

DISEASE OF THE GIT

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FUNCTIONAL ANATOMY & PHYSIOLOGY OF GIT

- The esophagus is a muscular tube & extends 25cm from the cricoid cartilage to the cardiac orifice of the stomach. It has upper & lower sphincter.
- The stomach acts as a (hopper) retaining & grinding food, & then propels it into the small bowel.
- In the stomach, gastrin, histamine & acetylcholine are the main stimulants of acid secretion, from apical membrane of the parietal cells by the hydrogen-potassium ATPase, (proton pump).
- Pepsinogen is produced by chief cells, & converted to pepsin by gastric acid.
- The intrinsic factor which is a glycoprotein is secreted in parallel with acid, & it is necessary for B12 absorption.
- Gastrin is produced by antral G cells, & somatostatin is secreted by D cells throughout the stomach. Ghrelin, is secreted by oxyntic glands, it stimulates acid secretion, appetite & gastric emptying.
- Prostaglandins stimulate bicarbonate, with the mucin & trefoil factor family (TFF), protect the gastric mucosa. NSAIDs prevent the protective mechanism & predispose to ulceration & erosion.
- Gut microbiota plays an important role in maintaining a healthy gut environment & function & vit.K production.

CLINICAL MANIFESTATIONS OF GIT DISORDERS

- Diseases of the GIT can present with different manifestations , & each of these could be multifactorial , that's to say , different disease can present with the same manifestations, even disorders outside the GIT can present with these gut related symptoms & signs. That's why investigations are important to make a final diagnosis in each complaint. The most important manifestations are:
- 1-dysphagia: mainly in esophageal diseases, could be for solids or liquids or both , painful or painless dysphagia, upper or lower according to the site.
- 2-Abdominal pain : can be more specified by elaboration about the main characters of pain (site,radiation,exaggerating & relieving factors).
- 3-dyspepsia & abdominal distention: due to peptic ulcer disease, gastritis & motility disorders.
- 4-Nausea & vomiting.
- 5-Diarrhoea , constipation or change in bowel motion.
- 6-GIT bleeding : upper (hematemesis or melena)due to (PU, Esophageal varices, Ca stomach) & NSAIDs. or lower(bleeding per rectum) due to(infection, hemorrhoid, ulcerative colitis & Ca colon).
- 7-Jaundice , weight loss ,anemia, features of liver disease, ascites or malabsorption syndrome.

DISEASES OF THE ESOPHAGUS

- The most common esophageal disorders are:
- 1-Esophagitis with or without ulcer: whether due to reflux of gastric acid(reflux esophagitis can cause peptic ulcer), chemical due to caustic ingestion, infective causes such as CMV & candidiasis.Eosinophilic esophagitis is an infiltrative disorder occur due to different etiologies.
- Esophagitis can occur with or without esophageal ulceration, as part of peptic ulcer disease.
- 2-motility disorders: such as achalasia, diffused esophageal spasm.
- 3-esophageal tumors: whether benign or malignant.
- The most important manifestations of esophageal disorders are, dysphagia(painful or painless) , regurgitation, & systemic symptoms according to the cause.

DISEASES OF THE STOMACH

- 1- peptic ulcer disease & gastritis: it encompasses esophageal ulcer, gastric ulcer, duodenal ulcer. The role of *Helicobacter pylori* in the pathogenesis of peptic ulcer & gastritis is important in diagnosis & treatment decision.
- 2-dyspepsia: it could have functional or organic causes. The presence of alarming features(red flags) are important for proper decision in management steps. These features are:
 - A-the age of the patient .
 - B-GIT bleeding.
 - C-Weight loss.
 - D-Anemia.
 - E-Vomiting.
 - F-Palpable abdominal mass.
 - G-Dysphagia.
- 3-Bleeding : could be due to peptic ulcer , vascular malformations, drug induced, or cancer .
- 4-Gastric outlet obstruction: in chronic peptic ulcer , trichobezoar, gastric antral malignancy.
- 5-Tumors of the stomach , benign or malignant, MALT(mucosa associated lymphoid tissue) lymphoma.

