

PRACTICAL

4

***Granulomatous
Diseases***

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1- Tuberculosis of the lung

Pulmonary TB – Caseous Necrosis – Gross



The granulomas have areas of caseous necrosis. This pattern of multiple caseating granulomas primarily in the upper lobes is most characteristic of secondary T.B.

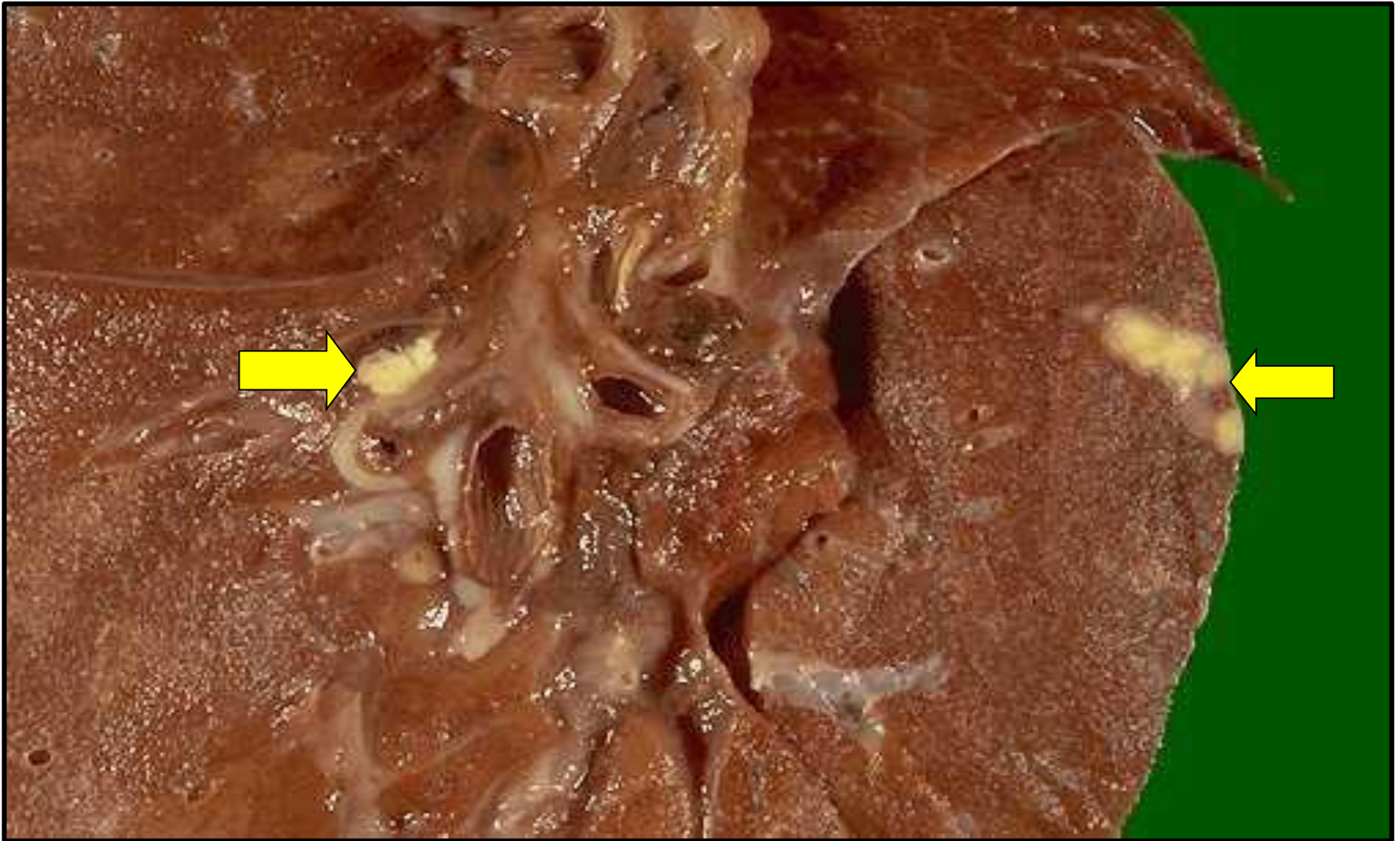
Pulmonary TB – Caseous Necrosis – Gross



Initial (primary) infection with T.B. producing a sub-pleural lesion called

focus. The early Ghon's focus together with the lymph node

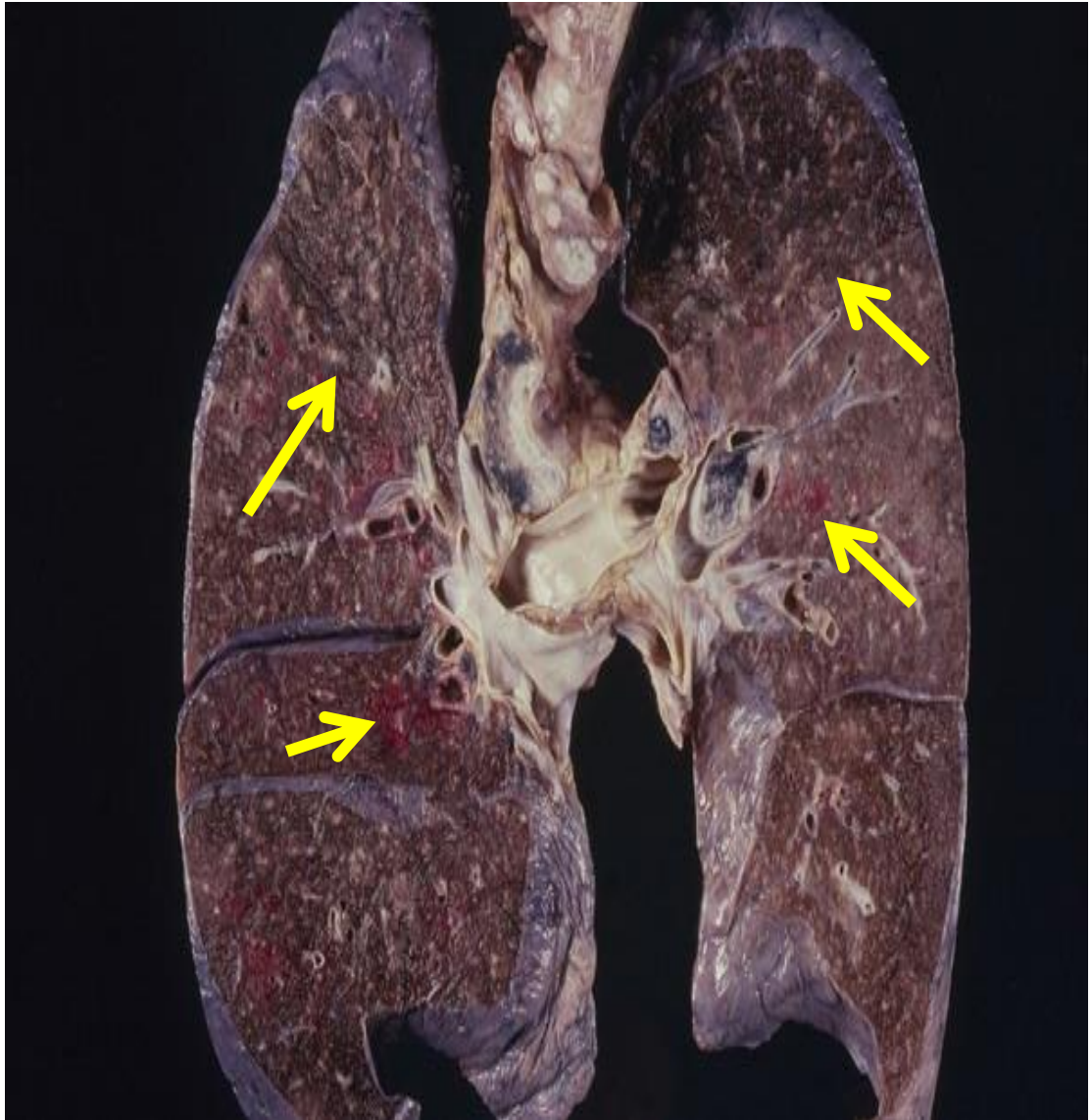
Pulmonary TB - Ghon's Complex – Gross



