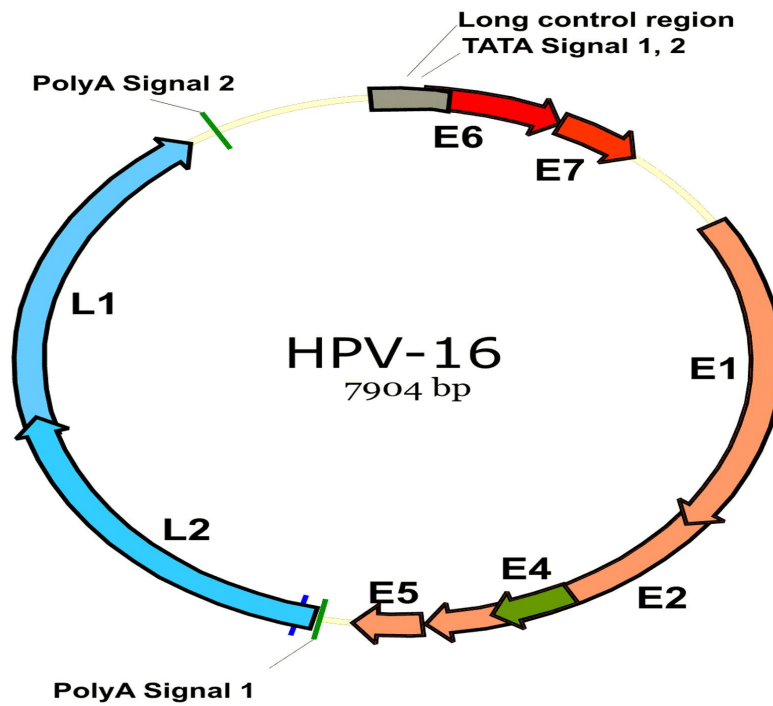


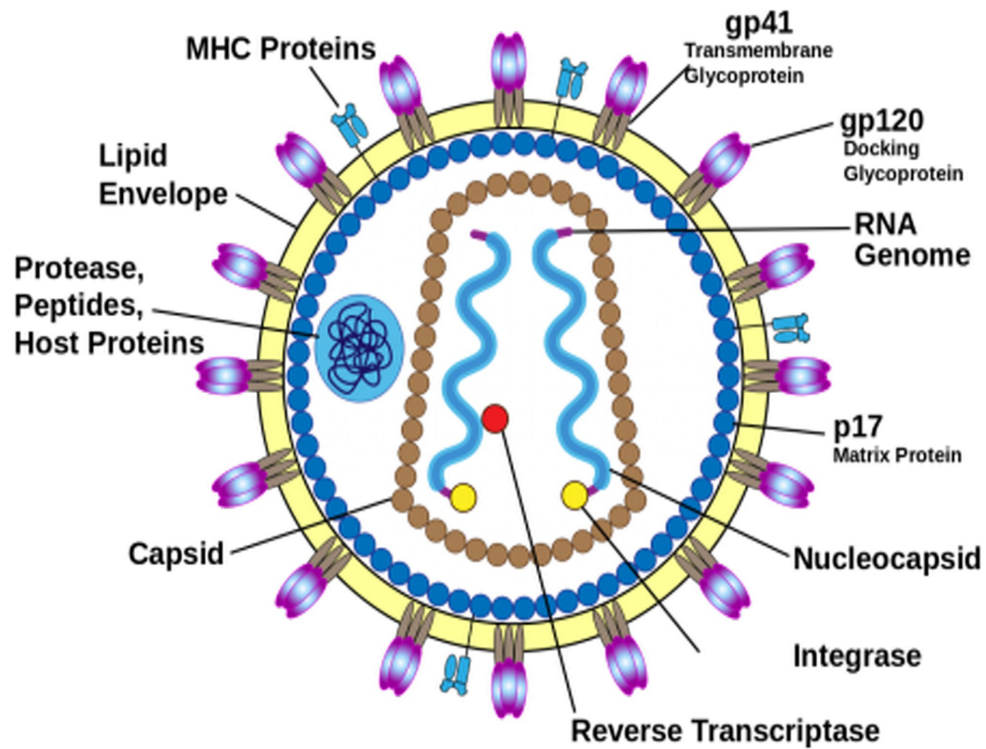
## Infections



**P 6-1.** Human Papilloma virus (HPV). Genomic structure of HPV-16. A common DNA virus.

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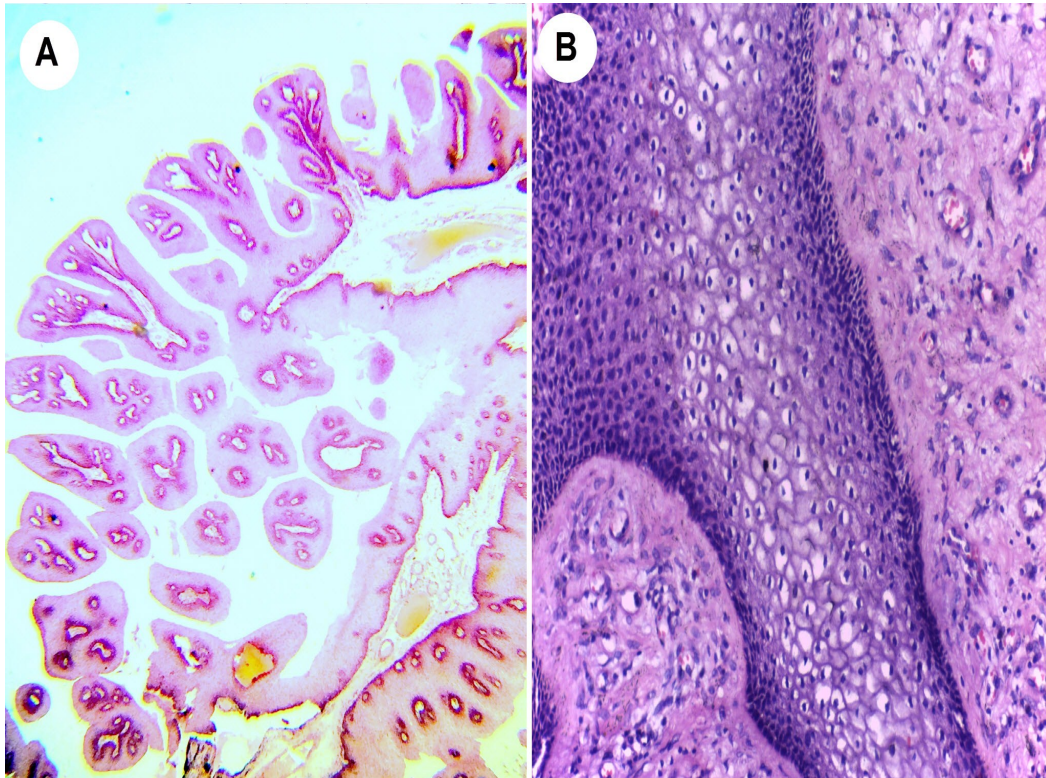
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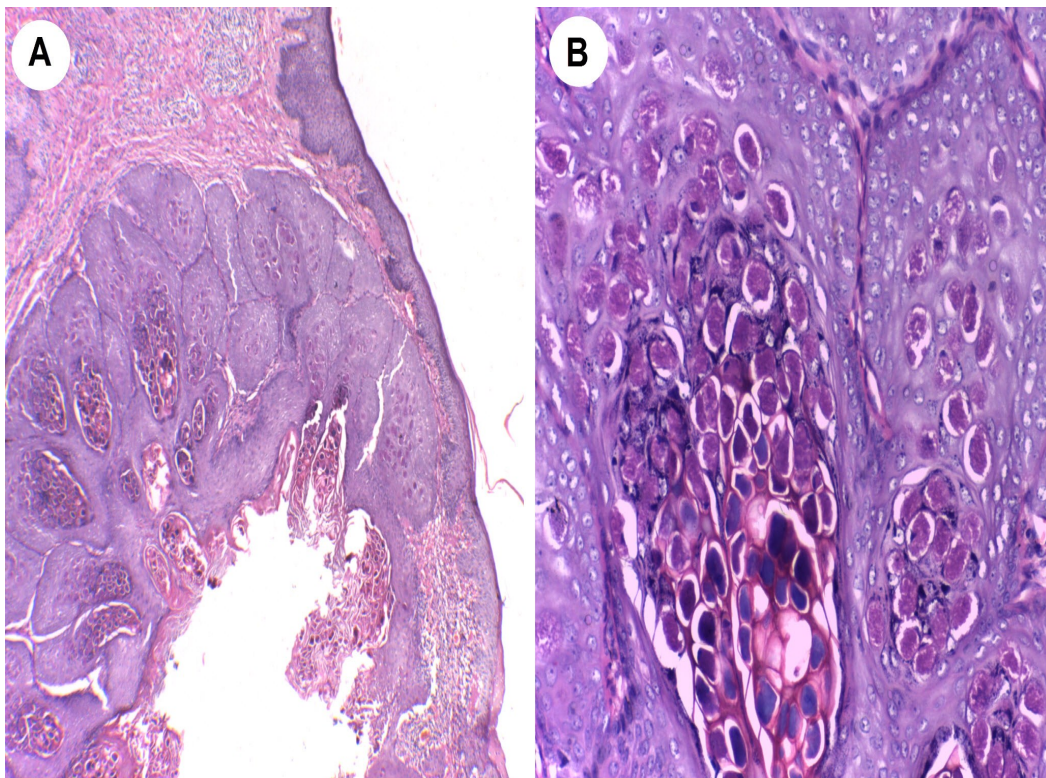
P 6-2. Human Immunodeficiency Virus (HIV). Genomic structure of HIV, an RNA virus.



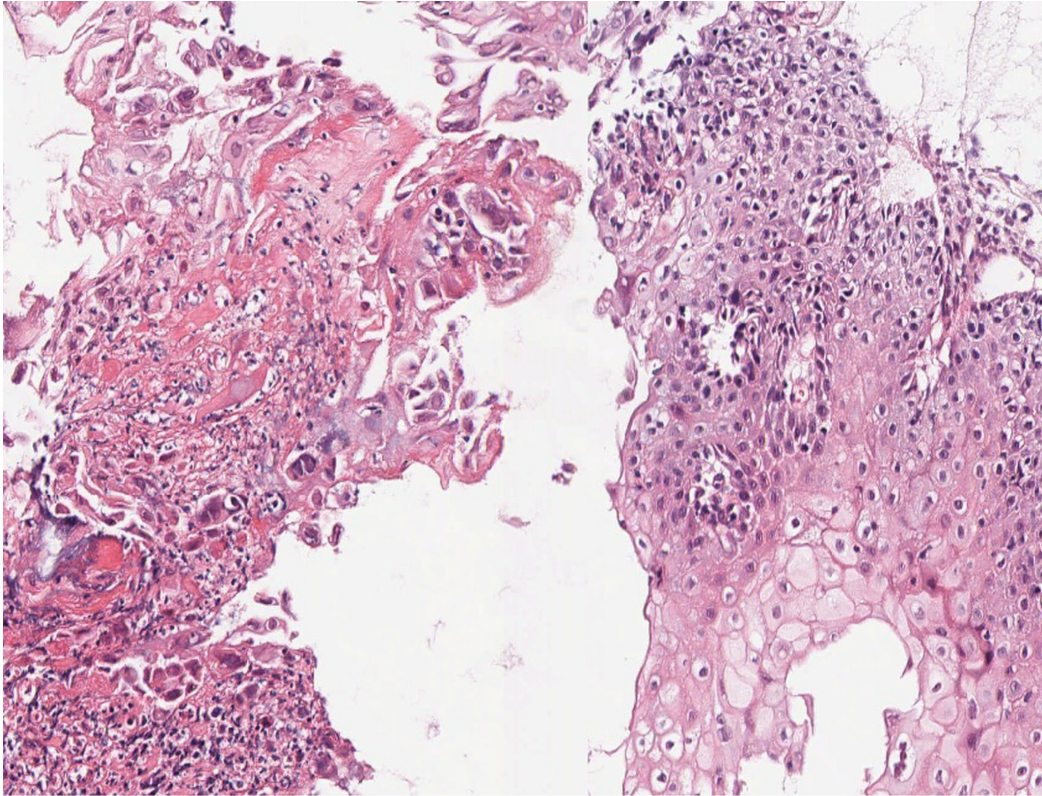
P 6-3. Verruca Vulgaris. Exophytic growth with hyperkeratosis, verrucous pattern, prominent granular cell layer and perinuclear vacuolation of superficial keratinocytes (koilocytosis). (Courtesy of PathologyOutlines.com)



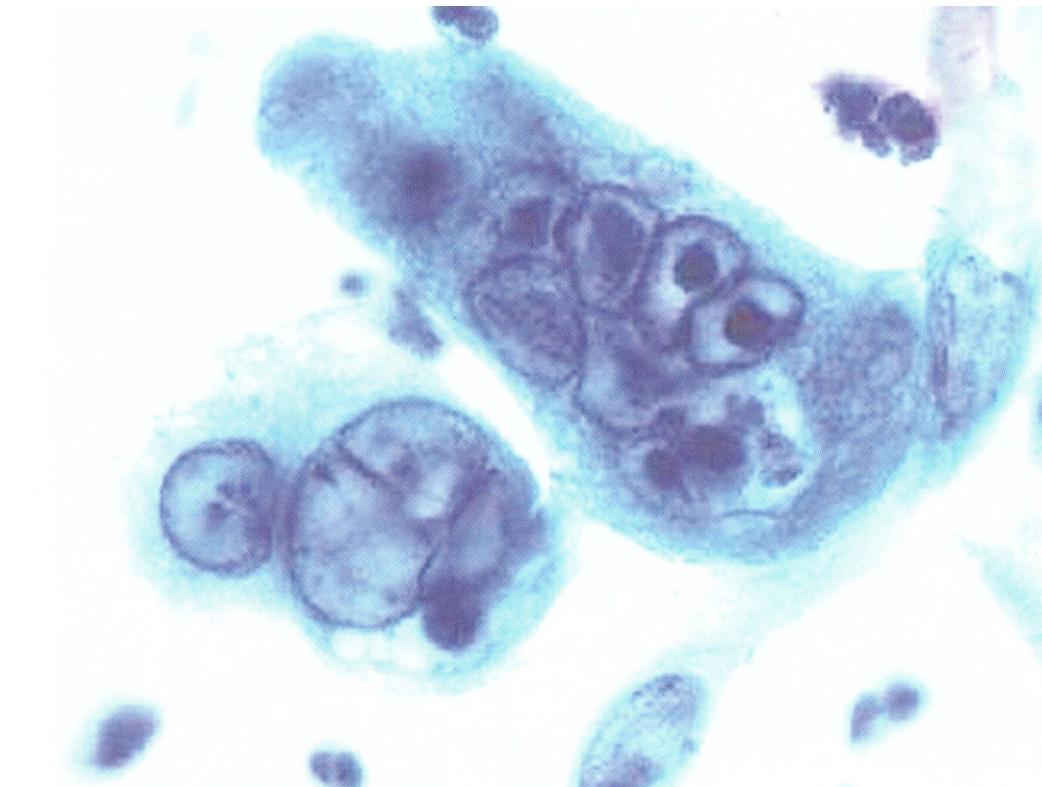
**P 6-4.** Condyloma accuminatum. **A** Whole section scan showing a cauliflower pattern. **B** Koilocytotic atypia (nuclear wrinkling with perinuclear clearing) characteristic of viral infection.