MALABSORPTION SYNDROME

- It is a state arising from abnormality in absorption of food nutrients across the GIT. The cause may be single or multifactorial , & the nutrient malabsorption also may be single or multiple depending on the underlying etiology. This in turn can lead to malnutrition & variety of anemias.
- The etiology can be due to
 - 1- mucosal enzymatic deficiency: (hypolactasia) ,or due to extensive mucosal damage such as in coeliac disease & infective agents such as post-infective malabsorption or giardiasis.
 - 2-defective digestive enzyme production: such as in cases of chronic pancreatitis or hepatobiliary disorder with inadequate bile acid production or biliary duct obstruction.
 - 3-defective mucosal transport mechanism , in cases of congenital or acquired lymphatic duct disorders, this could occur in Whipple's disease , congenital lymphangiectasia, or TB.
- It is important to mention that food digestion starts from the mouth where adequate grinding & mixing of the food is carried out by the teeth & saliva.
- In children , malabsorption is one of the causes of failure to thrive , & any child with such condition should be investigated properly to reach the specific etiology for the condition.

MALABSORPTION SYNDROME

Causes of malabsorption:

- Intestinal malabsorption can be due to:
 1. digestive failure caused by enzyme deficiencies
 2. structural defects
 3. mucosal abnormality
 4. infective agents
 5. systemic diseases affecting GIT

Malabsorption Syndrome

Clinical features

There is increased fecal excretion of fat (**steatorrhea**) and the systemic effects of deficiency of vitamins, minerals, protein and carbohydrates.

Steatorrhea is passage of soft, yellowish, greasy stools containing an increased amount of fat.

Growth retardation, failure to thrive in children

Weight loss despite increased oral intake of nutrients.

DISEASES OF THE SMALL INTESTINE

- The main small intestinal diseases are:
- 1-Infections: viral (Rota & CMV), bacterial (campylobacter ,vibrio-cholera),TB,giardiasis).
- 2-Malabsorption syndrome.
- 3-Immune mediated: mainly Crohn's disease, but also terminal ileum in ulcerative colitis, celiac disease.
- 4-Congenital disorders: congenital pyloric stenosis, vascular malformations, ectopic gastric tissue or endometriosis. Disorders of nerve supply, intestinal pseudo-obstruction, enzymatic deficiency.
- 5-Neoplastic disorders: benign (leiomyoma) or non-Hodgkins lymphoma, MALT lymphoma
- 6-Iatrogenic : short bowel syndrome due to resection, blind loop syndrome, radiation induced .

INFLAMMATORY BOWEL DISEASE

- Ulcerative colitis:

- 1-It usually start from the rectum & ascends proximally throughout the colon.
- 2-The erosion involves the mucosa initially .
- 3-The distal ileum could be involved in cases of pancolitis.
- 4-Cryptitis (crypt abscess) is usual histological finding.
- 5-Pancolitis for long duration >10 years predisposes the patient to the risk of colonic Ca.

- Crohn's disease:

- 1-It can affect any part of GIT, but mainly the terminal ileum & proximal colon.
- 2-All layers of the gut are involved leading to fissuring, fistula & adhesions.
- 3-The main pathology is granuloma formation with fibrosis & different stages of inflammation.
- 4-it can cause malabsorption, blind loop syndrome with bacterial overgrowth , & chronic fistulae between different parts of the bowel, or between the bowel & Genito-urinary tract.

