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UNIVERSITY OF MICHIGAN

Pharynx, Esophagus and Stomach

Wednesday, January 09, 2008
1:00 PM

- General Features of the Tubular GI Tract
  - 4 layers
    - Mucosa
      - Epithelium
      - Lamina propria
      - Muscularis mucosae
    - Submucosa - dense irreg CT + submucosal plexus
    - Muscularis externa
      - Inner cicular layer
      - Myenteric plexus
      - Outer longitudinal band
    - Serosa if peritoneal, adventitia if retroperitoneal - loose CT
  - Major changes are in the mucosa
  - Functions of the GI mucosa
    - Protection - esophagus (food), stomach (acid), colon
    - Absorption - small intestine, colon
    - Secretion - stomach (small intestine)
  - Secretion is accomplished by glands located in:
    - Mucosa of stomach, small and large intestines
    - Submucosa of esophagus, duodenum
    - Outside of the tubular gut (extramural glands) - liver, pancreas
- Pharynx
  - Lined by stratified squamous non-keratinized epithelium
  - Look for prominent elastic fibers in lamina propria - deep purple (fuchsin) or dark glassy red (H&E)
  - Skeletal muscle
  - Mucous glands in muscular layer are extensions of those in the lamina propria
  - No muscularis mucosae, submucosa
- Esophagus
  - Straight, 25 cm long tube
  - Expandable lumen due to extensive muscularis mucosae, elastic fibers in submucosa
  - Stratified squamous non-keratinized epithelium
  - Upper 1/3 skeletal, middle 1/3 mixed, lower 1/3 smooth muscle
  - Isolated lymphoid nodules and scattered leukocytes in lamina propria
  - Thick layer of muscularis mucosae allows for expansion
  - Mucous glands in upper and lower lamina propria; sero-mucous glands in middle submucosa
  - Look for nerves (myenteric plexus) between layers of muscularis externa - large, dark nuclei and nucleolus
- Stomach
  - General structure
    - Same 4 layers
    - Relatively thick mucosa w/ numerous tubular glands
    - Muscularis mucosa is thick and may have three layers of smooth muscle
    - No glands in submucosa
    - Empty stomach, mucosa into longitudinal folds (rugae)
    - Surfaced is further subdivided by gastric pits continuous w/ tubular glands
    - Middle circularis layer of externa is thickened to form pyloric sphincter
  - Cardiac glands
    - Mucous glands w/ pale staining cytoplasm and basal nuclei

        - Cardio-esophageal junction - abrupt transition from mucosa with stratified squamous epithelium to glandular mucosa of stomach
        - Cardiac glands are columnar cells with "bubbly" supranuclear cytoplasm
    - Gastric Glands
        - Fundus and corpus regions
        - Pits are shallow and tubular glands relatively longer
        - Tall columnar cells lining luminal surface and pits have basally located nuclei and lightly staining cytoplasm; secrete mucus
        - Parietal cells are large and ovoid to pyramidal in shape, base adjacent to basement membrane; eosinophilic, granular cytoplasm; secrete H+ and intrinsic factor
        - Chief cells in lower one-third to one-half of glands; basophilic cytoplasm on base; secrete pepsinogen
        - Lymphoid nodules
        - Strands of smooth muscle fibers from inner layer of muscularis mucosae extend between glands toward the surface may help in emptying glands
    - Pyloric Glands
        - Pyloric sphincter creates thick wall (inner circular layer of externa)
        - Pyloric glands at base of pits are mainly mucous cells, pits are deeper than cardiac