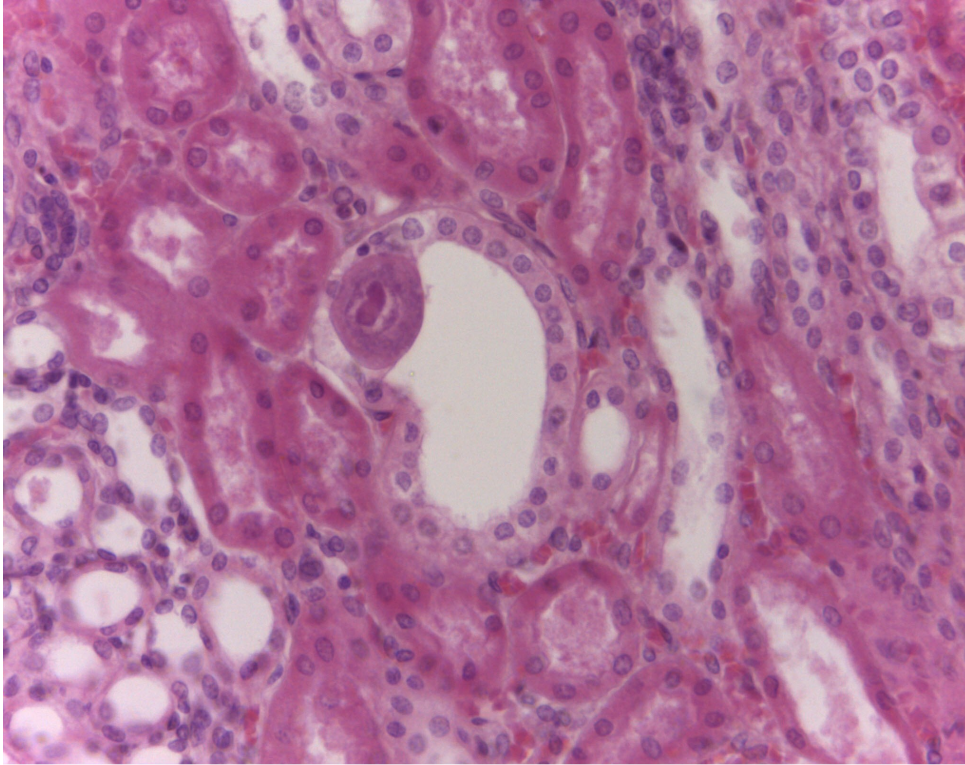
**P6-5.** Molluscum contagiosum. **A** Circumscribed intradermal lesion (cup-shaped). **B** Large cells with cytoplasmic viral inclusions (Molluscum bodies) displacing nuclei and contain viral particles.



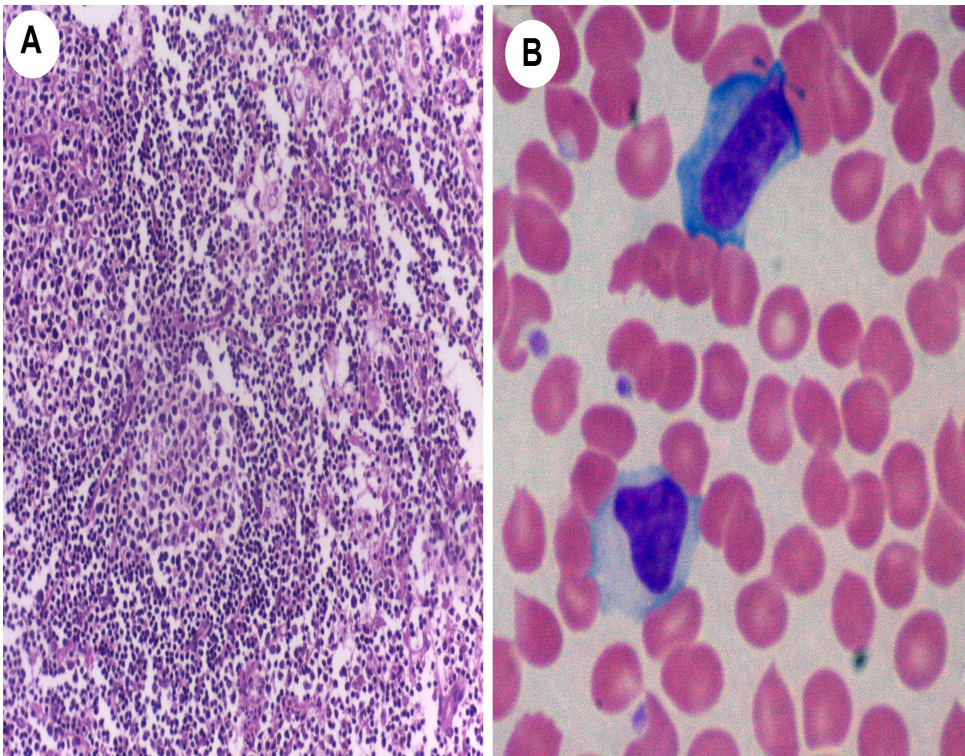
**P 6-6.** Herpes simplex oesophagitis. Marked intraepithelial edema with dissociation of cells (acantolysis), as well as, large vesicles.



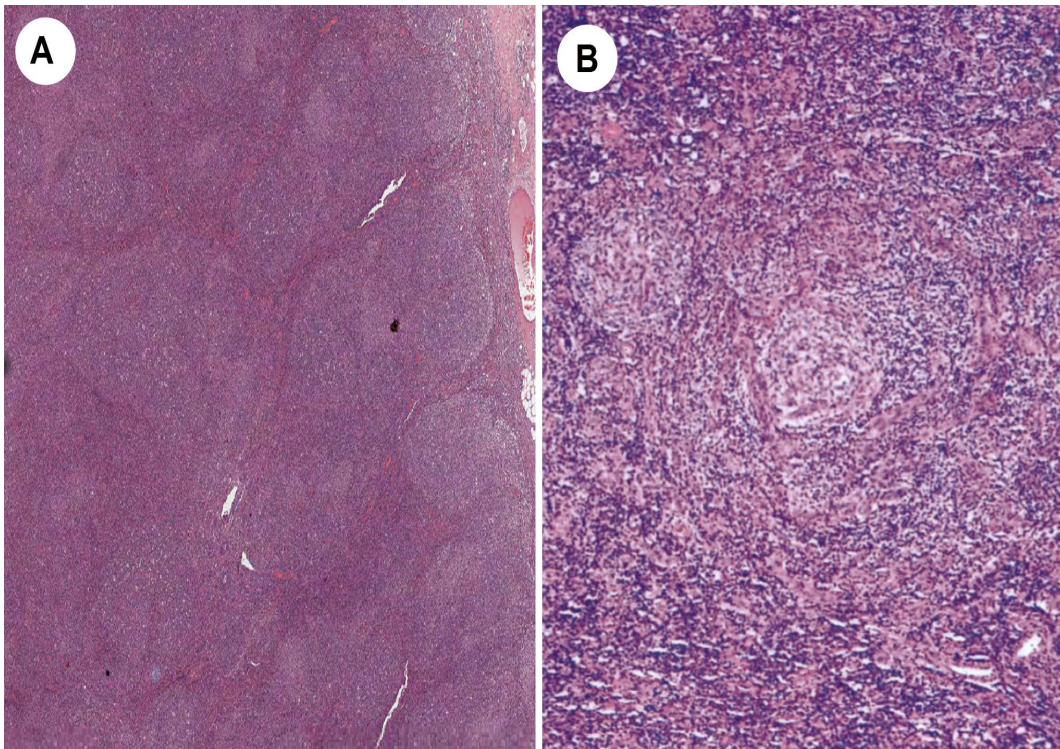
**P 6-7.** Herpes Simplex Virus (HSV), vaginal smear. The enlarged edematous nuclei with ground glass appearance are changes characteristic of HSV.



**P 6-8.** Kidney, cytomegalovirus. Markedly enlarged cells (cytomegally) with large intranuclear inclusion (Cowdry A type, owl's eye inclusion) resulting from peripheral margination of chromatin.



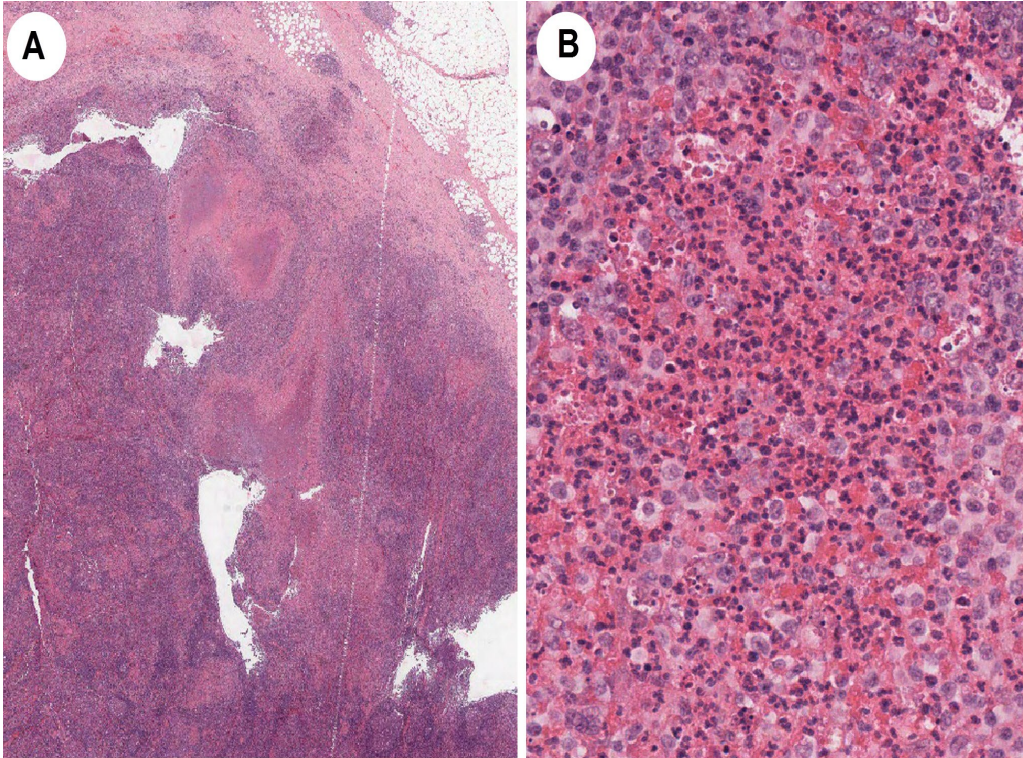
**P 6-9.** Infectious mononucleosis. **A** Lymph node with paracortical expansion rich in immunoblasts (Reed-Sternberg like) and plasma cells. **B** Peripheral blood smear, large atypical lymphocytes with abundant cytoplasm and irregular nuclei. EBV virus is confirmed by PCR.