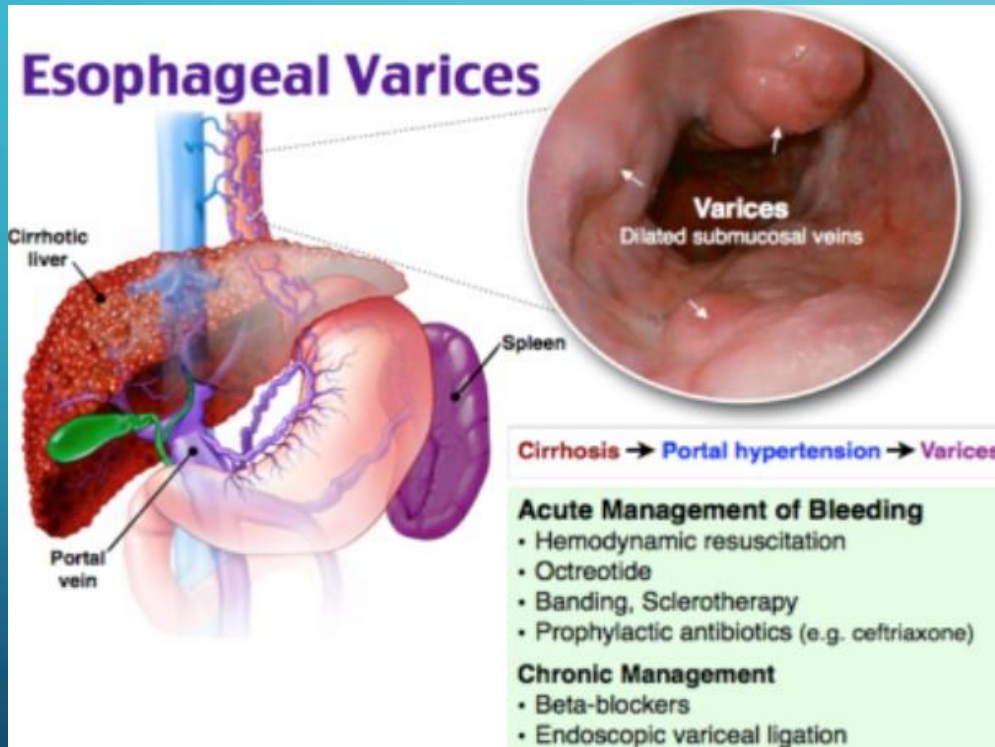
DISEASES OF THE COLON

- The main colonic diseases are:
- 1- infective: bacterial (bacillary dysentery, clostridium difficile) , amoebic dysentery, cryptosporidiosis, infective proctitis.
- 2-immune mediated: mainly ulcerative colitis, but also Crohn's disease.
- 3-congenital:vascular malformations, Hirschsprung's disease, hereditary polyposis coli.
- 4-Neoplastic: benign (colonic polyps) , malignant (Ca. colon).
- 5-Motility disorders: such as irritable bowel syndrome.

INVESTIGATIONS IN GIT DISORDERS

- 1-STOOL EXAMINATION: Multiplex PCR panel is better than the old general examination which used for parasite, as the delay in diagnosis & off target antibiotic use is almost eliminated. Also we can look for pus cells, RBC, occult blood, stool for H.pylori Ag. & for Cl.difficile toxins, fecal calprotectin, fat content in steatorrhea. Stool culture for vibrio-cholera, which is still used in cases of suspected cholera spread.
- 2-Endoscopic examination: OGD, colonoscopy, enteroscopy, non-invasive capsule imaging. It can be used as diagnostic & therapeutic tool.
- 3-Imaging studies: by Ultrasound which is most useful to study solid organs such as the liver, gallbladder, or endoscopic US for staging of malignancy. Barium studies such as barium swallow, meal, enteroclysis, contrast & double contrast colonography, mesenteric angiography, ERCP, MRCP, CT & MRI.
- 4-Studies for malabsorption: enzymatic studies for pancreatic & bile salts production.
- 5-Motility studies: for esophageal spasm, achalasia, colonic motility disorders.
- 6-Hematologic & serologic examination: for anemia, inflammatory markers (CRP, ESR), ANA, AMA, ASMA, H.pylori Abs.
- 7- Biopsy studies: for H.pylori, gastric Ca. colonic Ca., diagnosis of inflammatory bowel diseases.
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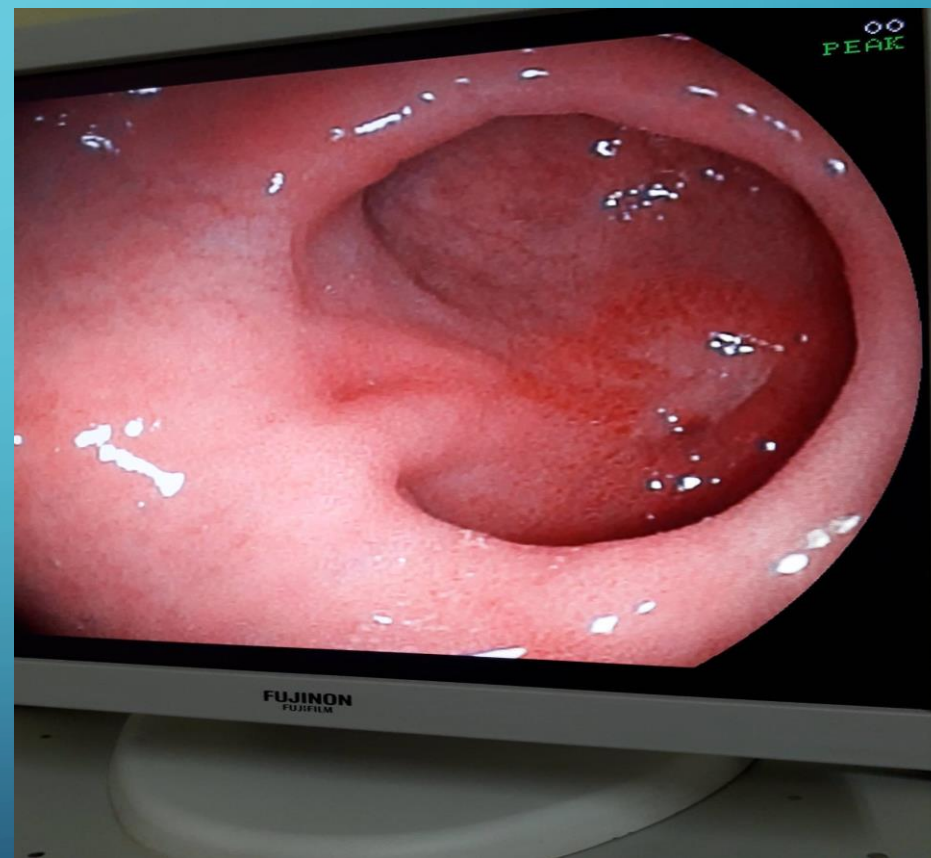
ESOPHAGEAL VARICES