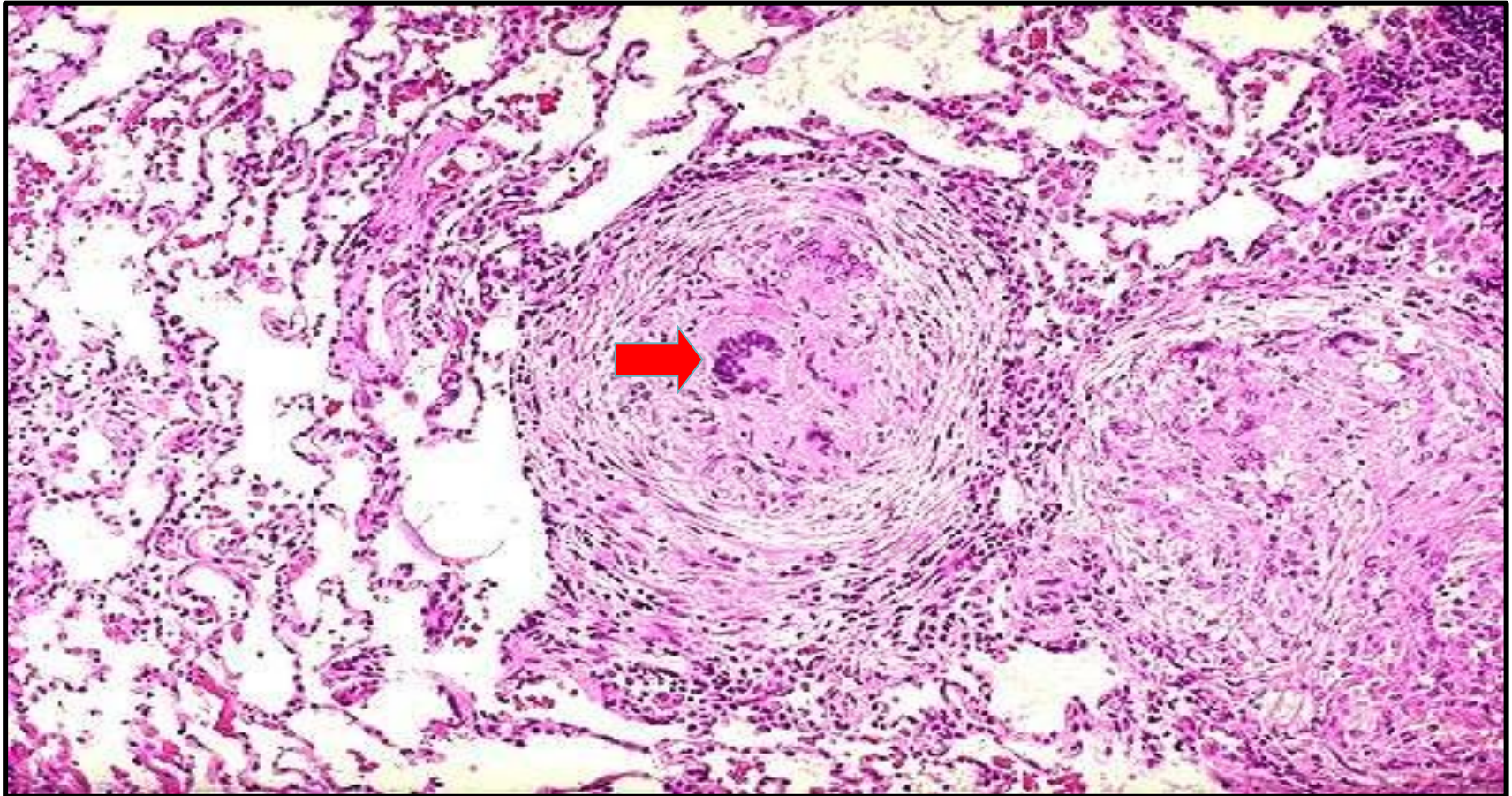
The Ghon's complex is seen here at closer range. Primary tuberculosis is the pattern seen with initial infection with tuberculosis in children. Reactivation, or secondary tuberculosis, is more typically seen in adults.

Miliary TB of the Lungs

- **Miliary TB can occur when TB lung lesions erode pulmonary veins or when extrapulmonary TB lesions erode systemic veins.**
- **This results in hematogenous dissemination of tubercle bacilli producing myriads of 1-2 mm. lesions throughout the body in susceptible hosts.**
- **Miliary spread limited to the lungs can occur following erosion of pulmonary arteries by TB lesions.**