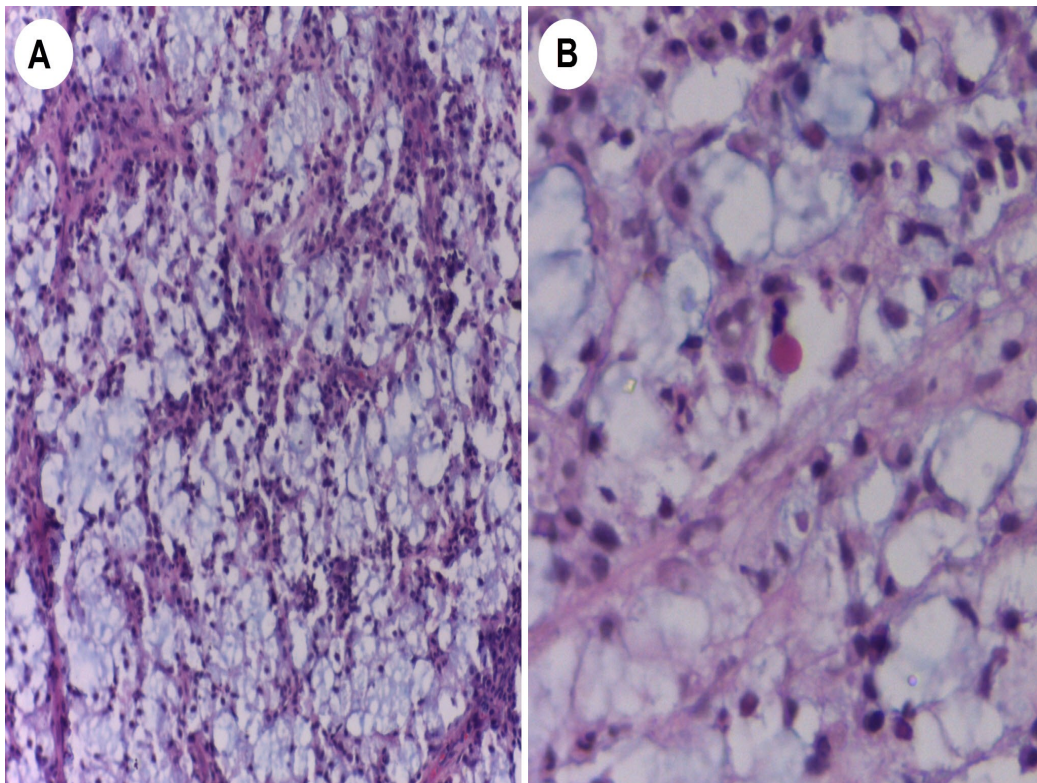
**P 6-10.** Lymph node HIV Infection. **A** Early stage, with marked follicular hyperplasia. **B** Late stage, follicular involution with loss of follicles and expansion of vascular interfollicular tissue rich in plasma cells.



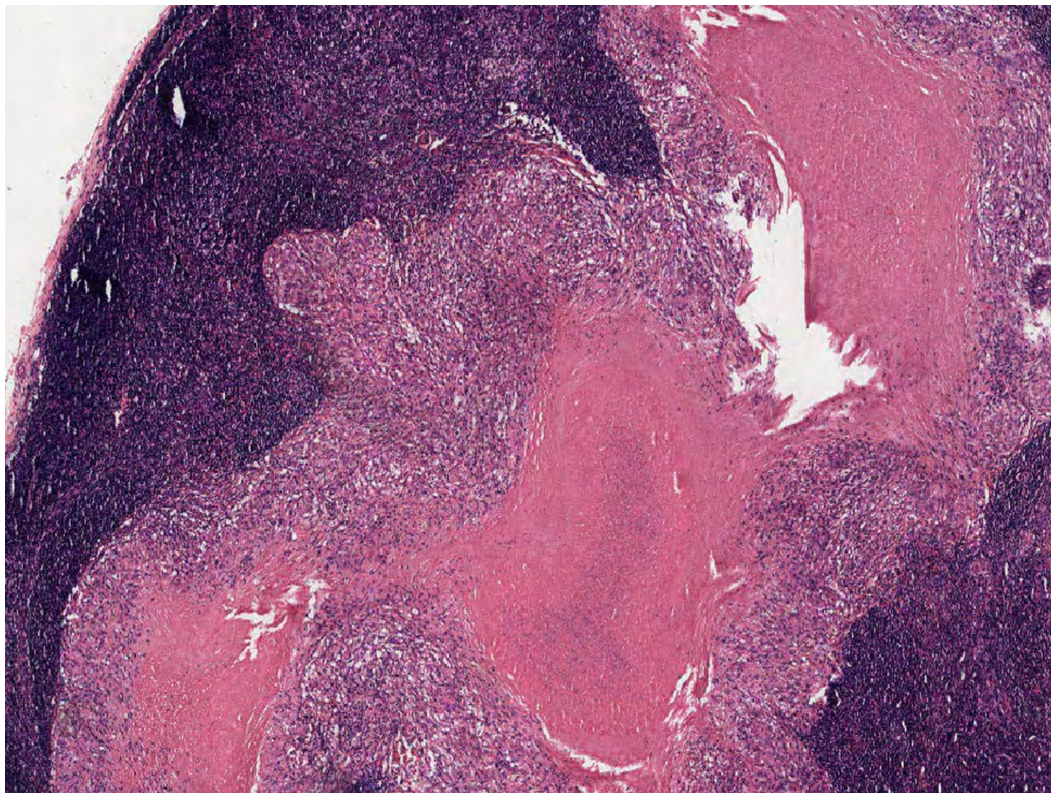
**P 6-11.** Gastric antrum, *Helicobacter Pylori*. Curved bacilli are commonly seen on surface of foveolar epithelium .



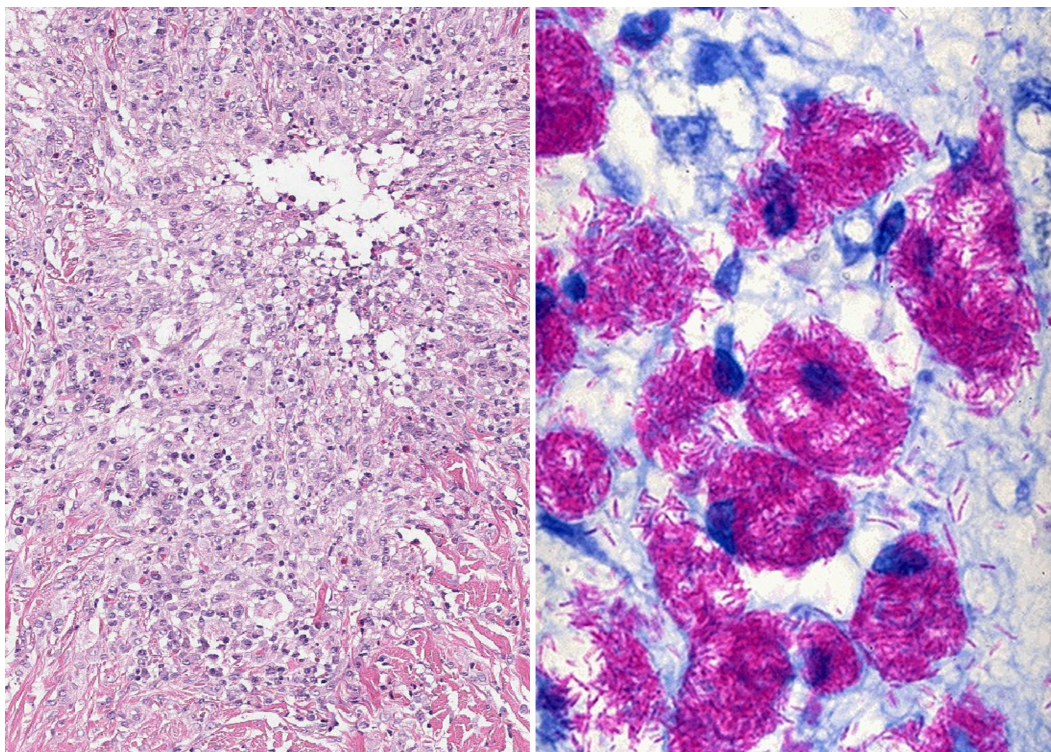
**P 6-12.** Lymph node, Cat-scratch disease. **A** Suppurative granulomas with multiple stellate micro-abscesses. **B** Central exudate rich in neutrophils with peripheral histiocytic reaction with lack of epithelioid cells and giant cells. *Bartonella henselae* bacteria is confirmed by PCR.



**P 6- 13.** Nasal rhinoscleroma. **A** Clear and foamy macrophages (Mikulicz cells) and plasma cells. **B** Plasma cell cytoplasmic inclusions (Russell bodies) at center.

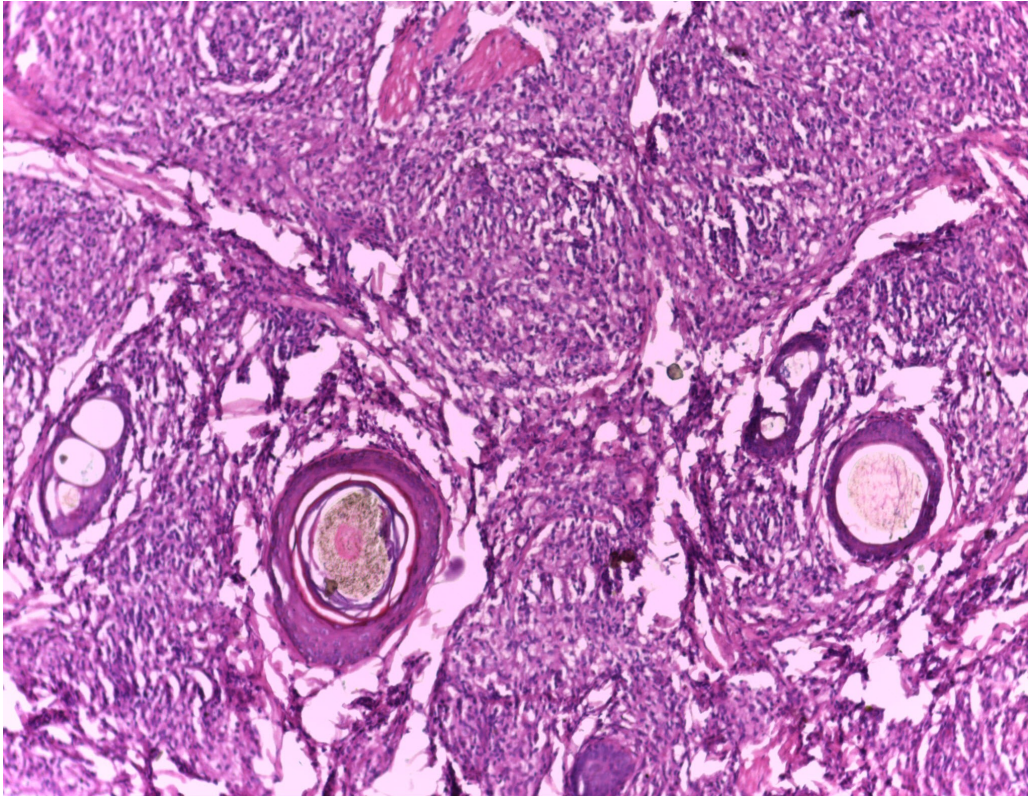


**P 6-14.** Lymph node, caseous granuloma. Granulomas with prominent central necrosis surrounded by palisaded epithelioid histiocytes.

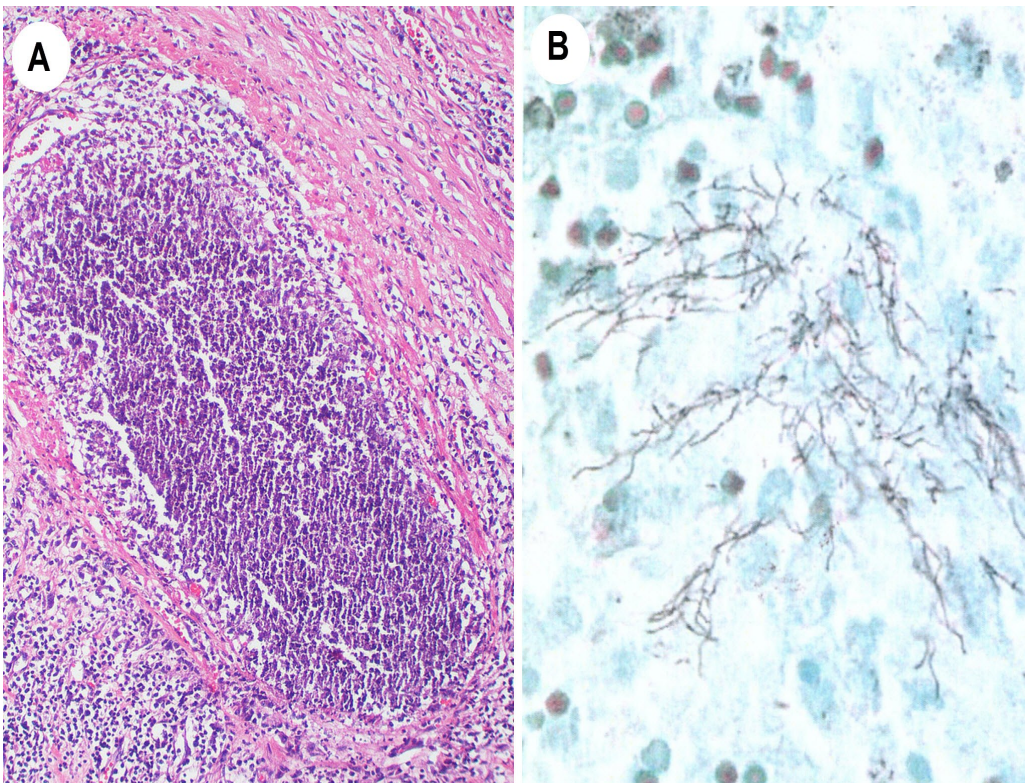


**P 6-15.** Lymph node, atypical mycobacterial infection. **A** Non-caseous granuloma with spindle and round cells, may be confused with tumors. **B** Zeil-Neelsen stain and acid fast stain demonstrates abundant bacilli in histiocytes.

