

Gastrointestinal tract pathology

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Learning objectives:

- ✓ Types and morphology of intestinal adenoma.
- ✓ Carcinoid tumor, carcinoid syndrome, and what is a morphological appearance of carcinoid tumor?
- ✓ Morphological types of GIST?
- ✓ Risk factor, gross and histological features of colonic cancer?
- ✓ Causes, morphological appearance and complication of acute appendicitis?

B- Neoplastic polyps (Adenomas)

Adenomas are precursors of carcinoma.

On the basis of epithelial architecture Adenomas are classified into:

- 1- Tubular adenomas
- 2- Villous adenomas
- 3- Tubulo villous adenomas or mixed

Tubular adenomas:

Single or multiple, tend to be small pedunculated polyps

Histologically:

- The stalk is covered by normal colonic mucosa
- The head is composed of neoplastic epithelium, forming branching rounded or tubular glands.

Villous adenomas

- Often large and sessile (broad base rather than a stalk).
- Composed of numerous, finger-like projections of epithelium.

Tubulovillous adenoma

- Features of both adenomas (tubular and villous lesions).

✚ **Sessile serrated adenomas (Sessile serrated polyps):** are most commonly found in the right colon

Histologically: serrated architecture throughout the full length of the glands, including the crypt base, associated with crypt dilation and lateral growth.

➤ **The risk of malignant transformation is correlated with:**

- **Size:** the larger the size, the greater the risk (most significant).
- **Histological type:** villous adenoma has high risk.
- **Dysplasia:** sever dysplasia causes ↑ the risk.

- **Number:** increase in number ↑ the risk.

Familial syndromes

(A) Familial adenomatous polyposis coli (FAP)

- Autosomal dominant disease, it is caused by genetic defect is in the APC gene.
- A minimum number of **100** adenomas are required for diagnosis.
- It is evident in adolescence or early adulthood.
- The risk of colonic cancer is 100% by midlife unless a prophylactic colectomy is performed.

(B) Peutz- Jegher's syndrome

- Rare Autosomal dominant polyps
- Characterized by **pigmentation** around the mouth and oral cavity with multiple polyps in the **small intestine**.
- Rarely undergo malignant transformation.

Neoplasms of the small intestines

Uncommon compared to tumors in other segments of GI tract

- **Benign:** Adenomas, leiomyomas, lipomas & Angiomas.
- **Malignant:** Adenocarcinoma, primary lymphoma, Carcinoid & GIST.

Neuroendocrine (Carcinoid) tumor

It is a **low grade** malignant tumor of the **neuroendocrine cell** origin.

Commonest sites: appendix, colon, esophagus, stomach, jejunum, ileum.

- ✓ The most important prognostic factor → **location** of the tumor.

Morphological features

Gross: appear as small, yellowish, brown nodules.

Histologically: nests, trabeculae, glands or sheets of uniform polyhedral cells, with scant pink granular cytoplasm and round-to-oval nuclei with **salt and pepper** chromatin (stippled nuclei).

- These tumors secrete vasoactive substances into the circulation.
- When there is liver metastasis **carcinoid syndrome** is developed (flushing of face, sweating, diarrhea, bronchospasm, cardiac valve stenosis).

Gastrointestinal Stromal Tumors (GIST)

- Mesenchymal tumors arise from the interstitial cells of Cajal, and the commonest site: **stomach**.
- Mostly slow- growing, solitary, well-circumscribed fleshy submucosal mass, cured by surgery

Histologically: 3 morphological types **spindle** (most common), **epithelioid** and **mix**.

Colorectal carcinoma

- ✓ Most common malignancy of the GI tract and is a major cause of morbidity and mortality worldwide.
- ✓ Males > females, 60-70 years of age

Etiology and pathogenesis: -

✚ Premalignant lesions

- * Adenomatous polyps
- * Inflammatory bowel diseases.

✚ Genetic factors

- * Familial adenomatous polyposis (FAP) 100% risk.
- * Microsatellite instability pathway (defects in DNA mismatch repair gene).

✚ Environmental factors especially dietary factors

- * High fat and high CHO diets.
- * Low fibers in diets.
- * Several recent studies suggest that use of aspirin and other NSAIDs exerts a protective effect against colon cancer.

Gross feature:

- ❖ Tumors of **proximal (right) colon** appear as **exophytic, polypoid** masses in the ascending colon and cecum.
- May ulcerate ----occult bleeding ----- iron deficiency anemia.
- Obstruction uncommon.
- ❖ In **distal part (left)** presented as **annular, encircling** lesions ----- produce so called napkin-ring constriction and narrowing of the lumen---
- intestinal obstruction (mainly) or ulceration causing rectal bleeding.

Histological features:

- Adenocarcinoma that ranges from well differentiated to undifferentiated, frankly anaplastic tumors.
- Many tumors produce mucin (**Mucinous Adenocarcinoma**) and this worsen the prognosis.

- Sometimes signet ring carcinoma as in gastric carcinoma.
 - ✓ The two most important prognostic factors are depth of invasion and the presence or absence of lymph node metastases.

Malignant Tumors of anal canal

*Adenocarcinoma *Squamous cell carcinoma *Malignant melanoma

THE APPENDIX

Acute Appendicitis

- ✓ Initiated by progressive increases in intraluminal pressure that compromise venous outflow.
- ✓ Obstruction is the primary event mostly by fecaliths.
- ✓ Other causes include tumor, mass of worms, Ischemic injury & stasis of luminal contents.

Grossly:

Vary according to severity and duration; Edema, congestion, suppuration, perforation and gangrene.

Microscopically:

- Transmural infiltration of neutrophils with ulceration of lining mucosa.
- In more severe cases, focal abscess may form (**acute suppurative appendicitis**) and that may progress to large area of hemorrhagic ulceration and gangrenous necrosis (**acute gangrenous appendicitis**).

Complications:

1. Gangrene
2. Perforation----peritonitis
3. Periappendicular abscess

Commonest tumor of appendix is Carcinoid tumor.

Thank you