



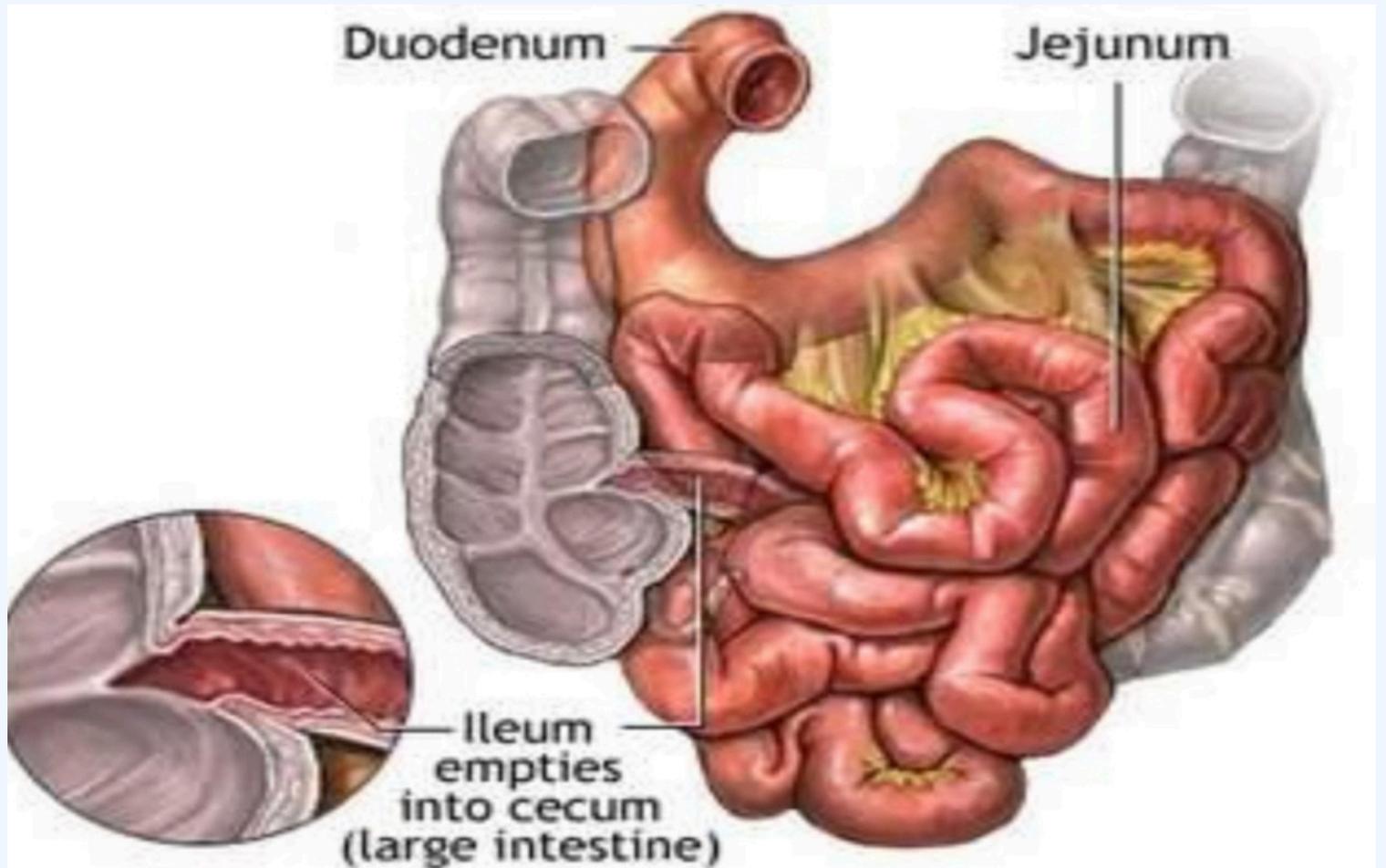
الطب والجراحة لجنة

small intestine

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small intestine



- **some anatomical significances of small intestine:**
- **Paradoudenal fossa as the main site of rare cause of internal intestinal obstruction by entering some intestinal loops in this fossa.**
- **being the jejunum and ileum is completely intraperitoneal they are more liable for volvulus so the volvulus of small intestine is not uncommon because of long mesentery and it's liable for tortuous.**
- **the fourth part of duodenum is fixed while jejunum is mobile part, so it is the site of jejunum injury.**

The ileum has a thinner wall and a smaller lumen than the jejunum and mainly occupies the central and right lower abdomen and pelvis.