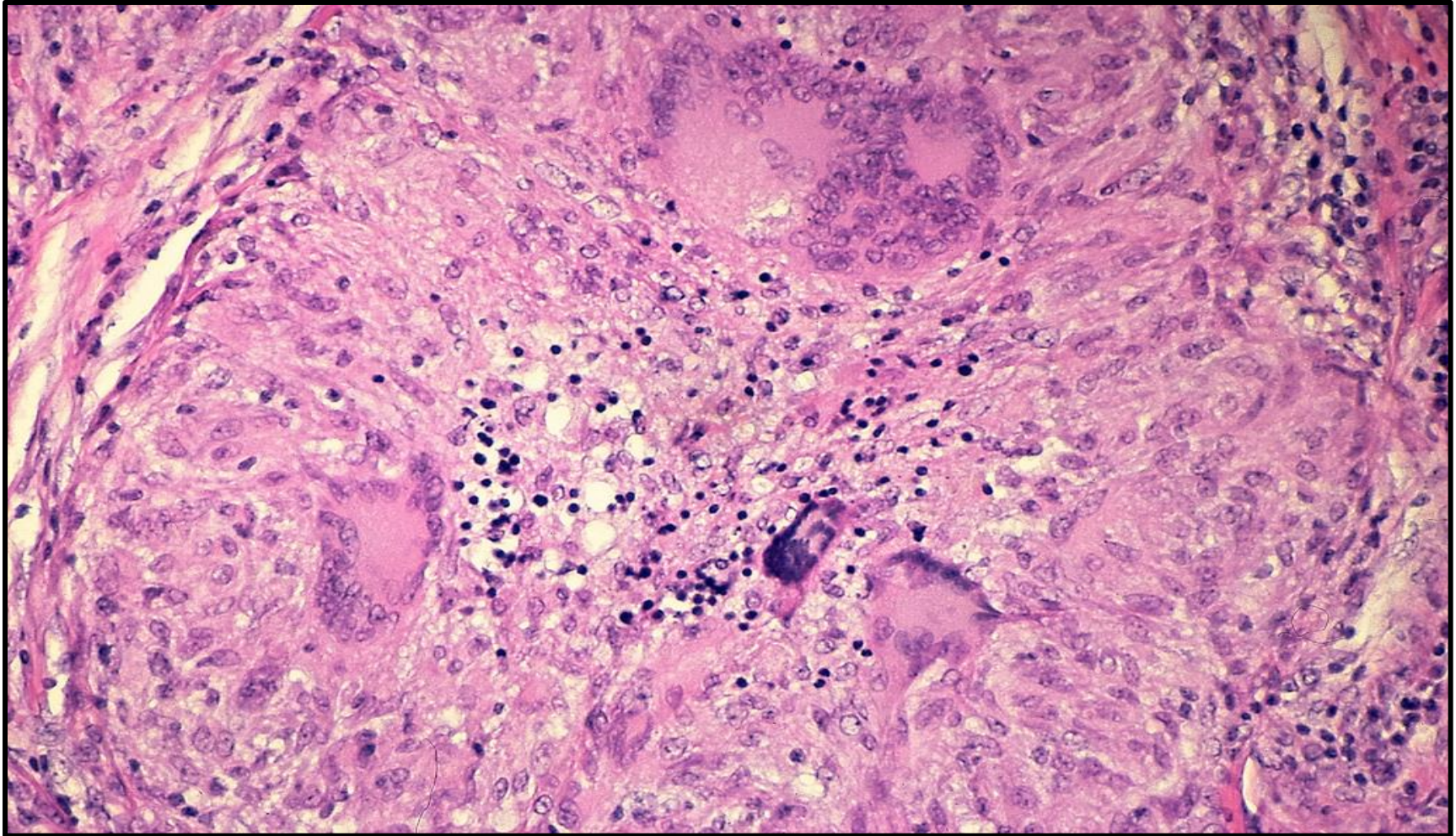


Tuberculous Granulomas



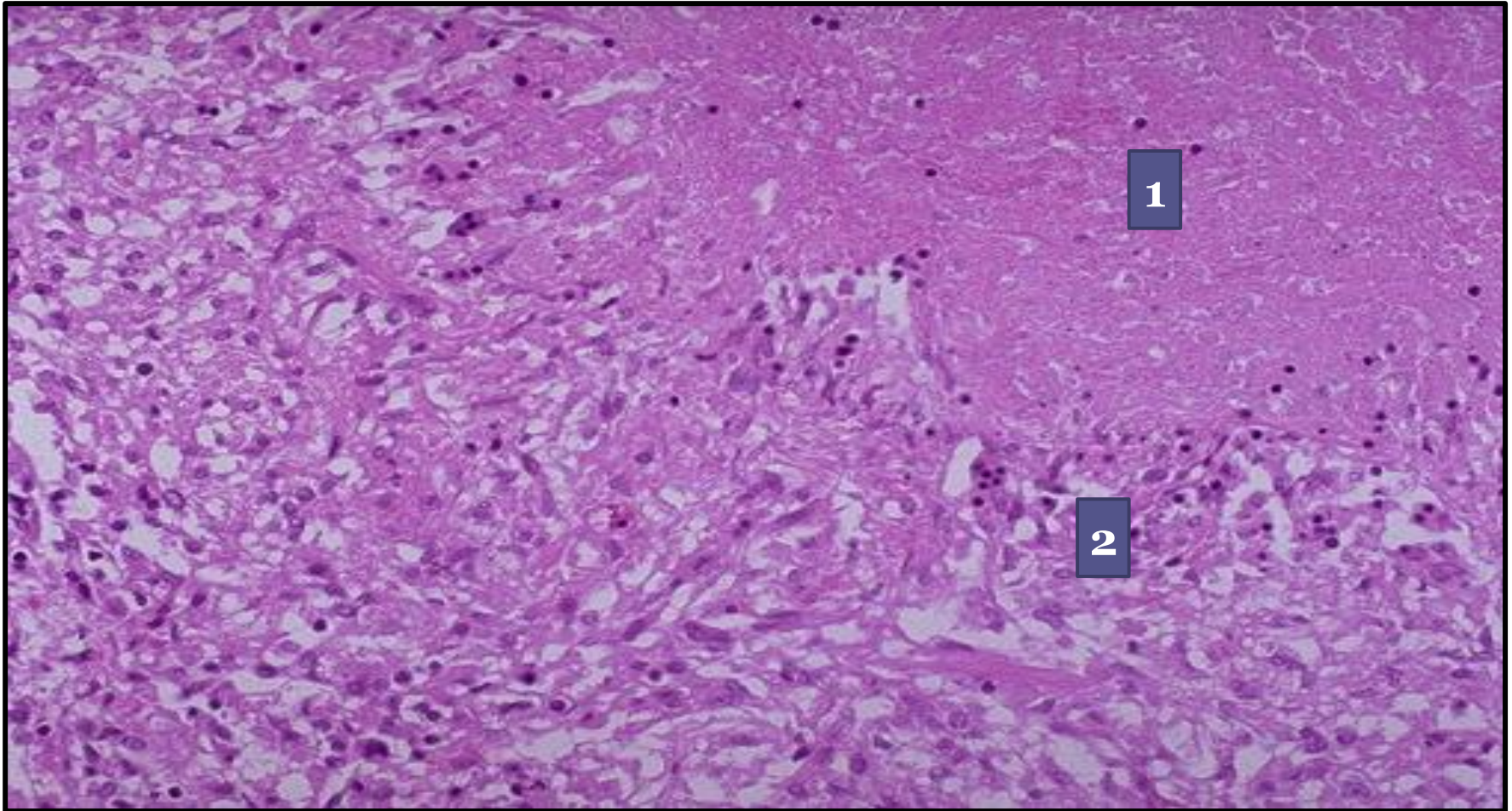
Well-defined granulomas are seen here. They have rounded outlines. The one toward the center of the photograph contains several Langhan's giant cells. Granulomas are composed of transformed macrophages called epithelioid cells along with lymphocytes, occasional PMN's, plasma cells, and fibroblasts

Pulmonary TB - Granuloma with central early necrosis



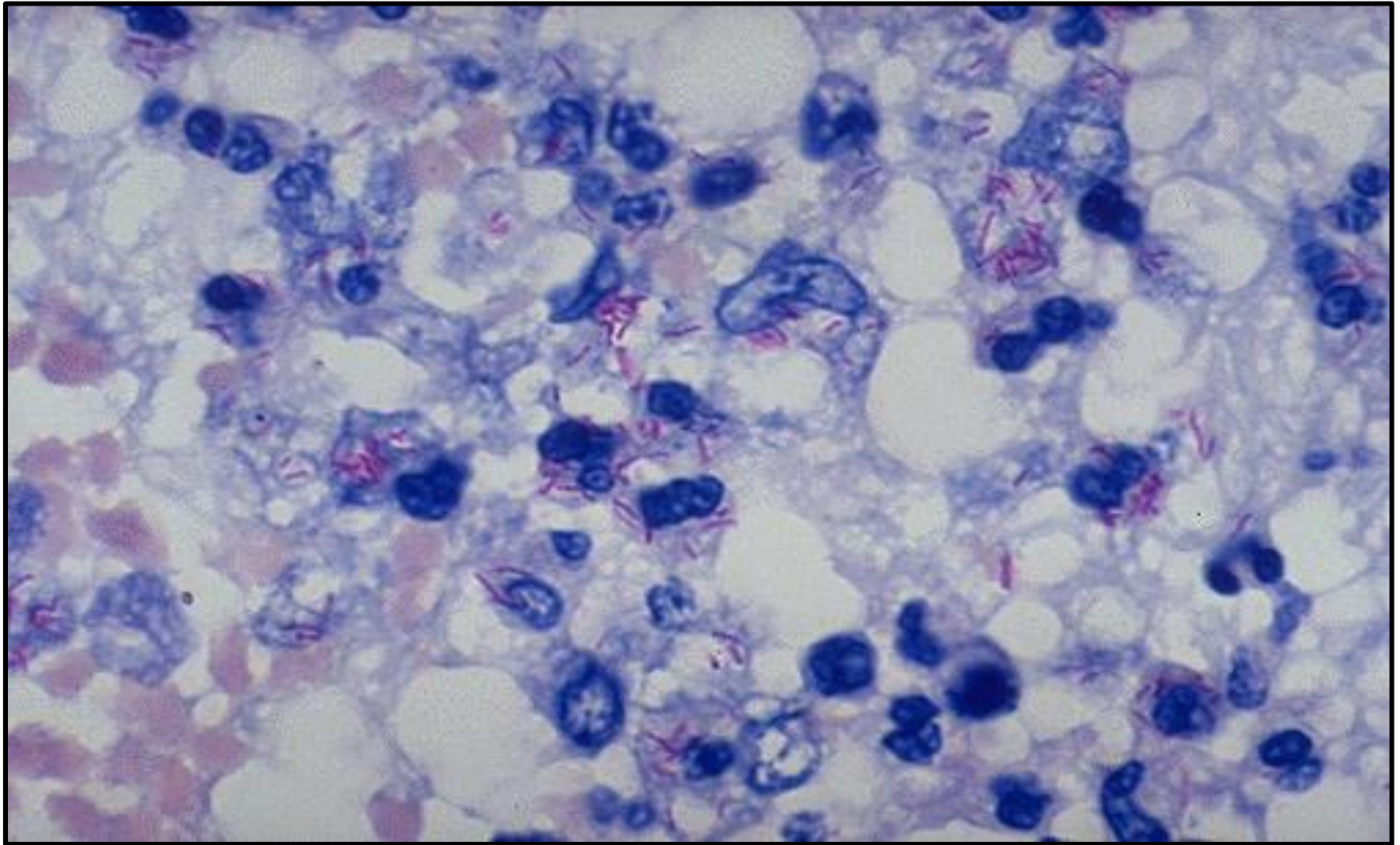
The pyknotic nuclei of epithelioid cells in the center of the granuloma (apoptotic bodies) are a precursor of necrosis.