ESOPHAGEAL DISEASE



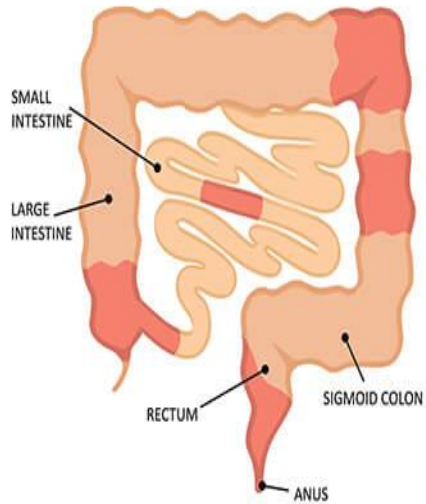
PEPTIC ULCER



INFLAMMATORY BOWEL DISEASE

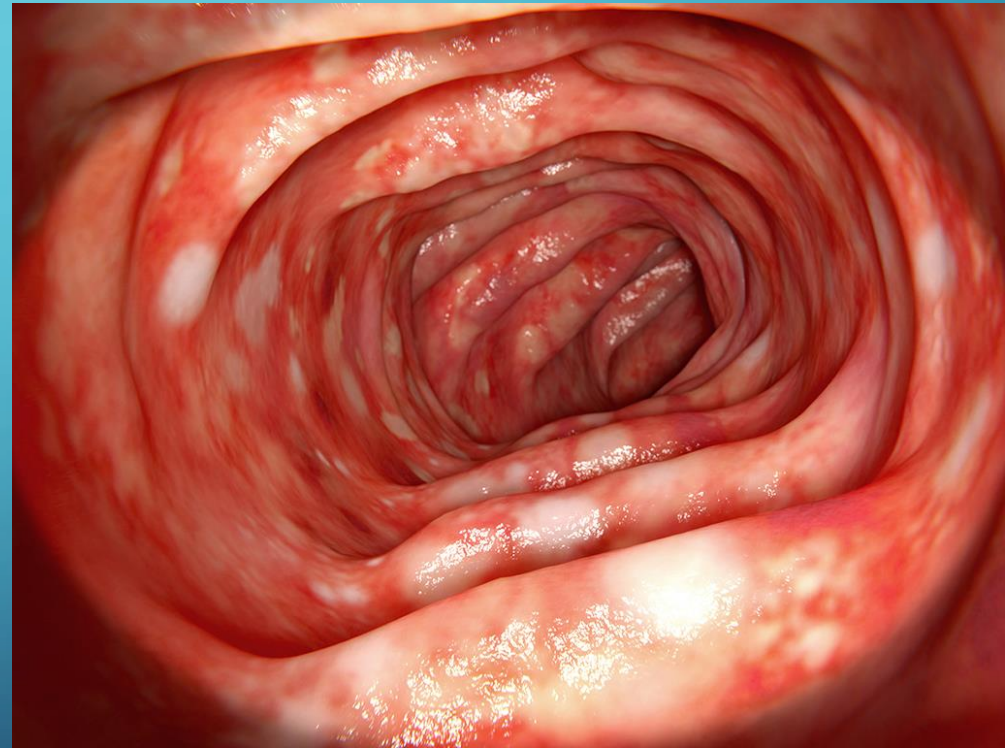
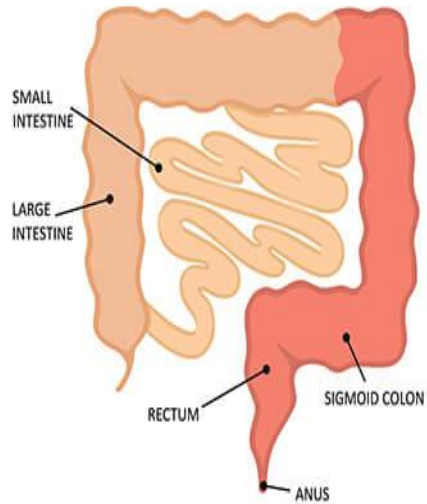
CROHN'S DISEASE