- The ileum called **Featureless or pipelike in the radiology**



INVESTIGATION OF GIT:

The small intestine is evaluated radiologically by:

- Plain abdominal Xray .**“initial and beneficial tool”** it gives sensitivity up to 75%
- upper GI series using barium or Gastrografin follow-through.
- enteroclysis, in which contrast is introduced directly into the proximal jejunum thorough a nasojejunal tube.
- CT scanning can also be combined with enteroclysis.
- Capsule endoscopy, video camera that is swallowed by the patient; as it passes through the gastrointestinal tract, it keeps transmitting digital images of the mucosa that are captured by a receiver device strapped to the patient.
- **The indication of use enteroclysis is to defferantiate between dynamic and nondynamic obstruction.**

DISEASES OF SMALL INTESTINE

1. CONGENITAL
2. INFLAMMATORY
3. MECHANICAL CAUSES
4. VASCULAR
5. NEOPLASTIC

Congenital variants :

*A patent vitellointestinal duct:

- Meckel diverticulum. **If the proximal part not obliterated**
- Vitelline sinus at the umbilicus **if the dista part not obliterated**
- Fibrous band between ileum and umbilicus, around which torsion of a small bowel loop may occur
- * Malrotation of the gut results in the location of the small intestine on the right side and the narrow base of the small bowel mesentery predisposes it to volvulus.
- * Atresia (duodenal, jejunal, and ileal), narrowing, or even complete obliteration of the lumen resulting in neonatal intestinal obstruction
- * Diverticulae and duplication can occur in any part of the small intestine.

CROHNS DISEASE *“terminal ileitis”*



American gastroenterologist
Burrill Bernard Crohn

- * Dr. Burrill B. Crohn, who first described the disease in 1932
- Crohn's disease may affect as many as 780,000 Americans.
- * Men and Women are equally likely to be affected.
- * the disease can occur at any age, is more prevalent among adolescents and young adults between the ages of 15 and 35 y.

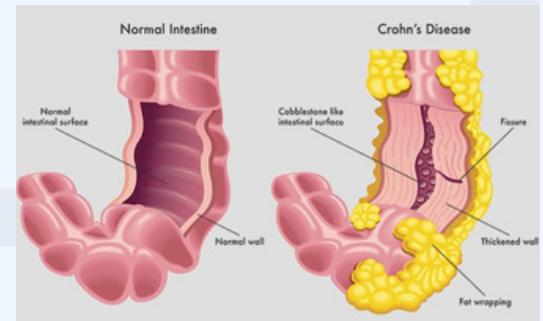
- * The causes of Crohn's disease are not well understood. Diet and stress may aggravate the dis., It tends to run in families.
- recently a gene called NOD2 has been identified as being associated with Crohn's disease (**NOD2 gene is associated with crohn's not the cause**) and the susceptibility to abnormal activation of the immune system is genetically inherited.

PATHOLOGY

Affect any part of G.I.T. **from the mouth to the anus**, commonly :

- Distal ileum only 33%
- Colon only 20%
- Ileum & colon 50%

1. Transmural pathology.
 2. Skipped areas are characteristic.
 3. dull purple red loops + areas of thick grey -white exudate.
 4. Deep mucosal ulcerations+ edema of the mucosa in between -cobble stone appearance.
 5. Enlarged mesenteric L.N.
 6. extensive fat wrapping of intestine.
- the mesenteric fat wrapping the intestine**
7. dilated proximal segment,



CLINICAL FEATURES

The symptoms of Crohn's disease are dependent on the location, the extent, and the severity of the inflammation.

1. colicky intermittent pain is the most common symptom of Crohn's disease , becomes constant dull ache as the disease progresses. **Any patient with chronic intermittent colicky pain has a high possibility of crohn's disease**
2. Diarrhoe, the 2nd most common symptom. **“watery diarrhea”**
3. Hematochezia. **By ulceration of blood vessel**
4. Low grade fever.

5. malaise, wt loss.
6. arthralgia.
7. tenderness in Rt lower abdomen.
8. Non classical anal fissures, recurrent perianal abscesses.

Diagnosis of crohns disease

There isn't any single test that can diagnose crohns dis.

* Crohn disease is initially diagnosed on the basis of a combination of clinical, laboratory, radiologic and histologic findings.

* A diagnosis of Crohn's disease should be considered in any patient who presents with chronic diarrhea, abdominal pain, bowel obstruction, weight loss, fever, or night sweats.

