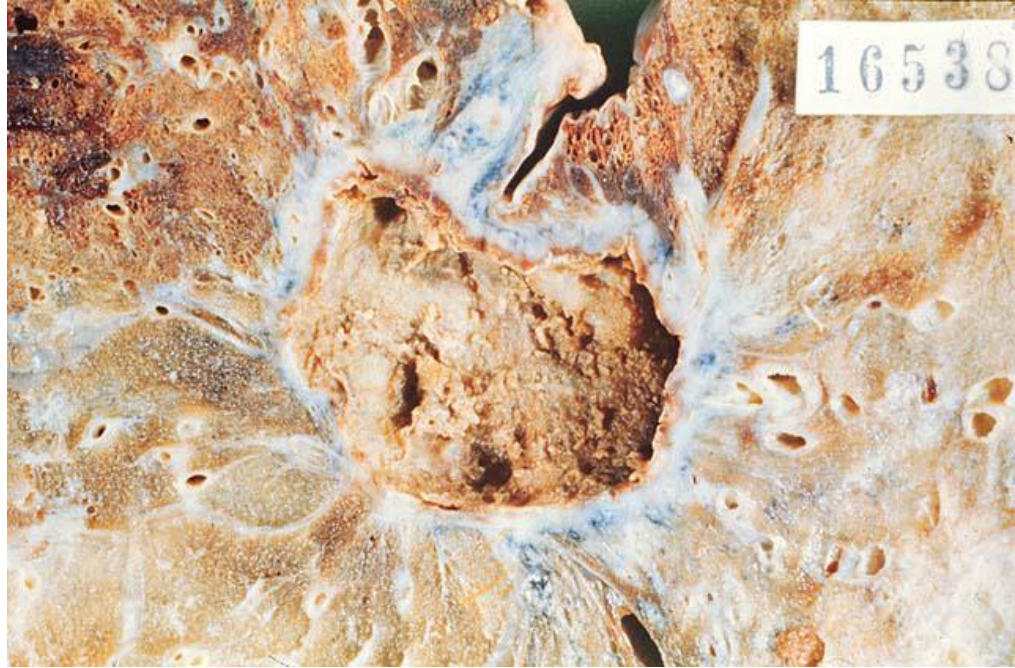
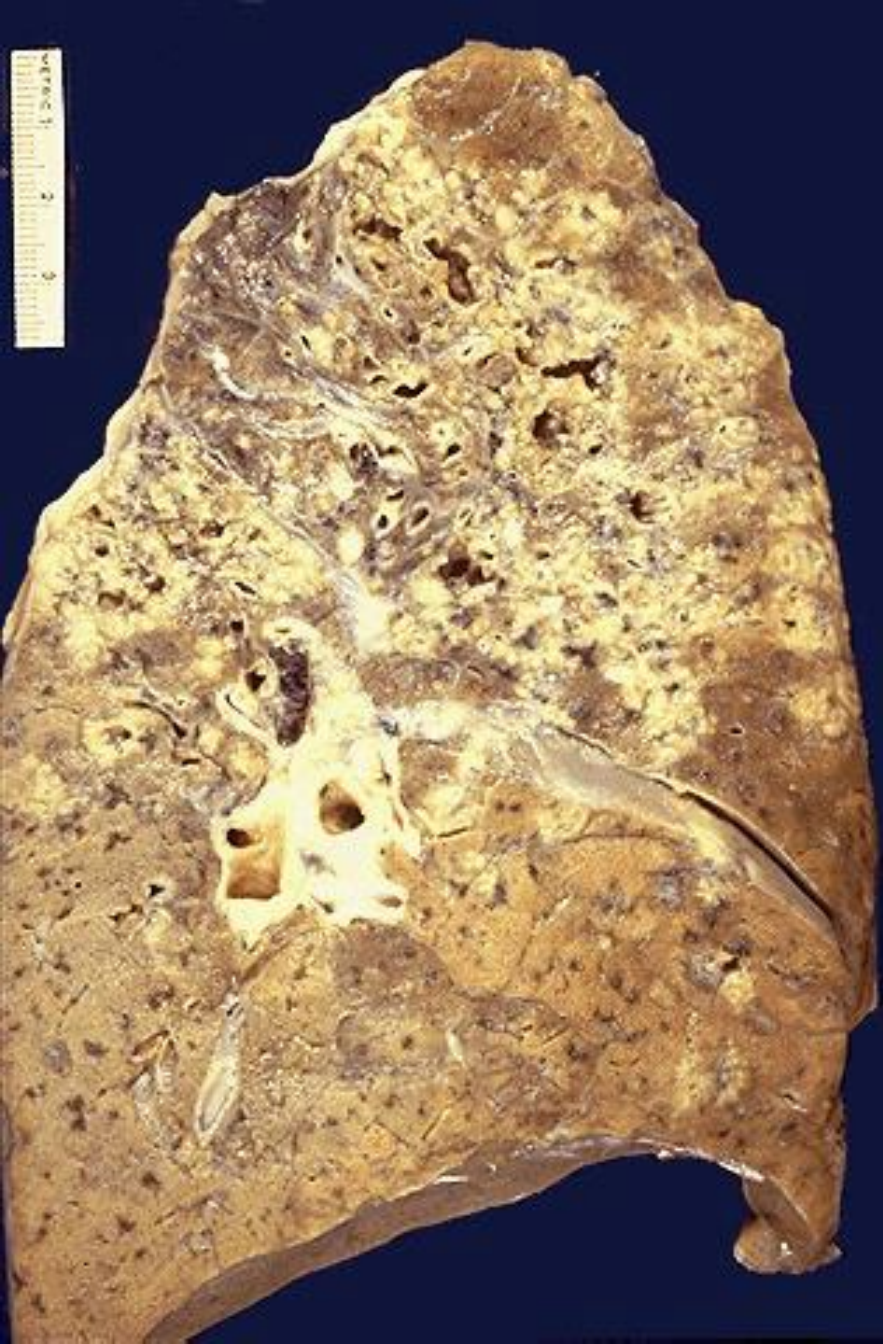
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