Tuberculous Granulomas



The edge of a granuloma is shown here at high magnification. At the upper is amorphous pink caseous material [1] composed of the necrotic elements of the granuloma as well as the infectious organisms. This area is ringed by the inflammatory component [2] with epithelioid cells, lymphocytes, and fibroblasts.

Acid Fast bacilli of Mycobacterium TB in the Lung



*A stain for **Acid Fast Bacilli** is done (**AFB** stain) to find the mycobacteria . The mycobacteria stain as red rods, as seen here at high magnification.*

2- Tuberculous Lymphadenitis

Tuberculous Lymphadenitis - Gross

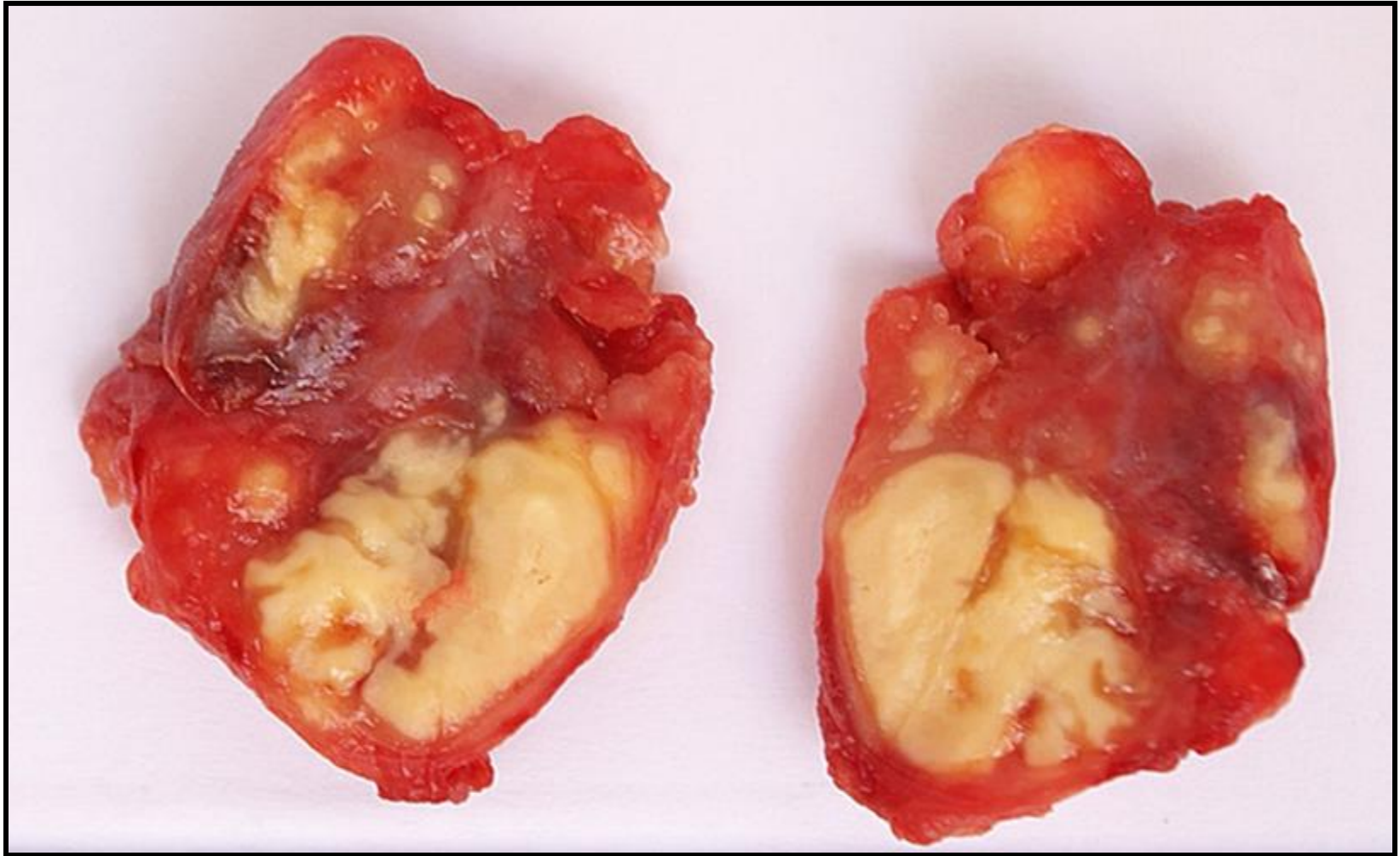


• *Enlarged right cervical lymph nodes*

• *Discharging sinus*

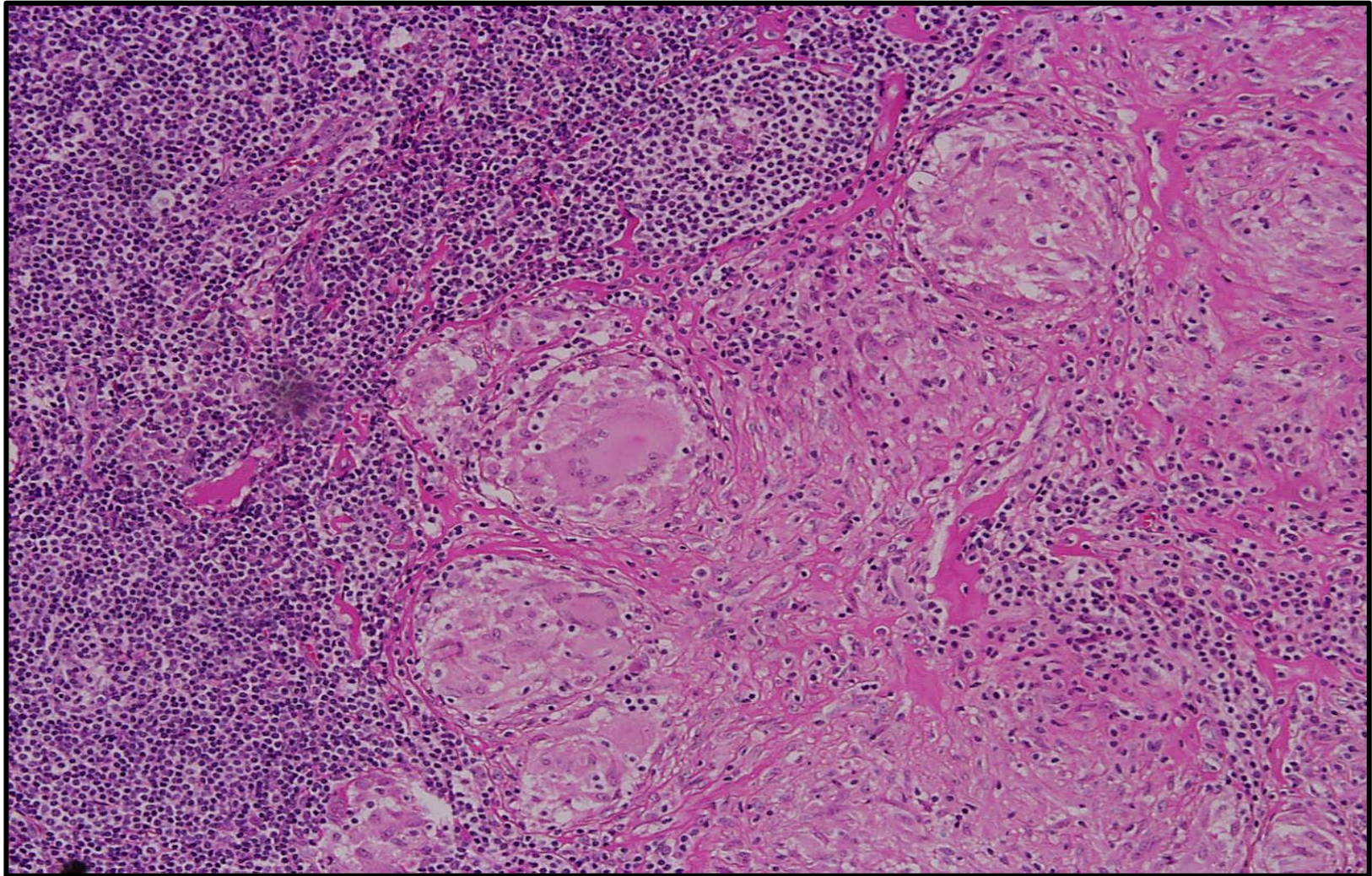
Chronic granulomatous lymphadenitis secondary to tuberculosis