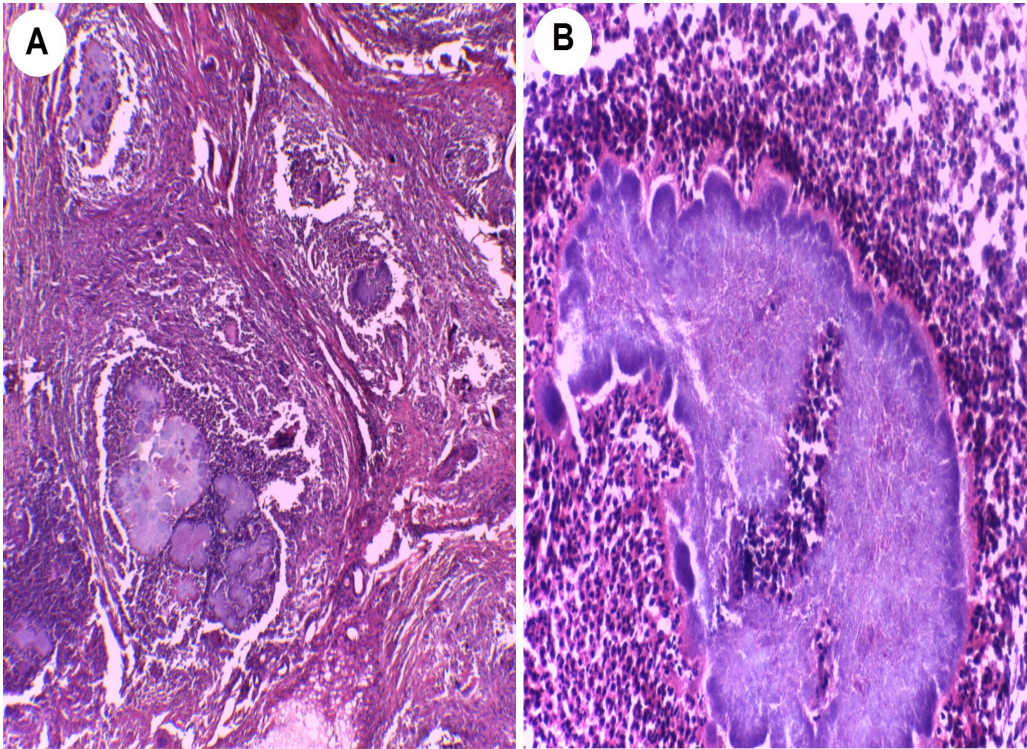




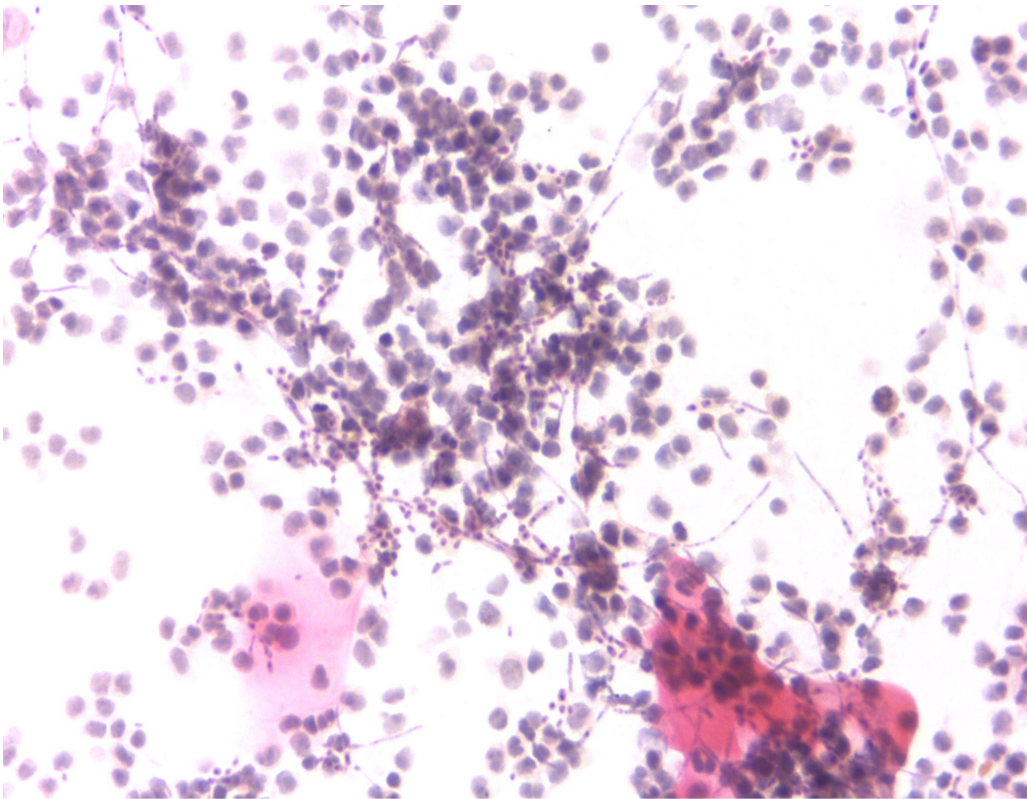
**P 6- 16.** Leprosy, skin. Macrophages are found in poorly circumscribed non-caseous granulomas in the dermis, rich in lymphocytes. Acid fast *Lepra* bacilli will confirm the diagnosis.



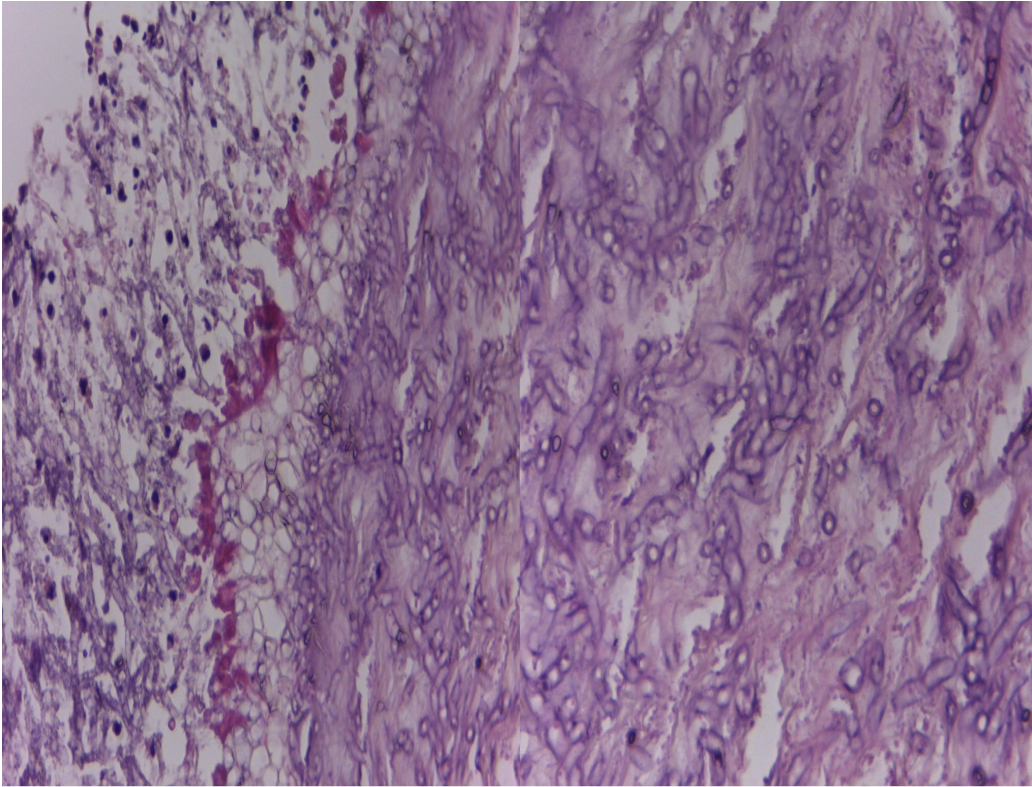
**P 6-17.** Nocardia. **A** Small abscess formation with histiocytic reaction. **B** Branching filamentous nocardia (GMS silver stain).



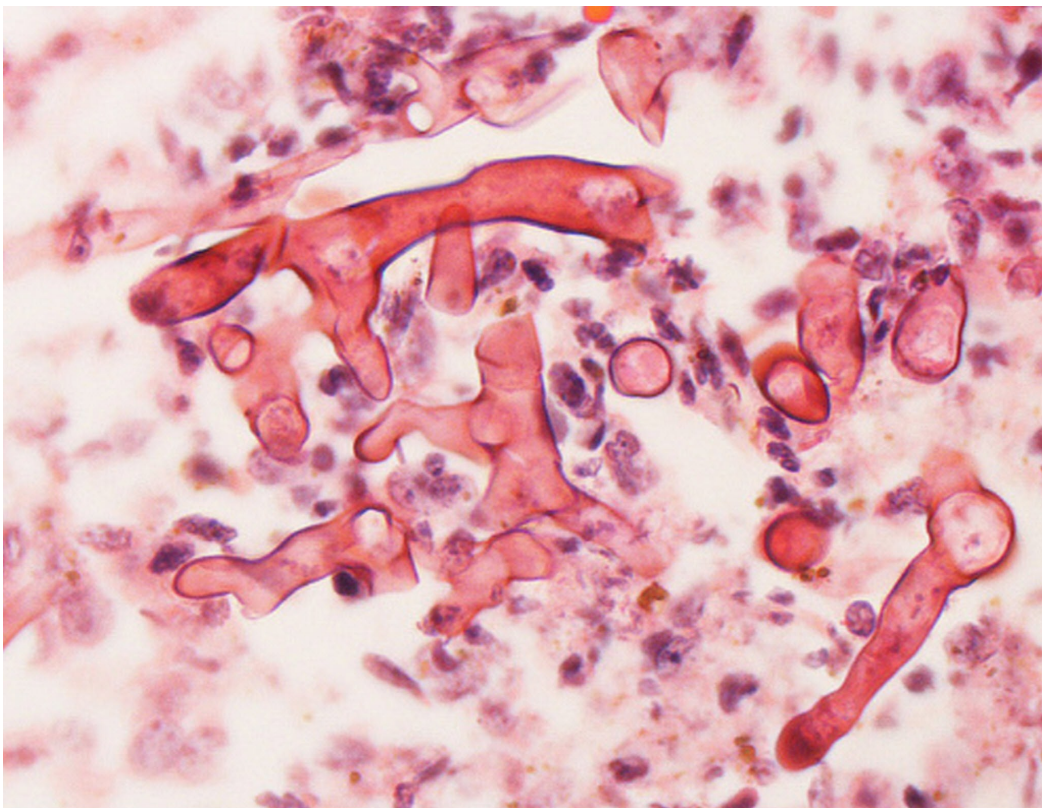
**P6 - 18.** Actinomycosis. **A** Multiple bacterial colonies with suppurative inflammation. **B** Contrary to fungal Madura foot, the colonies are gram positive, show eosinophilic club-shape periphery and have yellow color in the discharge (sulfur granules).



**P 6- 19.** Monilia fungus (*Candida albicans*), vaginal smear cytology, Pap stain, from a diabetic patient. Note the filamentous and yeast forms (grape-like) of the fungus.



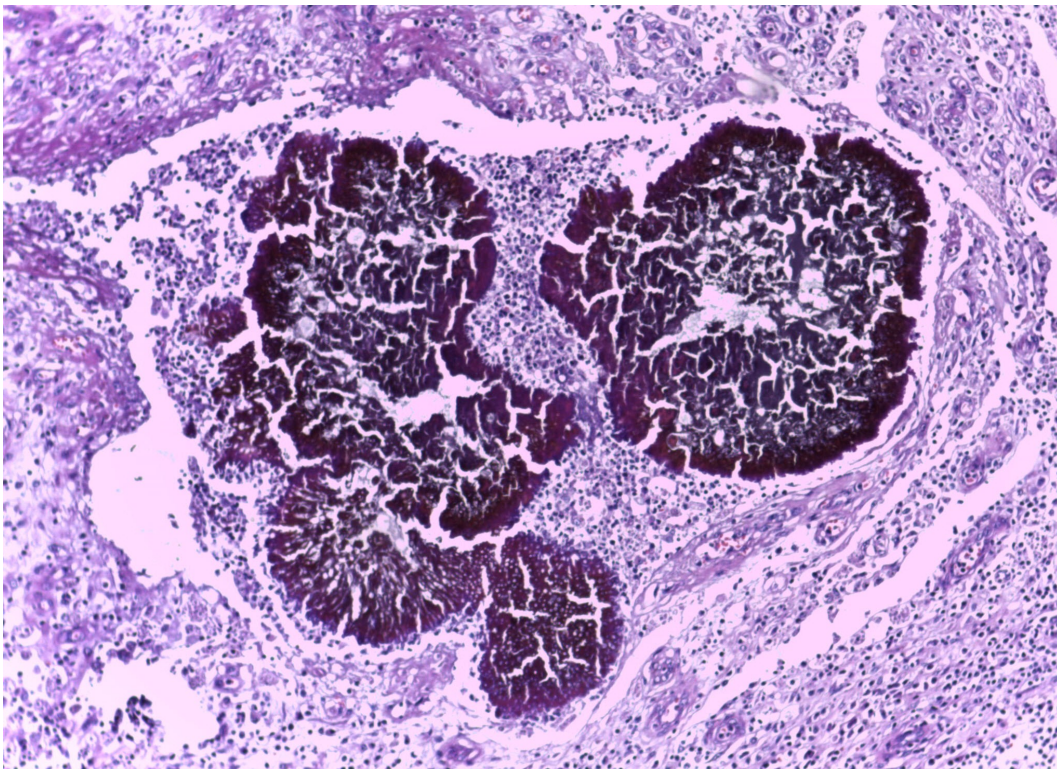
**P 6-20.** Aspergillus fungus. Septate filaments branching at acute angles, diameter ranges from 2.5 to 4.5  $\mu\text{m}$ . Typically affects upper respiratory tract and lung.