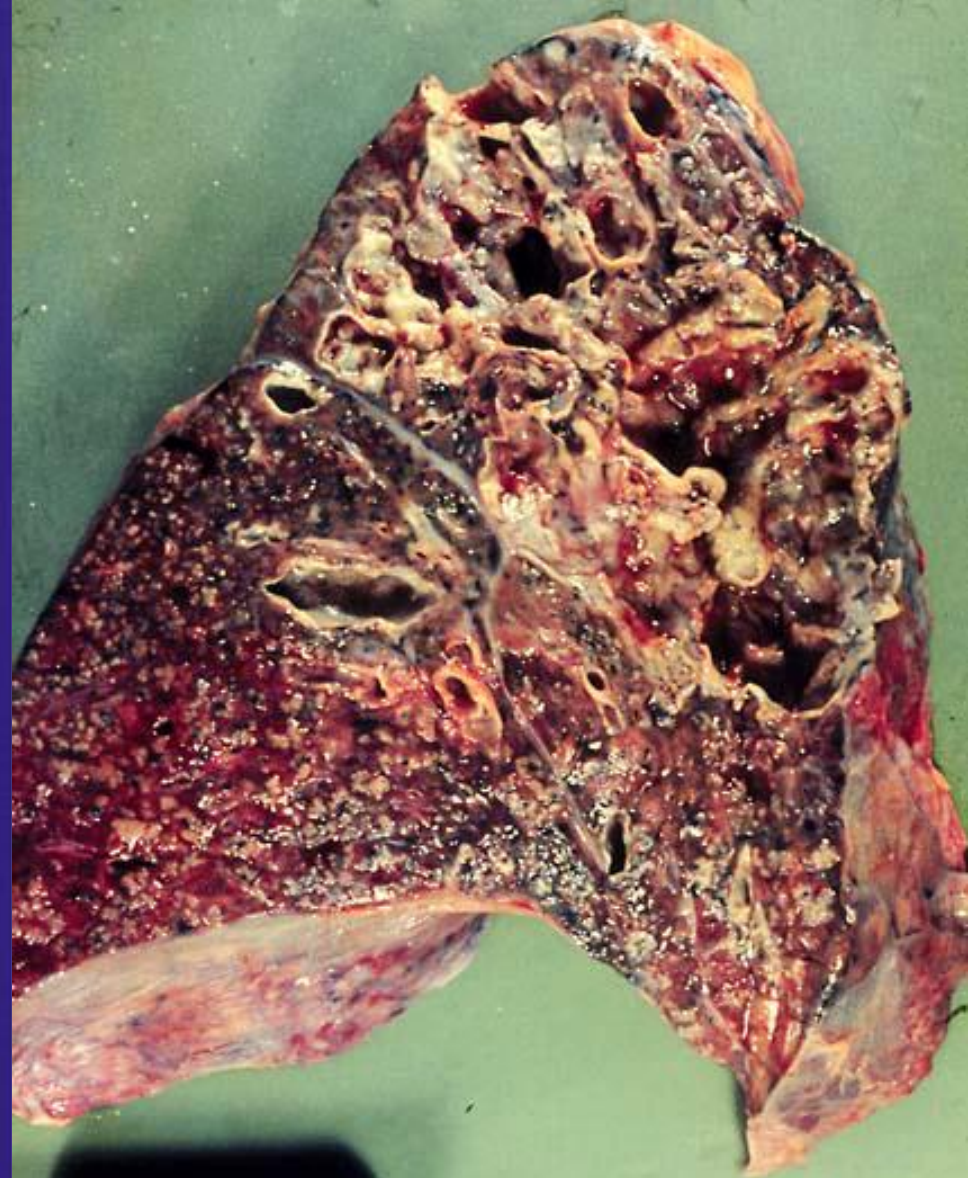
Encapsulated pulmonary tuberculoma.



Destructive secondary tuberculosis.

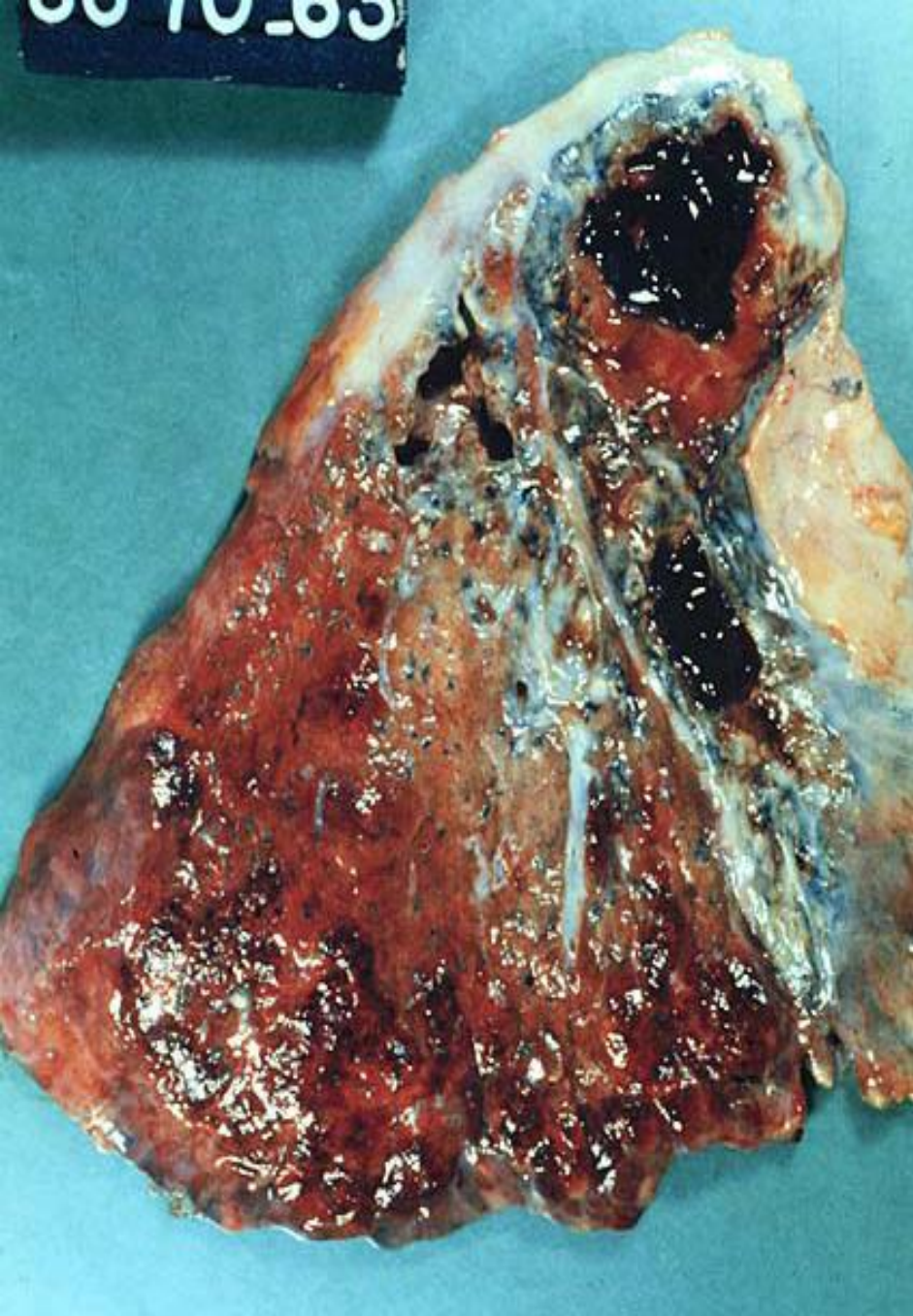