Tuberculous Lymphadenitis – Cut Section



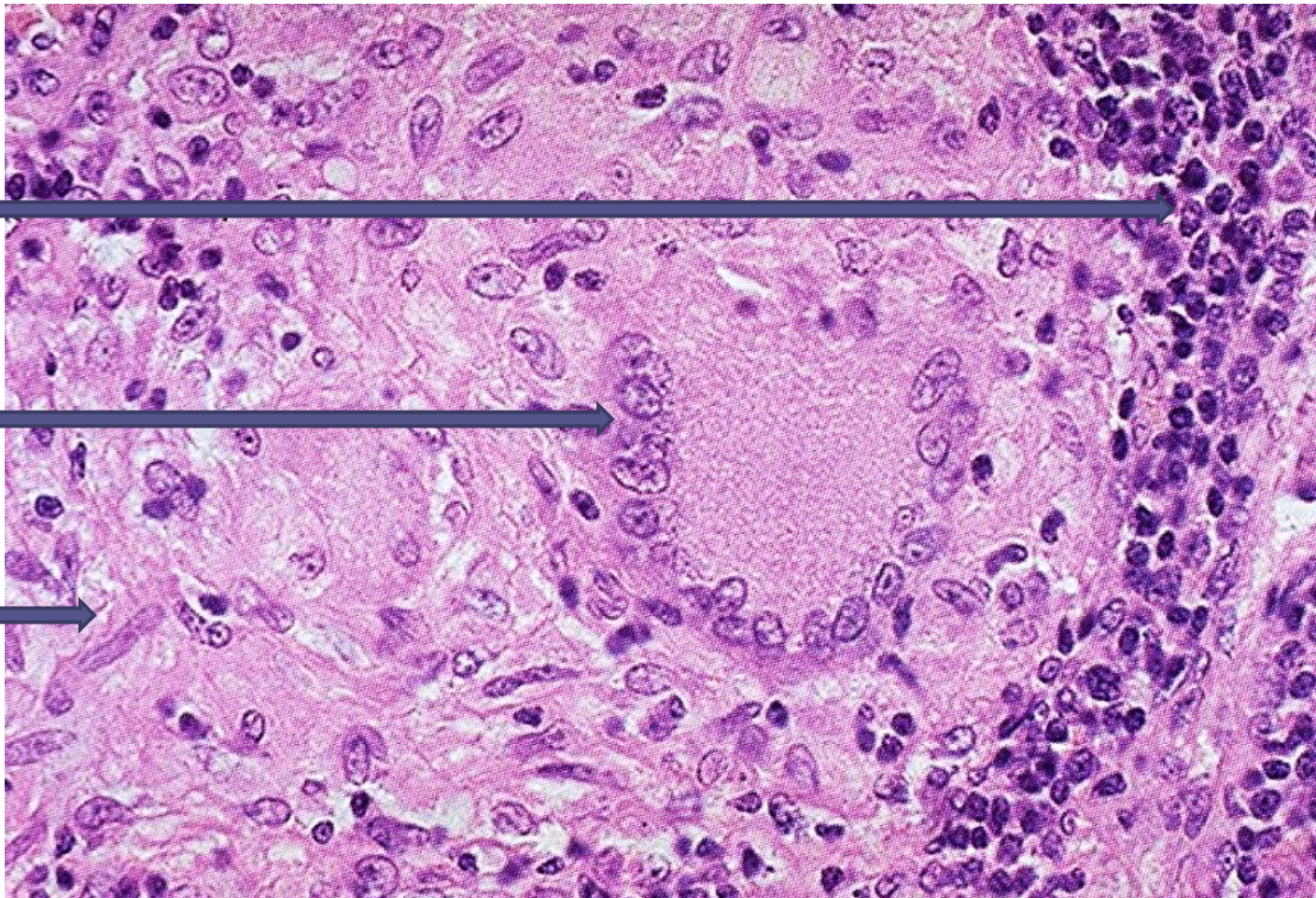
Section of a lymph node with connective tissue capsule and lymphoid tissue

Tuberculous Lymphadenitis



Many round and oval tubercles/ granulomas with or without central caseation that appears structureless, homogenous and pink in colour.

Tuberculous Lymphadenitis



lymphocytes

giant cell

epithelioid -
histiocytes

The granulomas consists of epithelioid cells, few langhan's giant cells (large cell with multiple peripheral nuclei) and peripheral rim of lymphocytes

Granulomatous/Tuberculous Lymphadenitis

- A granulomatous inflammatory response to tuberculosis includes mainly **epithelioid cells, lymphocytes and fibroblasts**.
- The granuloma shows that the epithelioid -histiocytes are elongated with long, pale nuclei and pink cytoplasm.
- The macrophages join together and form multinucleated cells called ***giant cells***.
- The typical giant cell for infectious granulomas is called a ***Langhans giant cell*** and has the nuclei lined up along one edge of the cell in a horse-shoe pattern