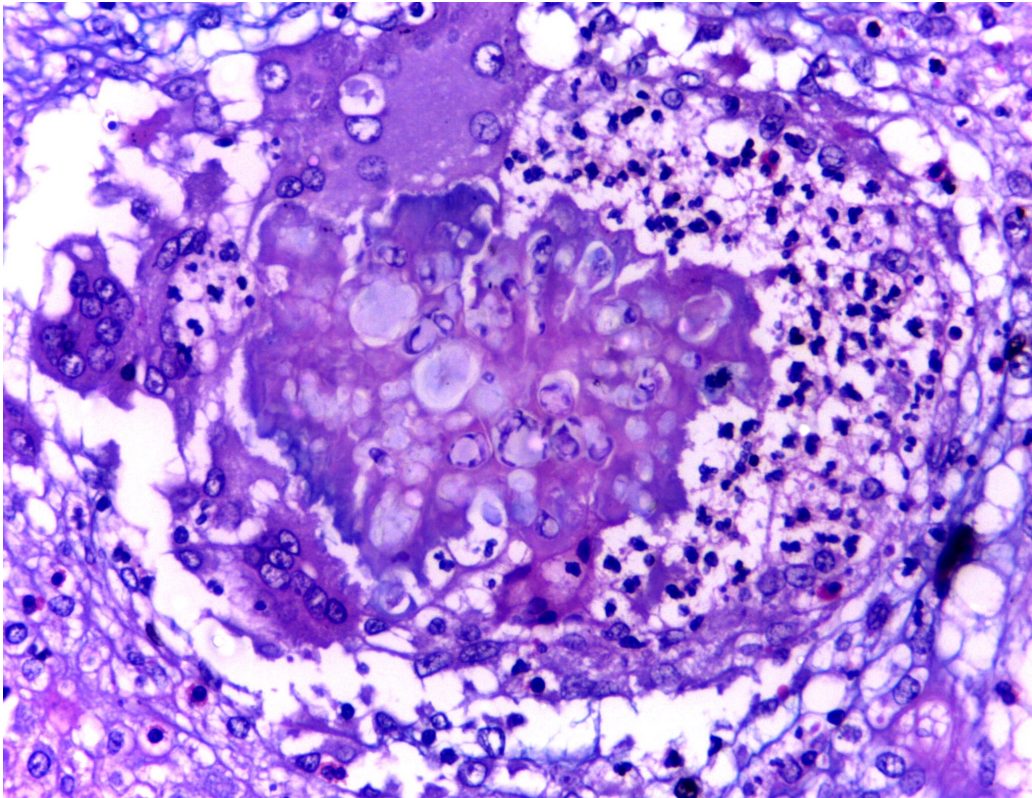
**P 6-21.** Mucormycosis, upper respiratory tract sample. Broad non-septate hyphae branching at right angles. Positive to GMS silver stain "courtesy of PathologyOutlines.com".



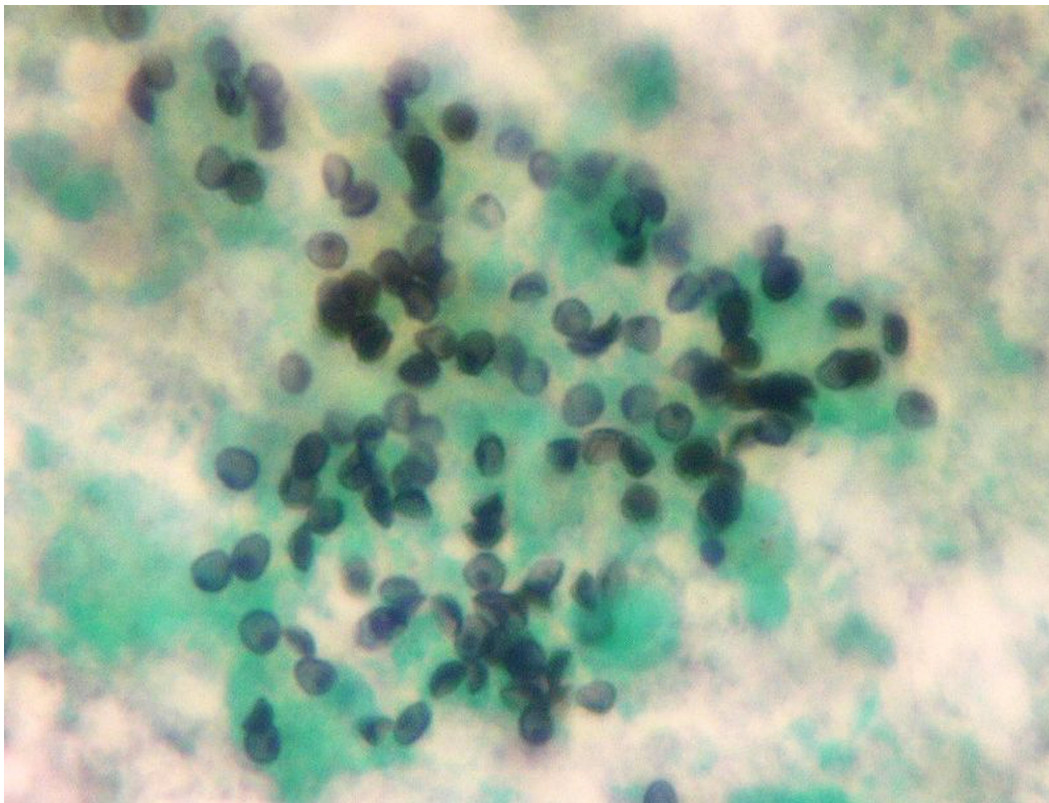
**P 6- 22.** Madura foot. Multiple skin sinuses discharging pus. Smears from the discharge will identify the etiologic agent (actinomyces bacteria or *Madurella mycetomi* fungus).



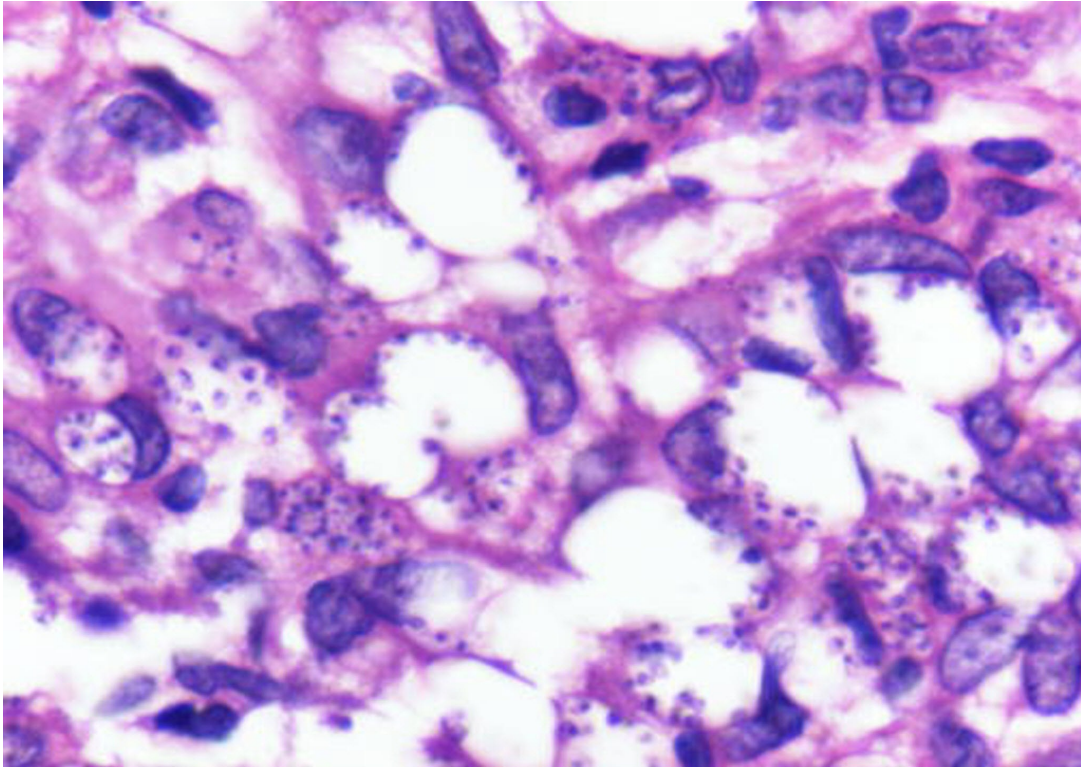
**P 6- 23.** Madura foot resulting from fungal infection. Localized abscess contains central dark brownish colonies (micro-abscess) surrounded by granulation tissue. The main causative fungus is *Madurella mycetomi*.



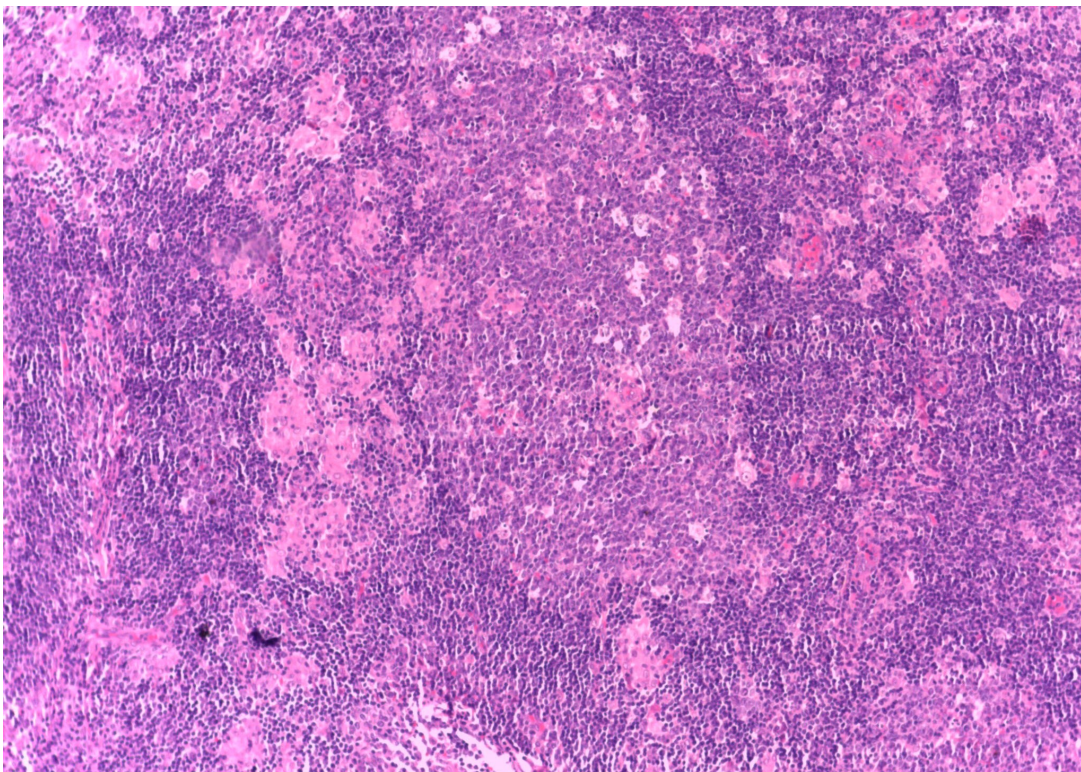
**P 6- 24.** Cryptococcus infection, brain. Rounded and budding yeast forms, 4-10 microns with thick capsule (stains bright red with mucicarmine).



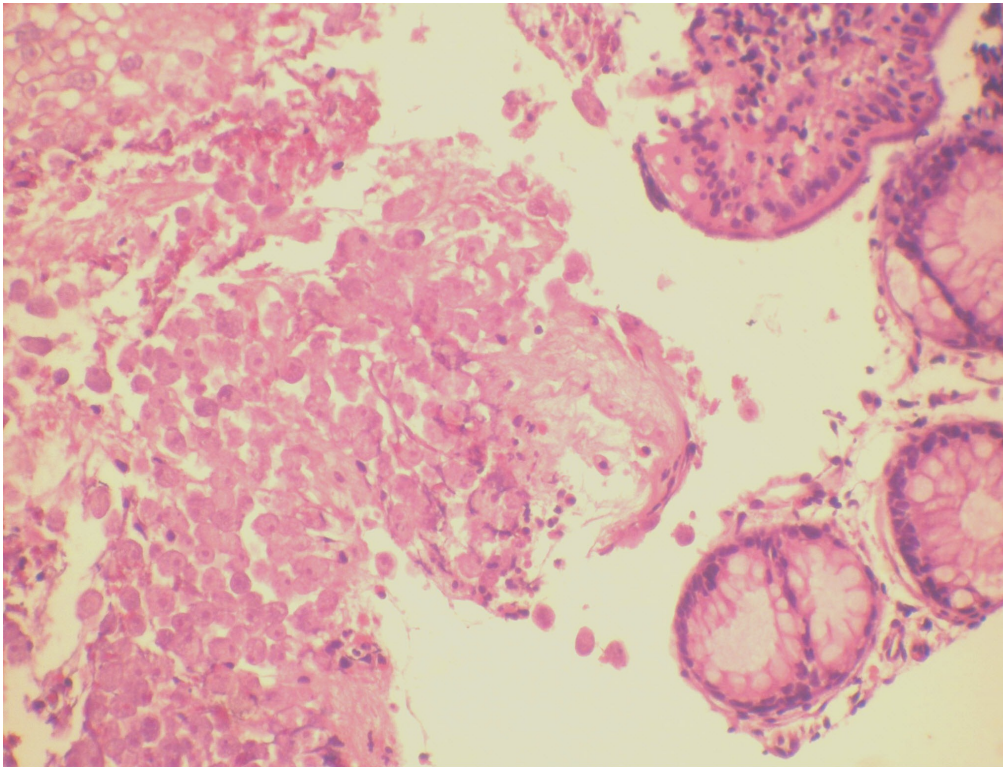
**P 6- 25.** Pneumocystis jirovecii, lung of a patient with AIDS. Fungi are 4-6 microns, boat shaped "courtesy of PathologyOutlines.com".