Secondary fibro-cavitary tuberculosis, cavity wall.

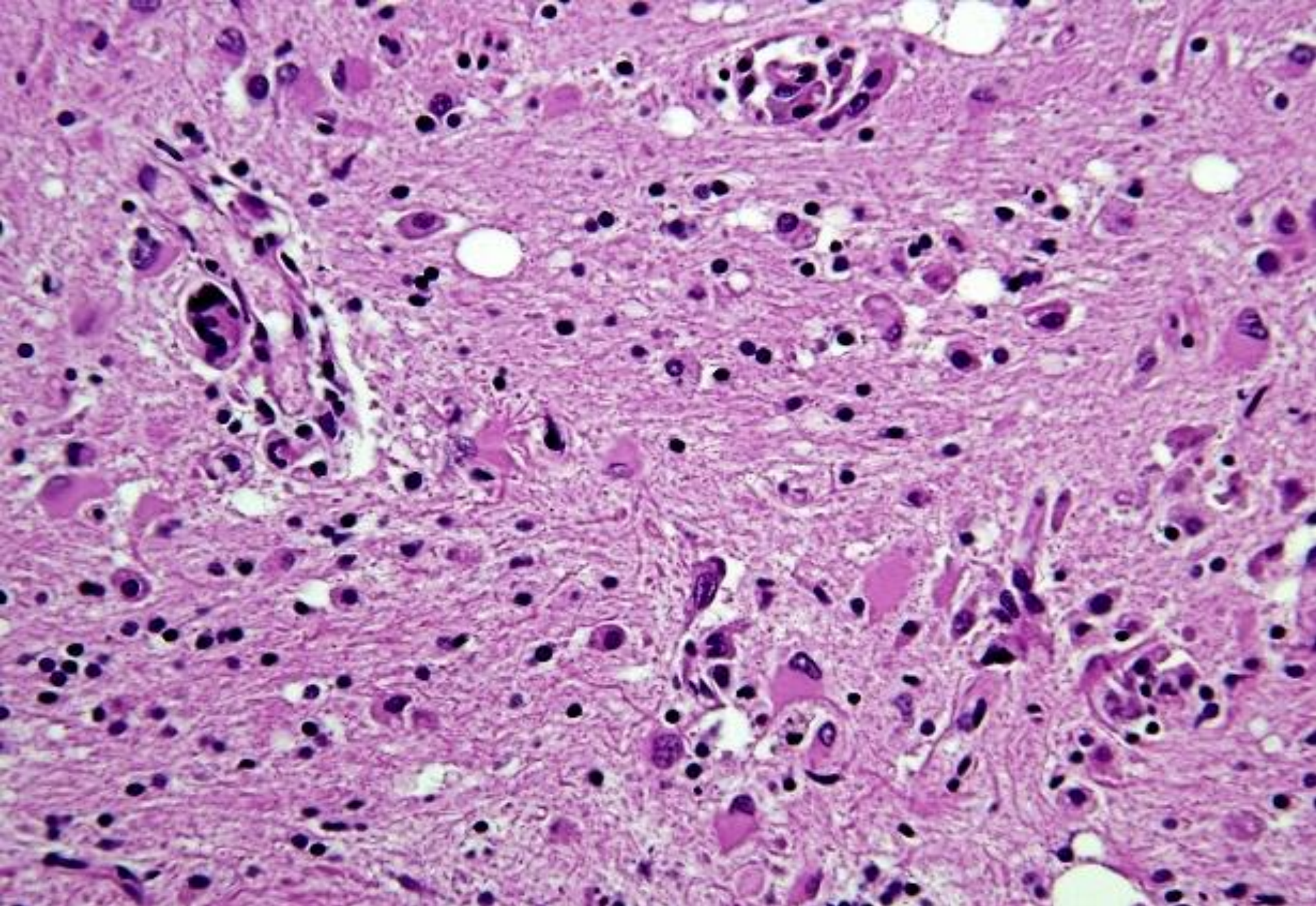