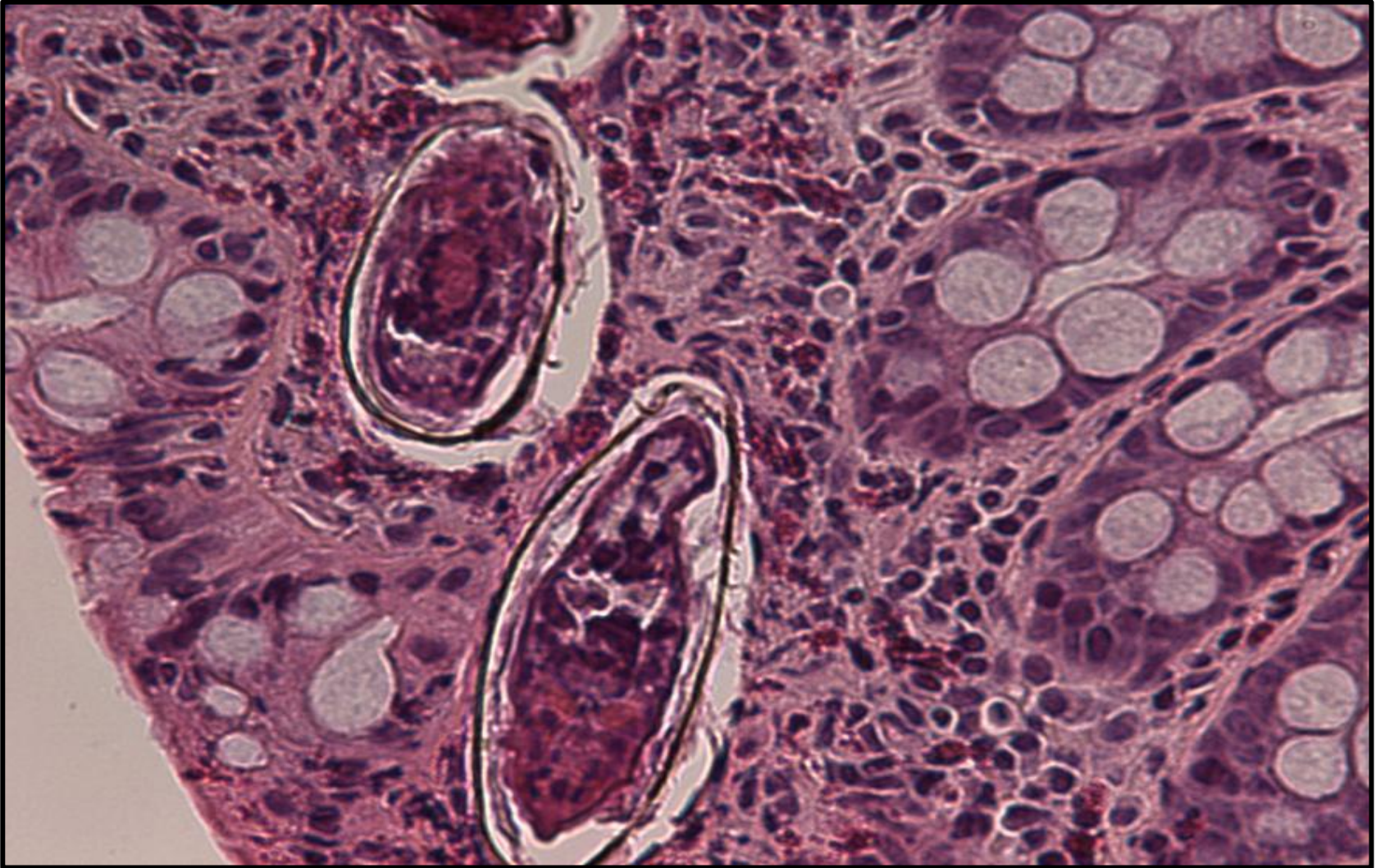
Tuberculous lymphadenitis :

Section of a lymph node with connective tissue capsule and lymphoid tissue shows:

- + Many round and oval tubercles/ granulomas with or without central caseation that appears structureless, homogenous and pink in colour.**
- + The granulomas consists of epithelioid cells, few langhan's giant cells (large cell with multiple peripheral nuclei) and peripheral rim of lymphocytes.**