PATCHY INFLAMMATION THROUGHOUT
SMALL AND LARGE BOWEL

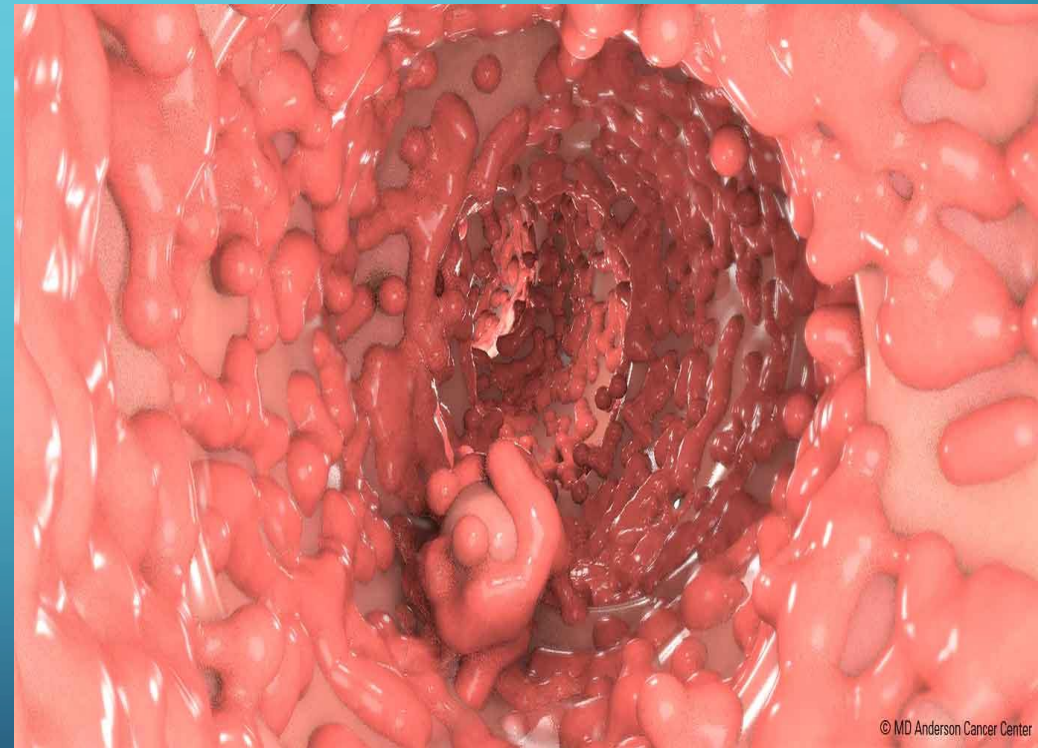


ULCERATIVE COLITIS

CONTINUOUS AND UNIFORM
INFLAMMATION IN THE LARGE BOWEL



COLONIC POLYPS & CANCER



HIRSCHSPRUNG'S DISEASE