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Secondary fibro-cavitary tuberculosis.



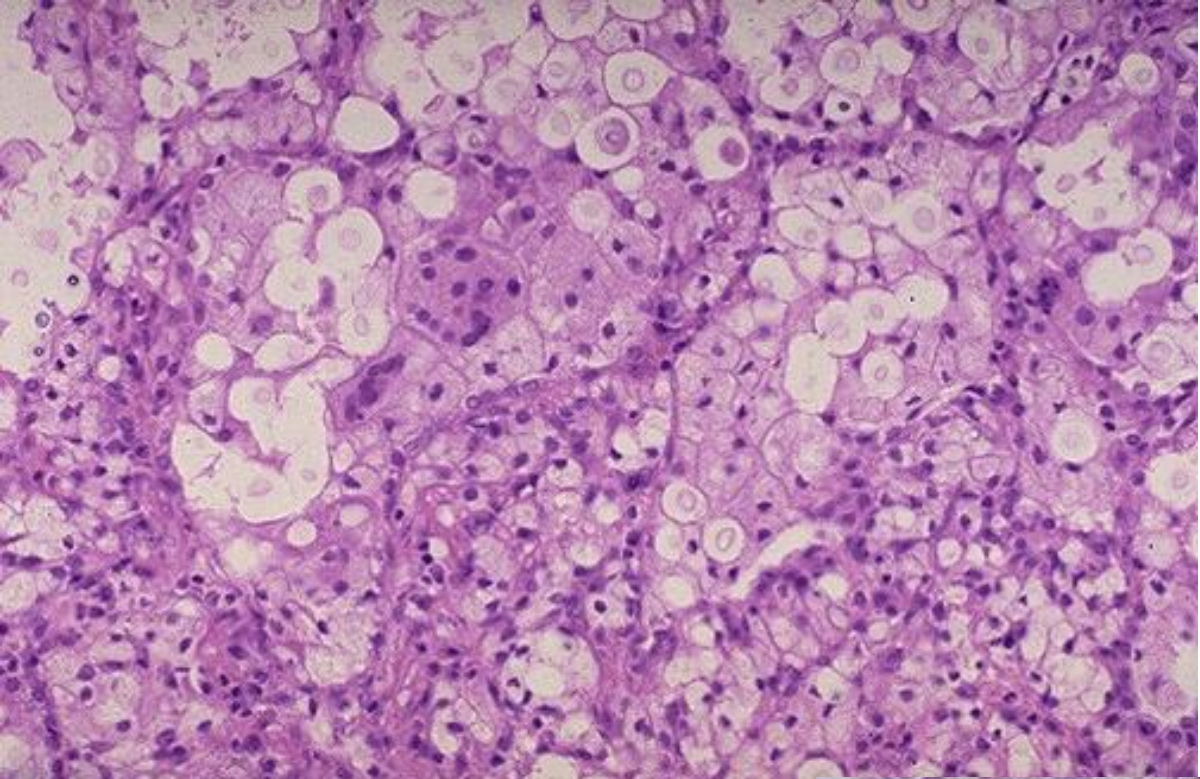
Pulmonary fibro-cavitary