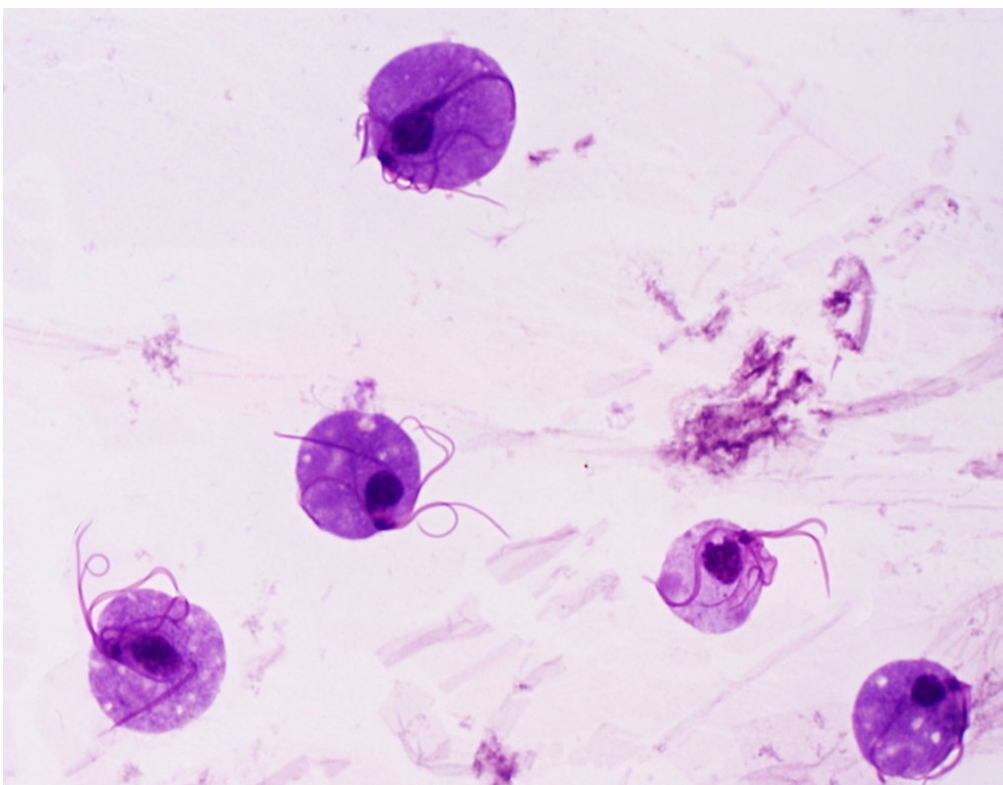
**P 6-26.** Leishmaniasis, skin. Histiocytes contain numerous small oval organisms (2-4 microns) with indistinct cytoplasm, nucleus, and a small, rod-shaped kinetoplast "courtesy of PathologyOutlines.com



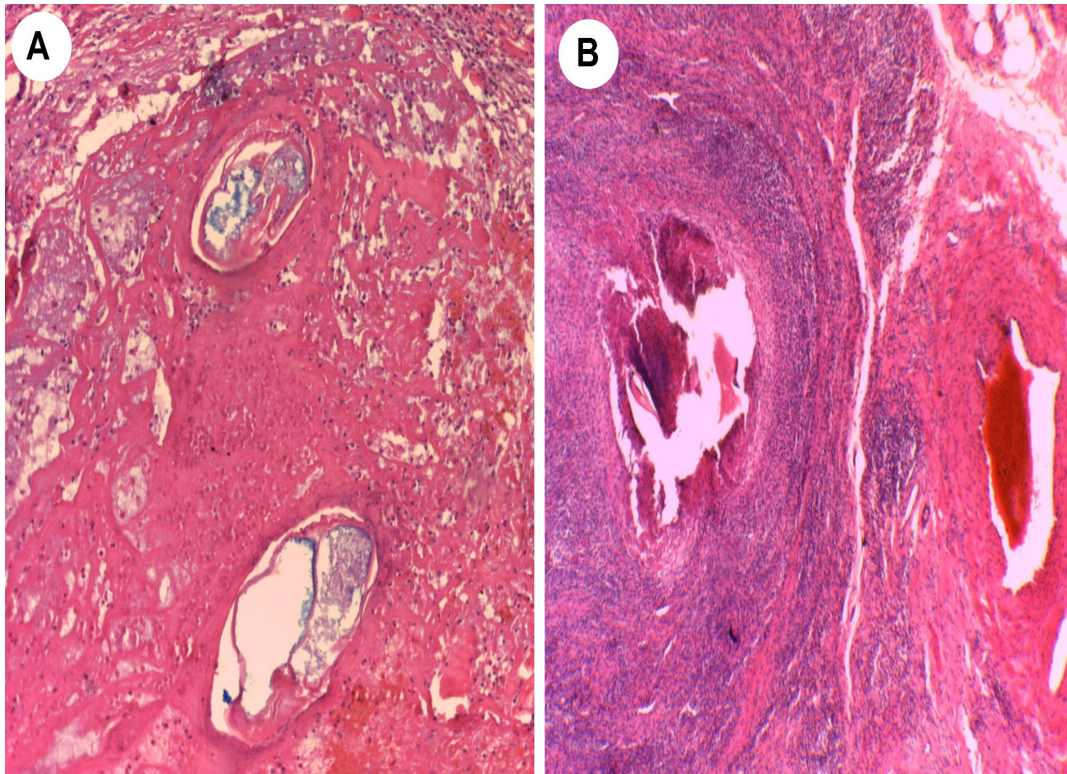
**P 6-27.** Toxoplasmosis, lymph node. Preserved architecture with follicular hyperplasia and scattered dendritic cells present both within and outside germinal centers. The causative protozoan (*Toxoplasma gondii*) is confirmed by serology (ELISA).



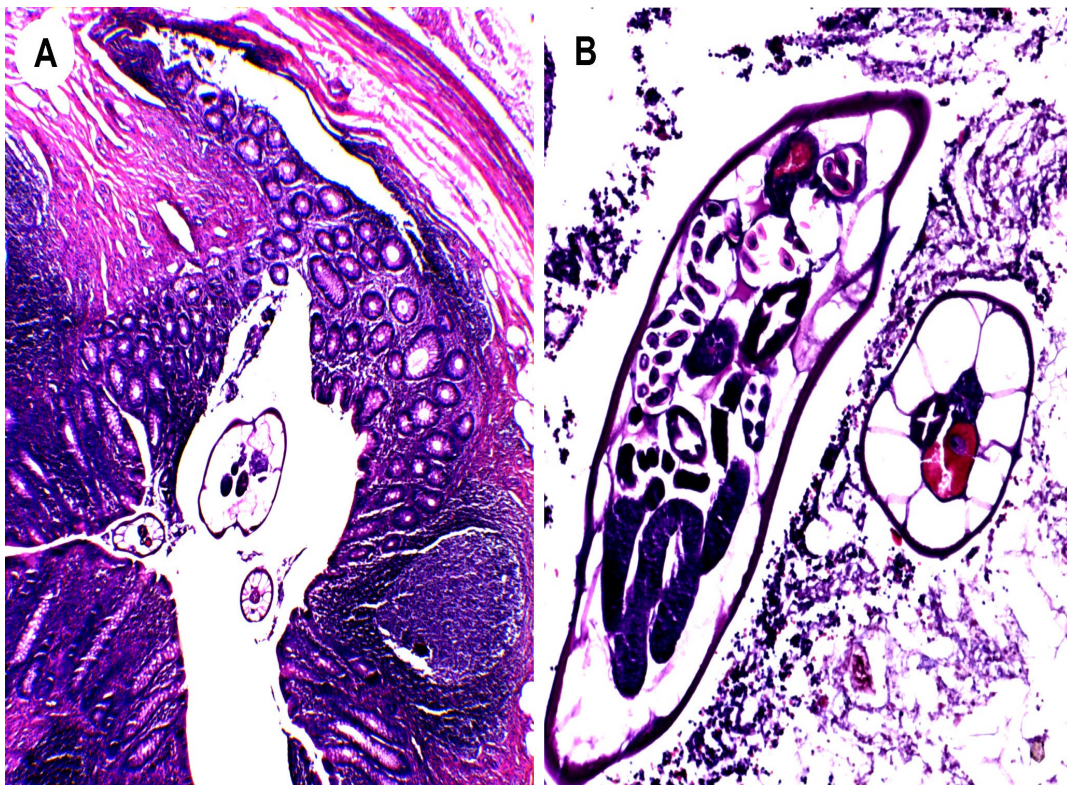
**P 6-28.** Amebiasis, colon. Necrotic ulcer showing numerous trophozoite phase of the parasite in the left field with rounded structure and central small nuclei. (Courtesy of pathologyOutlines.com).



**P 6-29.** Trichomonas, vaginal smear, Pap stain. Pear shaped organisms with eccentric very small nuclei, eosinophilic cytoplasmic granules and surface flagella.

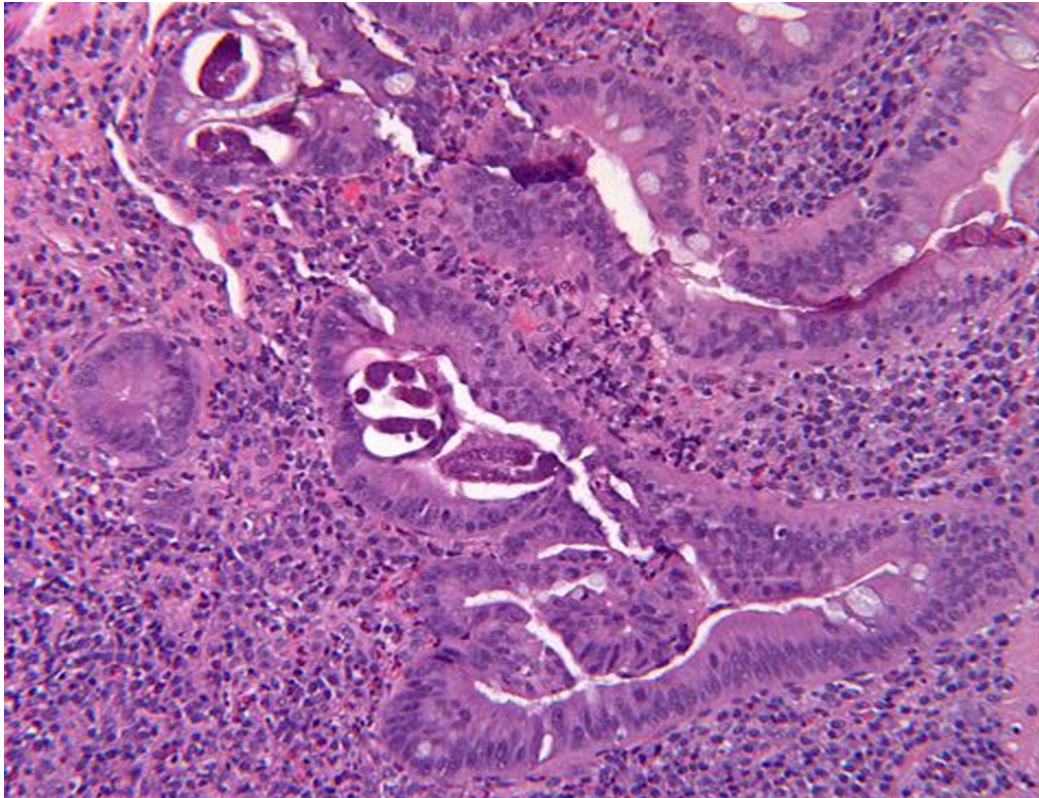


**P 6-30.** Filariasis, lymph node biopsy. **A** and **B** Cross section of adult worm in lymphatics with surrounding chronic inflammation and fibrosis. Microfilaria (not shown) are identified in blood.



**P 6-31.** *Entrobium vermicularis* in appendix. **A** Low power showing multiple worms in the lumen. **B** High power of female worm with multiple eggs in the uterus.