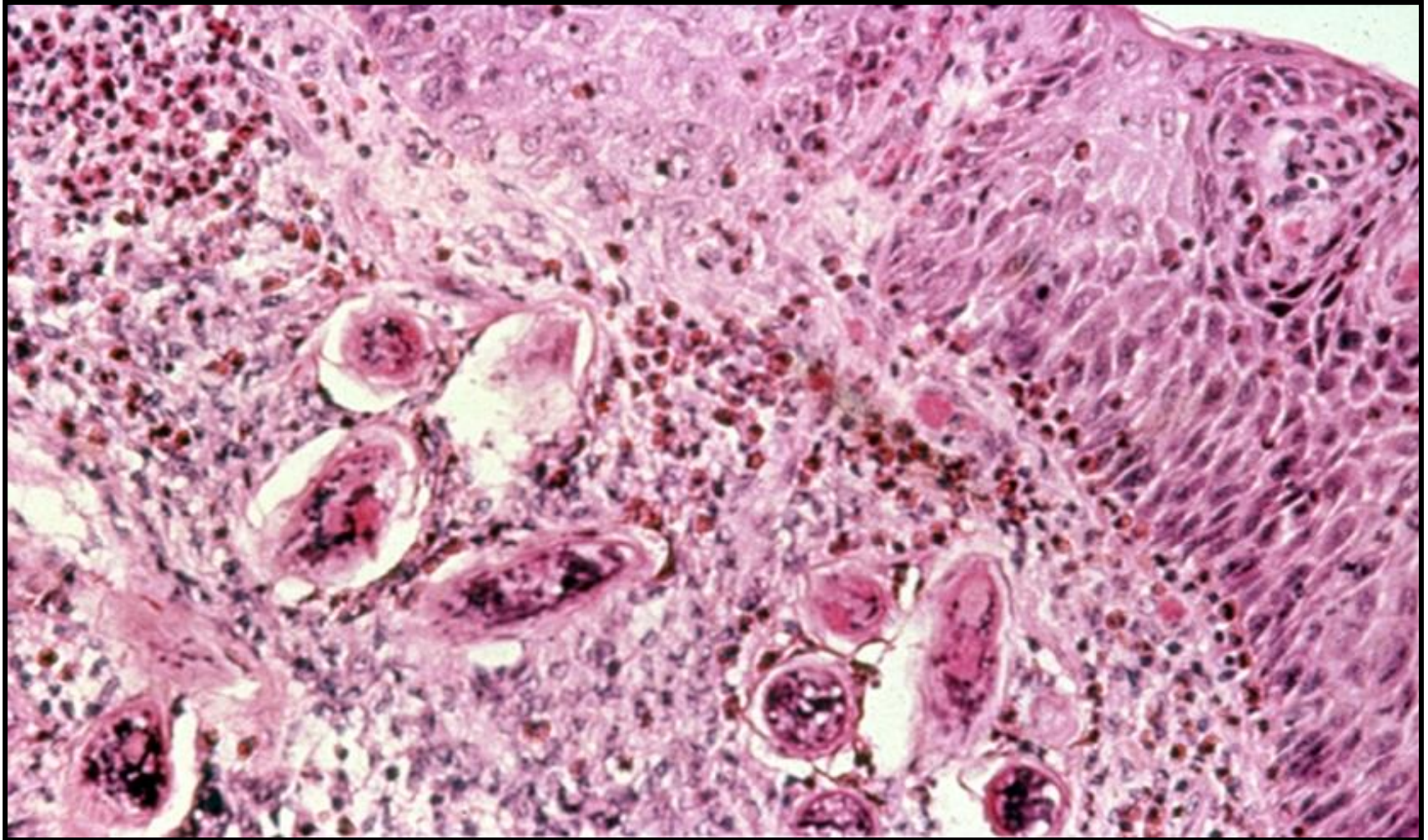
3- Bilharzial Granulomas

Colonic Bilharziasis - HPF



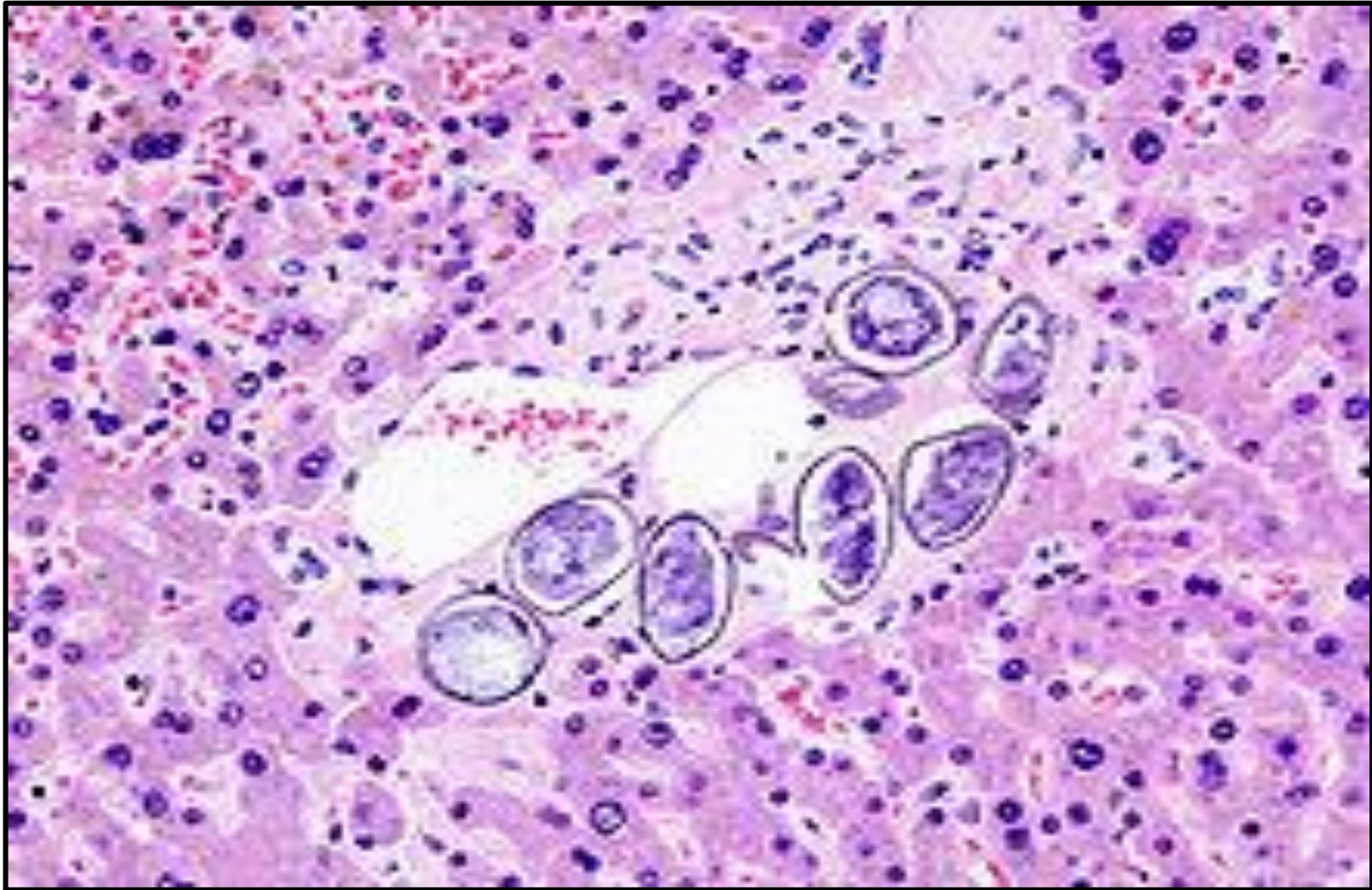
Colon biopsy of bilharziasis. Fibrosing foreign body granuloma against the miracidium-containing ovum of *S. mansoni* is observed in the submucosal layer (H&E).

Bilharziasis of the Urinary Bladder



Schistosoma haematobium. Urinary Bladder biopsy showing bilharziasis eggs

S. japonicum in the Hepatic portal tract



S. japonicum eggs in hepatic portal tract

Bilharziasis of the rectum \ urinary bladder:

Section of fragments of rectal \ urinary bladder mucosa shows:

- + Many Bilharzial ova with yellow brown shells in mucosa and submucosa surrounded by fibrosis and chronic inflammatory cells consisting of lymphocytes, plasma cells and many eosinophils.**
- + Few granulomas are seen around the ova.**

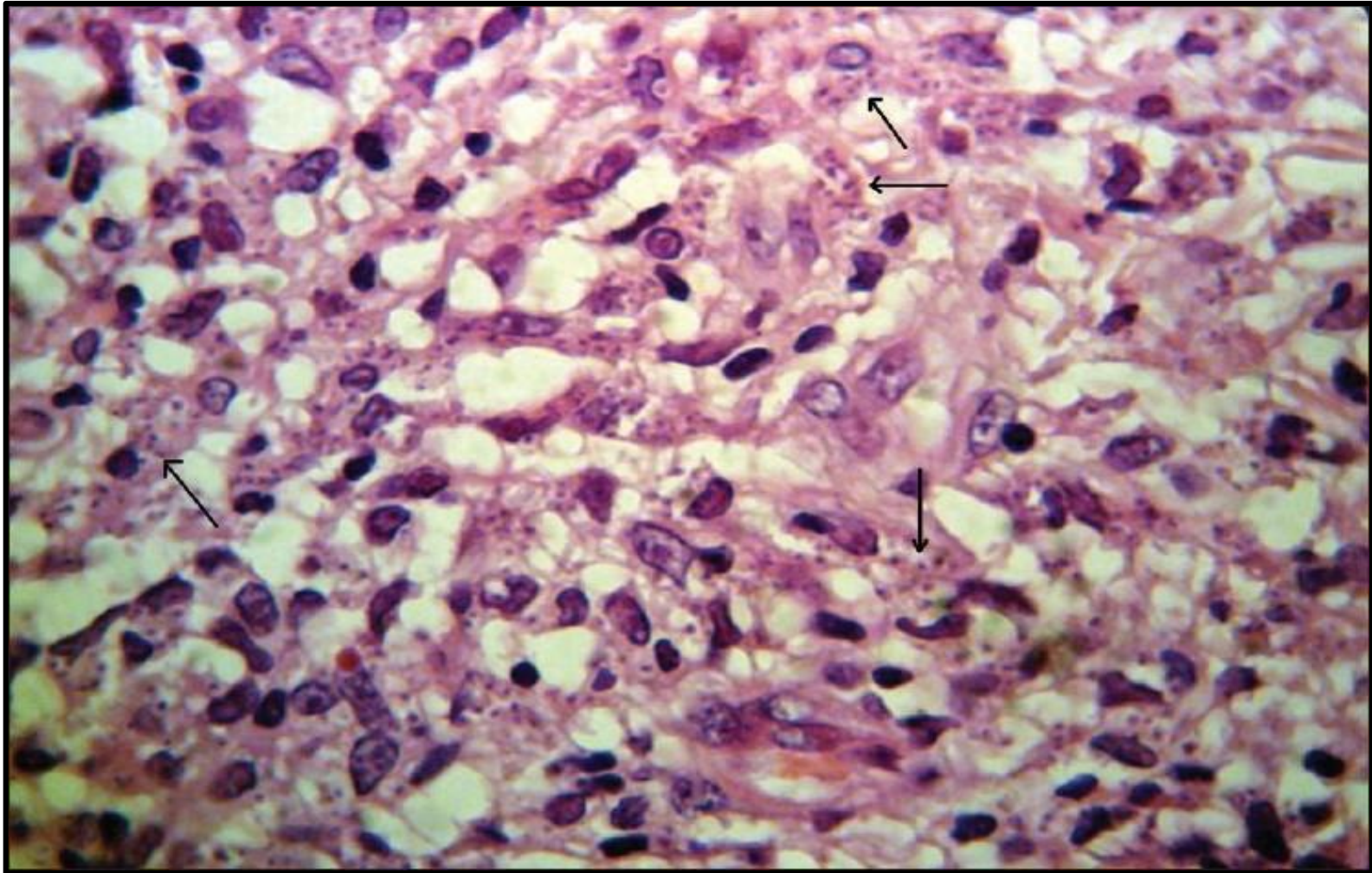
4- Cutaneous Leishmaniasis

Cutaneous Leishmaniasis



Leishmaniasis is caused by parasitic infection, mainly by parasites of the Leishmania genus which are carried by a blood-sucking insect known as the sandfly.