tuberculosis with hemorrhage.



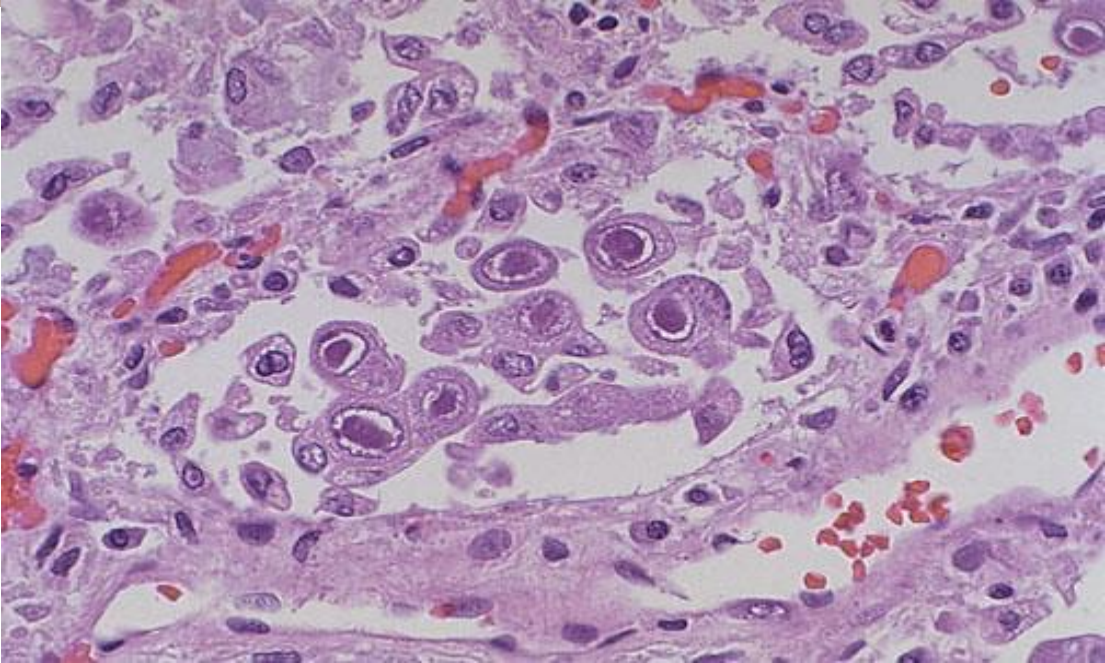
HIV encephalopathy with giant cells, resulting from fusion of HIV-infected macrophages.



Kaposi sarcoma (*skin, liver, stomach*).



**Pulmonary
cytomegaloviral
infection.**



**Pulmonary
cryptococcosis.**