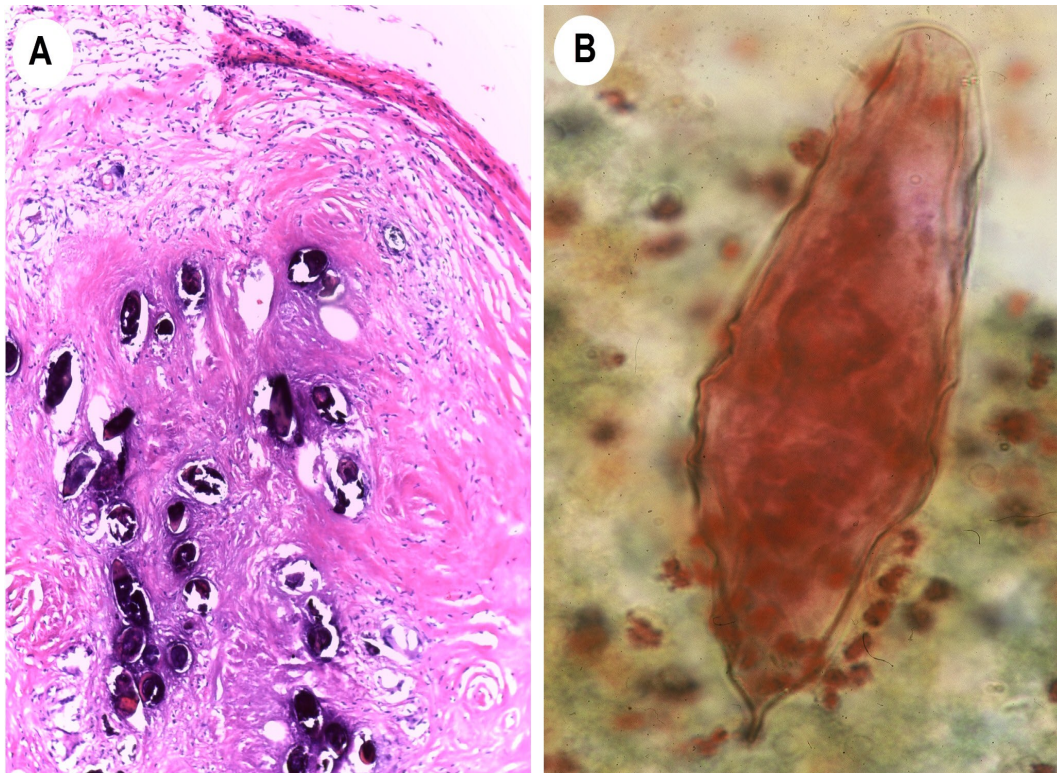




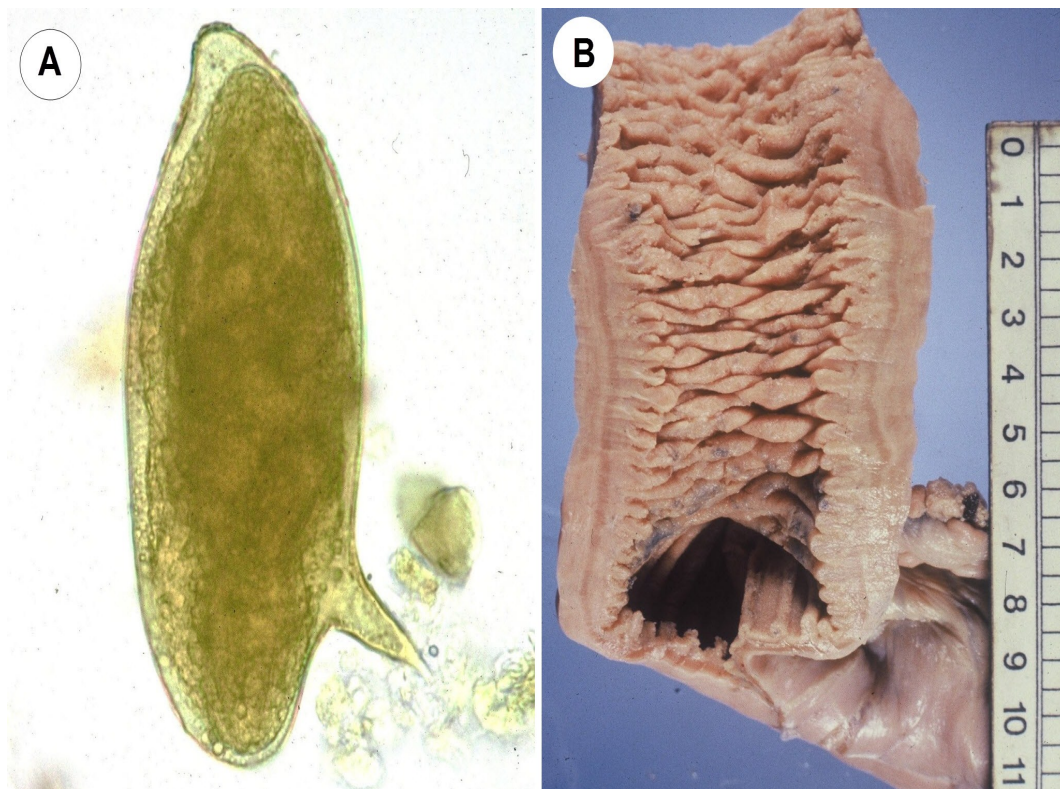
**P 6- 32.** *Strongyloides stercoralis*. Adult worm in the mucosa of small intestine. "courtesy of PathologyOutlines.com".



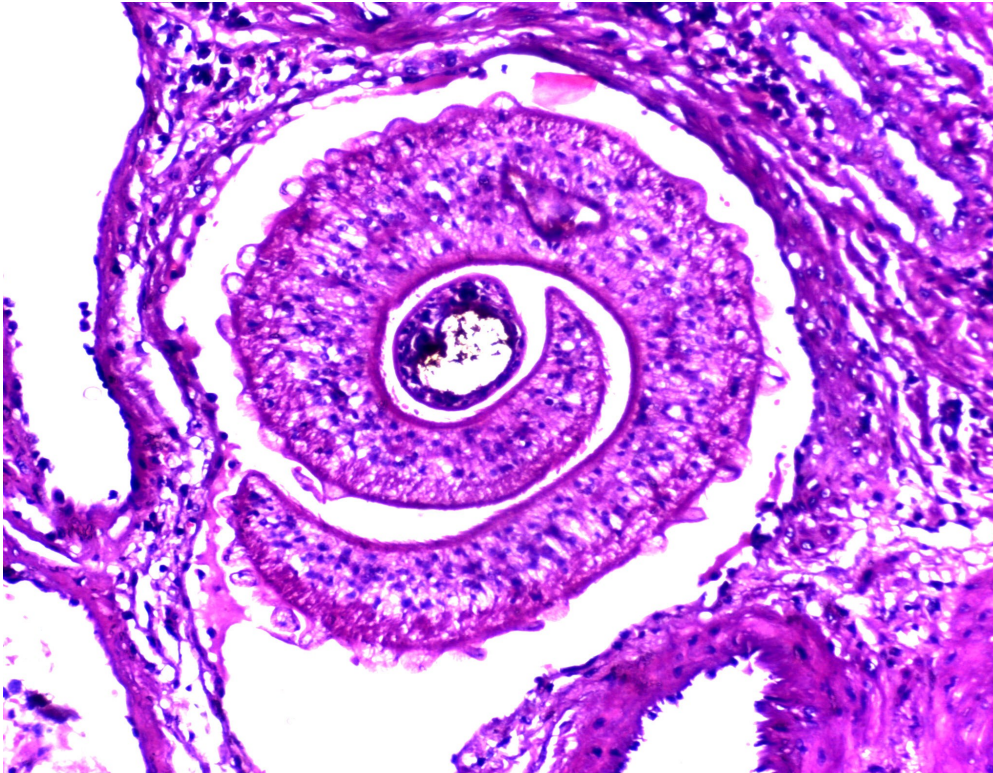
**P 6- 33.** Soft tissue nematodes (Creeping eruption). **A** Linear burrows beneath the skin surface. **B** Adult worm in the subcutaneous tissue surrounded by dense suppurative inflammation.



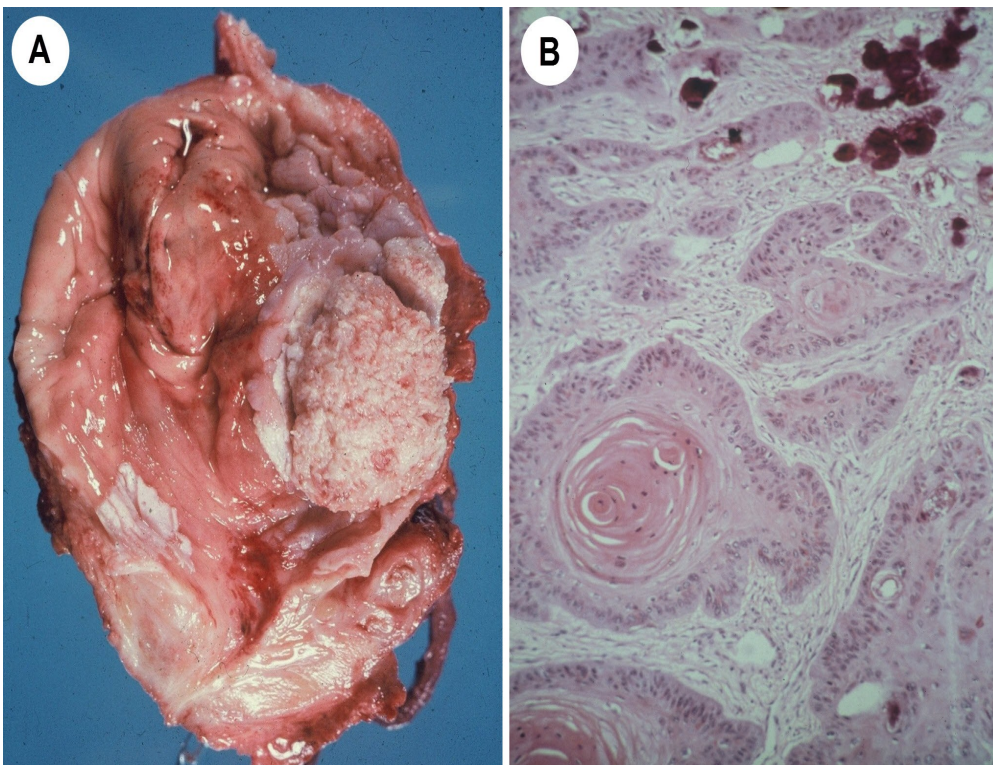
**P 6-34.** *Schistosoma hematobium*. **A** Calcified *S. hematobium* eggs in tissue section of urinary bladder. **B** *S. hematobium* egg with terminal spine in urine smear.



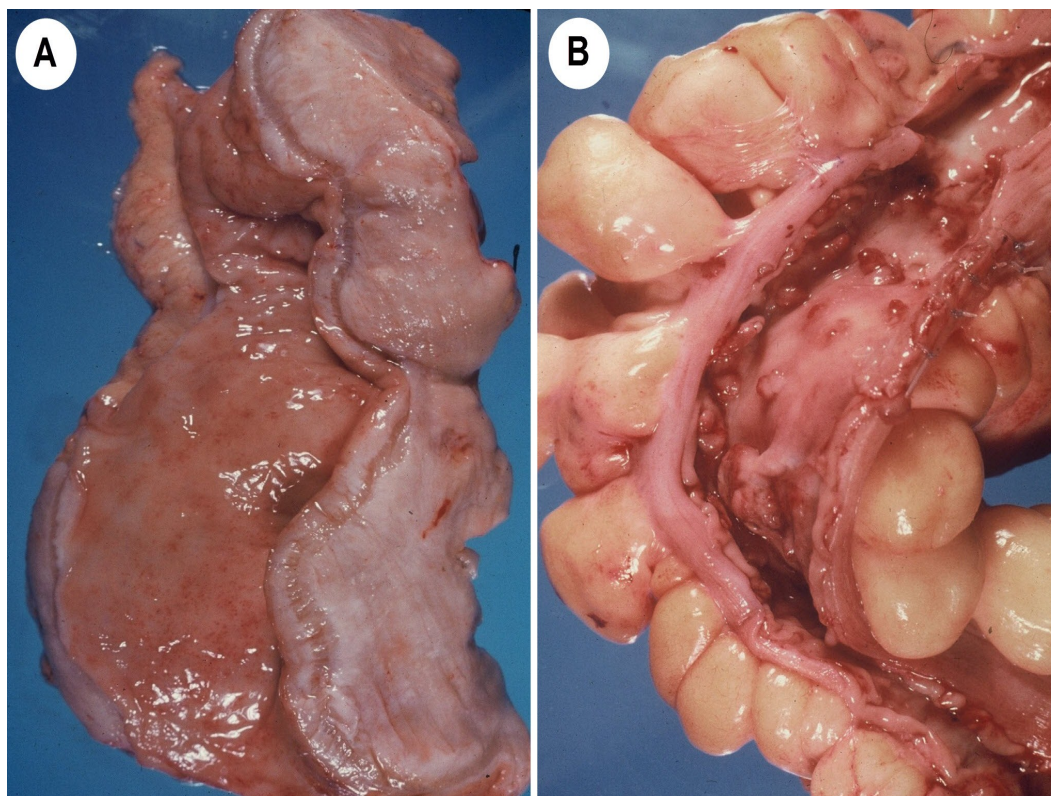
**P 6-35.** *Schistosoma Mansoni*. **A** Egg with subterminal spine. **B** Diffuse bilharzial granuloma with marked thickening of the wall of intestine.