Cutaneous Leishmaniasis



Histological view shows marked cellular infiltration and parasites (Leishman bodies) within macrophages

Cutaneous Leishmaniasis

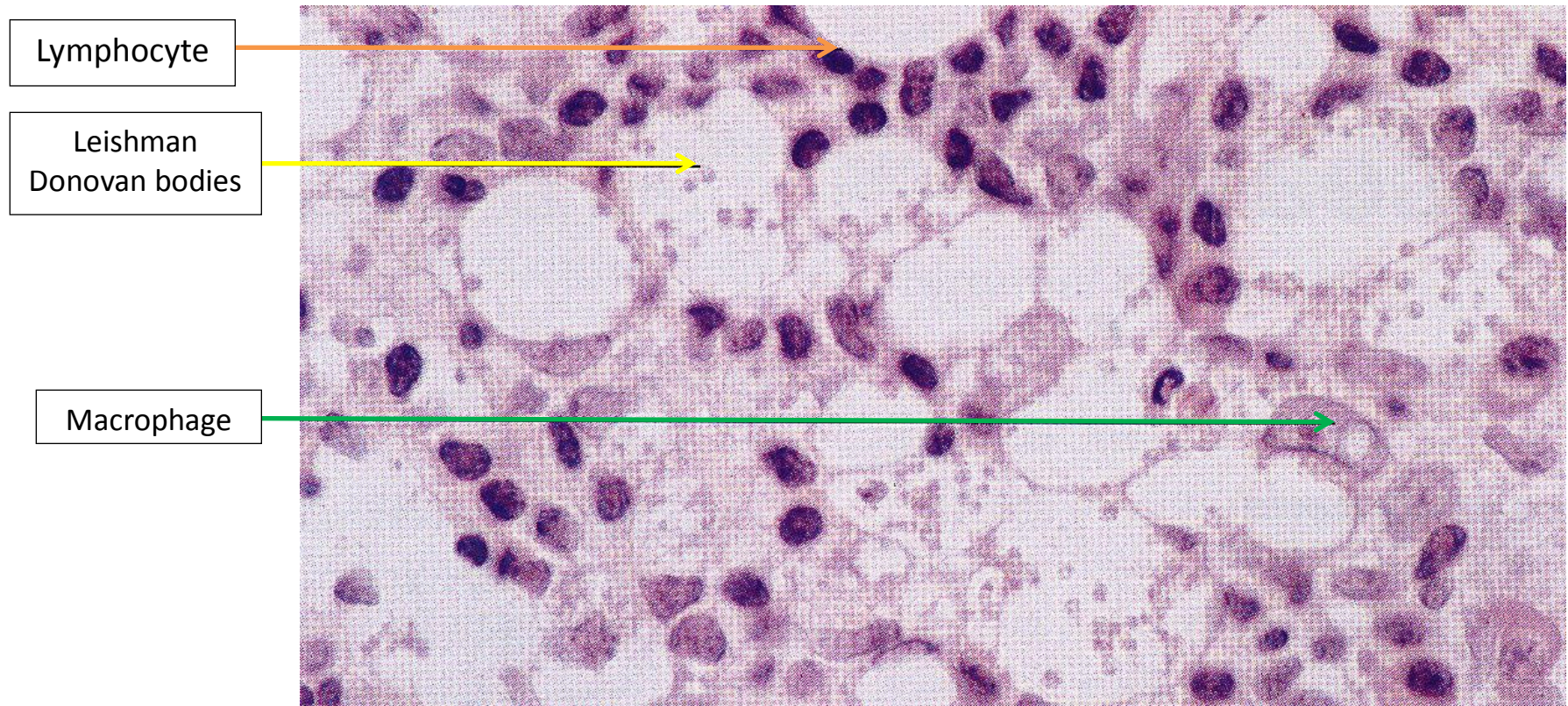
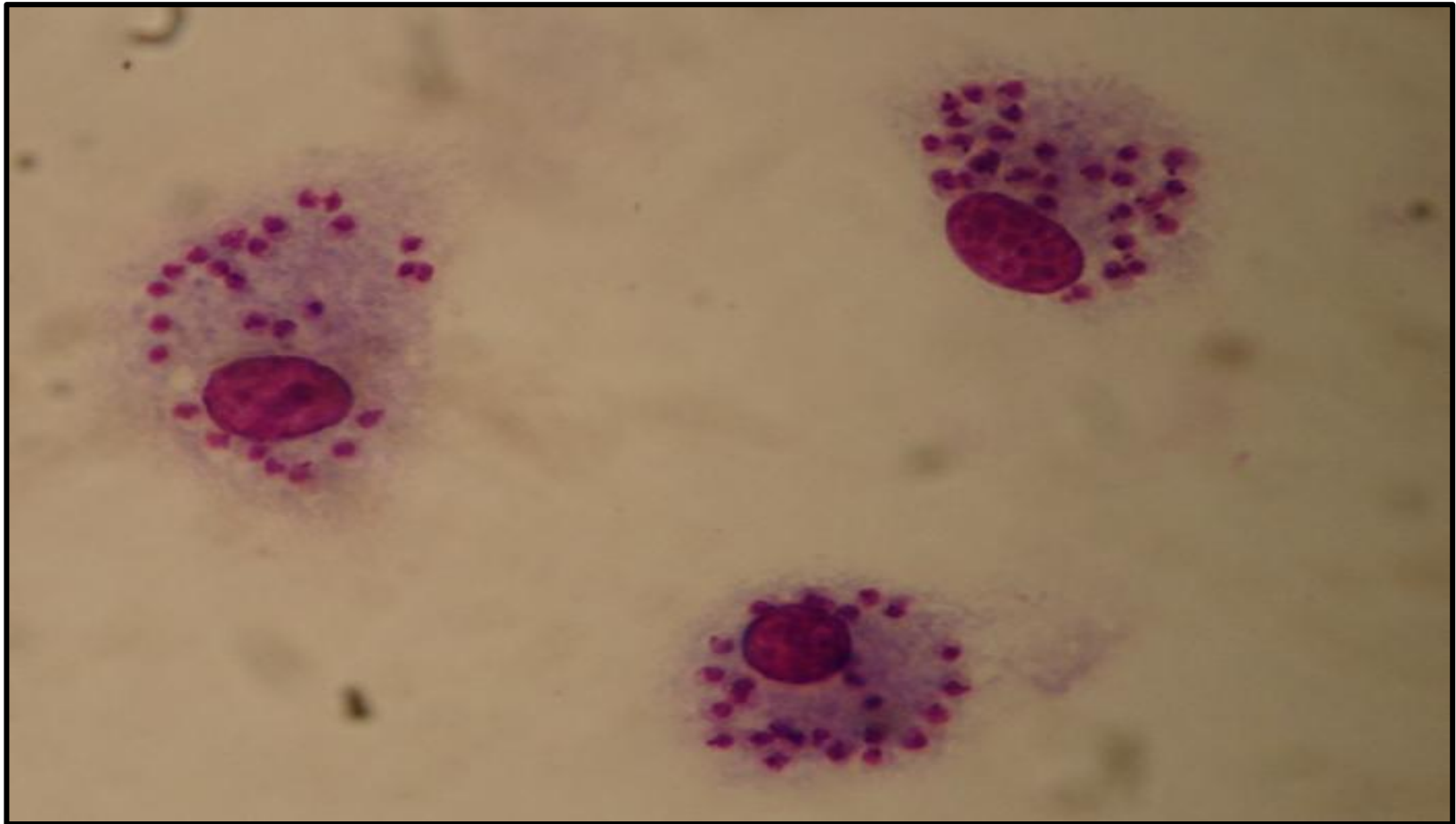


Figure C. Histopathological features of Cutaneous Leishmaniasis (high mag.).

Note the presence of numerous Leishman-Donovan bodies within the foamy macrophages.

Cutaneous Leishmaniasis



The blood film shows macrophages containing Leishmania amastigotes, each with a prominent kinetoplast (seen as a darkened spot next to the larger nucleus) and no flagella (in contrast with the promastigote form).

GOOD LUCK