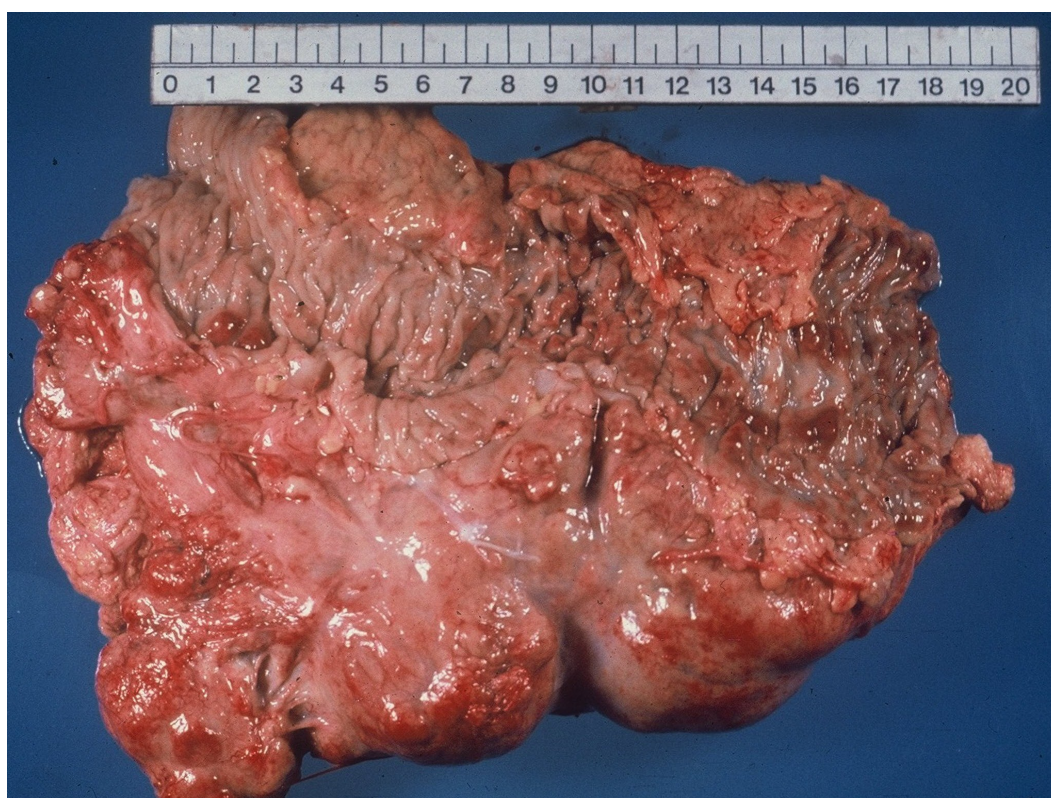
**P 6-36.** Bilharzia worms in a portal vessel. The female worm (central tubular structure in the picture) lies in the gynecophoric canal of the male which shows a spiral cut section and spiny surface.



**P 6-37.** Bilharzia-associated bladder carcinoma. **A** Gross picture showing a nodular tumor associated with a white patch (leukoplakia) of urothelium. **B** Histologic section of well differentiated squamous cell carcinoma (grade 1) associated with bilharzia eggs.



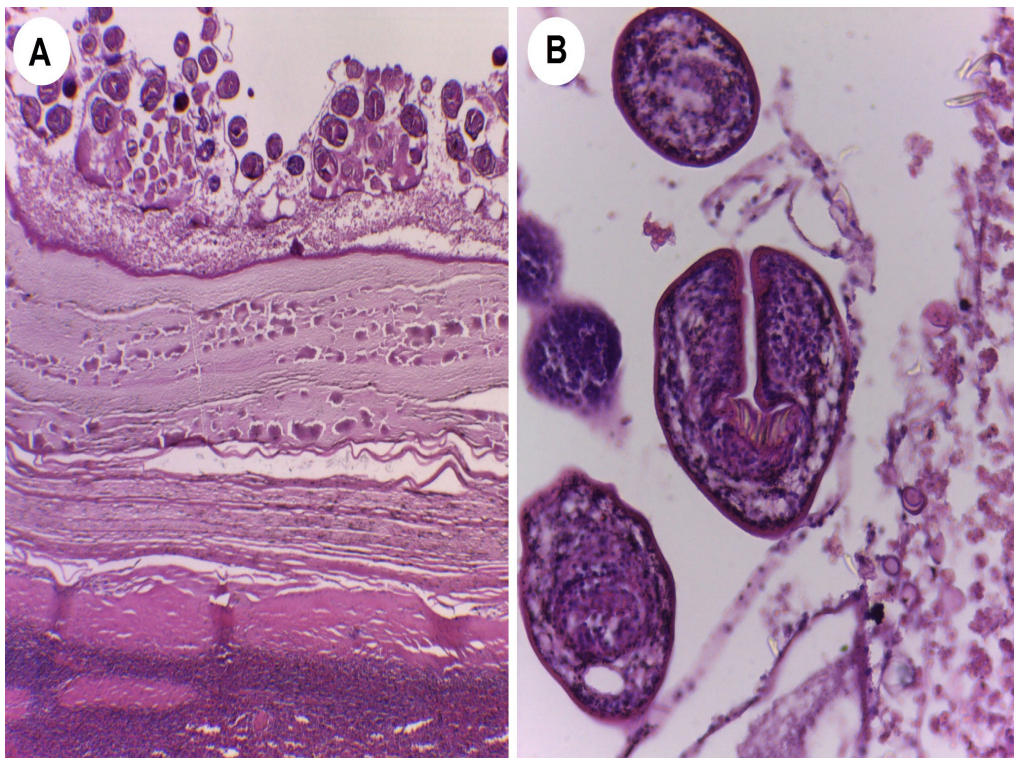
**P 6- 38.** Colon, bilharzial stricture. **A** Large sigmoid mass around sigmoid colon. **B** Multiple bilharzial granulomatous polyps.



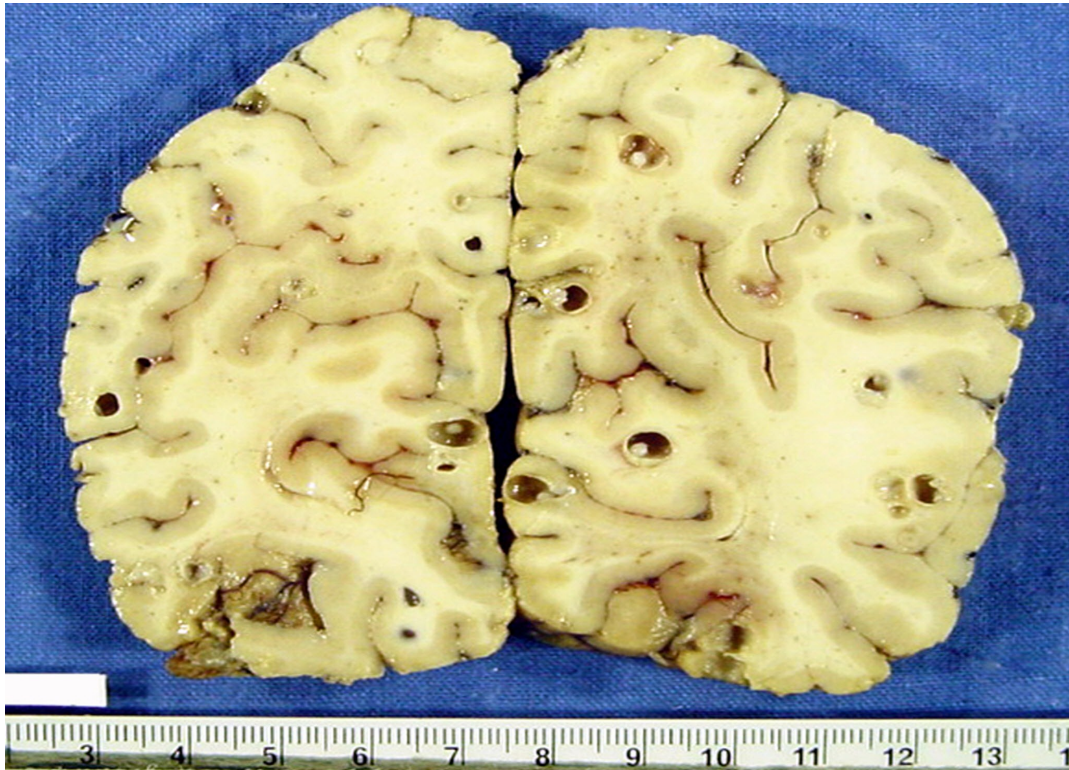
**P 6- 39.** Gross appearance of bilharzia polyps in the colon and their associated pericolic masses. Contrary to the urinary bladder, colonic bilharziasis is not pre-cancerous.



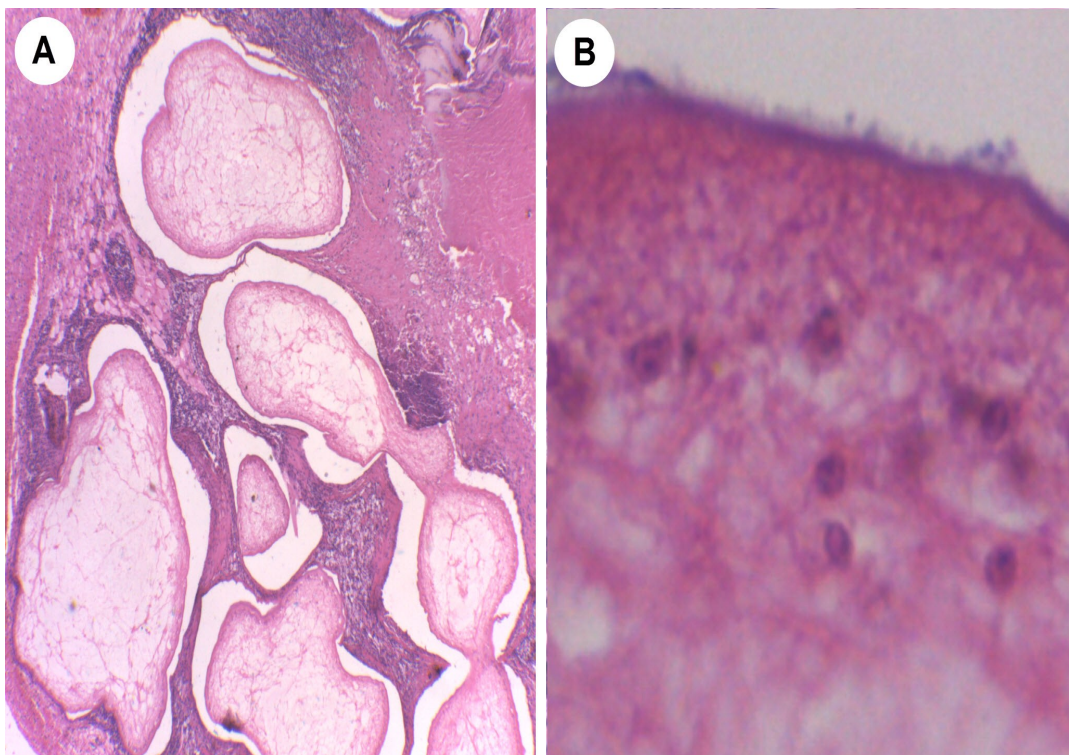
**P 6-40.** Hydatid cyst gross picture. Endocyst (laminated membrane) containing scolices (embryonic stage of the parasite.)



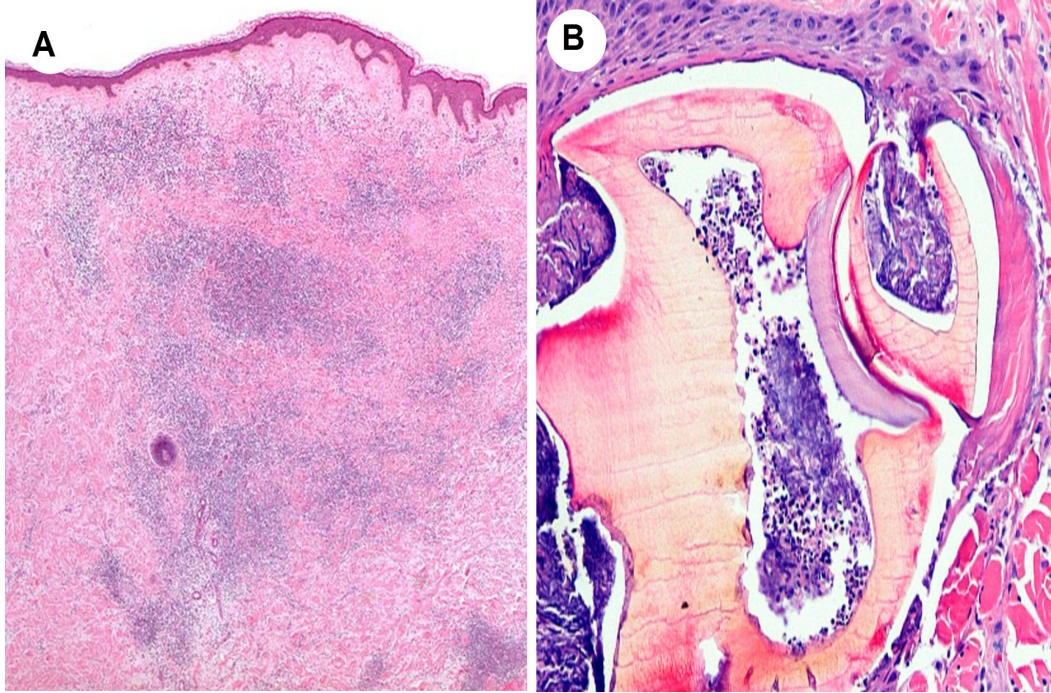
**P 6-41.** Hydatid cyst, spleen. **A** Inner (germinal) layer contains scolices of parasite, followed by laminated membrane which is avascular, eosinophilic and chitinous. Outer layer is dense fibrovascular tissue with chronic inflammation. **B** Scolices with double row of refractile suckers.



**P 6-42.** Brain cysticercosis. The presence of cysticerci in the human central nervous system is called neurocysticercosis. This is the most common parasitic infection of the brain worldwide. (courtesy of PathologyOutlines.com).



**P 6- 43.** Brain cysticercosis. **A** Low power showing the parasite in cystic cavities. **B** High power of surface of the parasite showing cuticle with surface microvilli and underlying monolayer of nuclei. This characteristic structure is dissimilar to any human tissue.



**P 6-44.** Tick bite of skin. **A** Low power showing very dense lymphocytic infiltrate, simulating lymphoma. **B** The presence of bony mouth parts of the tick in the lesion is diagnostic "courtesy of PathologyOutlines.com"

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