Laboratory study

* Generally they are nonspecific but may be helpful in supporting the diagnosis

ESR, CRP. Hb,

* Serologic studies are sometimes used to facilitate differentiation of Crohn disease from ulcerative colitis.

it is unreliable in diagnosis but reliable in differentiation

- Antibodies to the yeast *saccharomyces cerevisiae* are found more commonly in Crohn disease than in ulcerative colitis, whereas perinuclear antineutrophil cytoplasmic antibody (p-ANCA), is found more commonly in ulcerative colitis than in Crohn disease.

Radiology

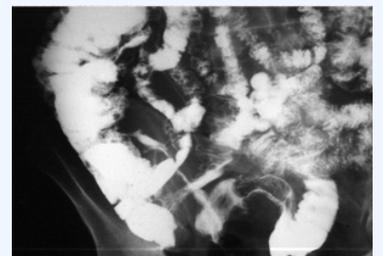
Various imaging modalities are available to aid in the diagnosis and management of Crohn disease

1. Plain abdominal X ray
2. Barium meal and follow through
3. C.T. scan
4. U/S

* Endoscopic visualization and biopsy are essential in the diagnosis of Crohn disease.

A noncaseating granulomas in about 15-30% of cases of biopsy samples and 40-60% of surgical specimens.

even the biopsy and histopathology not specific in detection granuloma and not all granulomas indicate crohn's disease



barium follow through

COMPLICATIONS

1. Obstruction by fibrosis (Most Common complication)
2. Fistula formation:
 - peritoneum
 - bowel
 - Skin
 - Urinary bladder
3. Haemorrhage
4. localised intraperitoneal abscesses
5. malignancy

TREATMENT

There is NO CURE for Crohn's disease

MEDICAL & SURGICAL therapy are palliative.

- to treat the acute flare-ups
- to maintain remission
- the use of medication, designed to suppress the immune system's abnormal inflammatory response.

Mild to moderate Crohn's disease

1. Treated with a salicylate preparation which include mesalamine and sulfasalazine

The dosage of oral mesalamine is 3 to 4 g per day

The response to therapy should be evaluated after several weeks.

2. antibiotic therapy :

Moderate to Severe Disease

*Treated with steroids until symptoms resolve and weight loss is reversed.

prednisone 40 mg daily over eight to 12 weeks have been shown to achieve a clinical response

*The immunomodulators azathioprine (Imuran) and mercaptopurine (Purinethol) may be used, but full response may not be achieved for several months.

Recently:

infliximab, an antibody to human tumor necrosis factor used to treat Crohn's disease, infliximab has proved successful in closure of fistulas, steroid- refractory disease, and in the improvement of moderate to severe disease.

Other Considerations in treating crohns disease:

vitamins and mineral supplementation iron,calcium. folic acid and vit.B12

SURGICAL INDICATIONS

- 1.Recurrent intestinal obstruction
- 2.bleeding
- 3.Perforation
4. Abscess formation
- 5.intestinal fistula
- 6.malignant changes

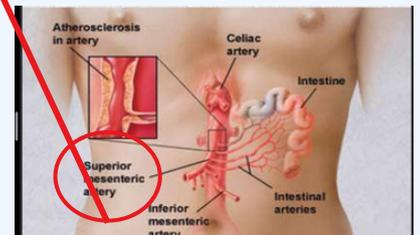
The surgical procedure in crohn disease

“Very minimum intervention “

- *Resection of the affected bowel
 - *Drainage of any septic foci
 - *Strictureplasty **removal of fibrosed part**
 - *Bypass
 - *Endoscopic dilatation of symptomatic accessible strictures
-

Acute mesenteric ischemia (AMI) ^{MC}

*Is typically defined as a group of diseases characterized by an interruption of the blood supply to varying portions of the smallintestine, leading to ischemia and secondary inflammatory changes. If untreated, this process will eventuate in life threatening intestinal necrosis.



*The incidence is low, estimated at **0.09–0.2%** of all acute surgical admissions.

*Embolic phenomena account for approximately **50%**

arterial thrombosis for about **25%**,

NOMI (non obstructive mesenteric ischemia) like in sever dehydration , sever acute pancreatitis, extensive burn and cases of sever septicemia) for roughly **20%**,

MVT (mesenteric venous thrombosis) for fewer than **10%**

THE RISK FACTORS FOR ACUTE VISCERAL ISCHEMIA

1. Age greater than 50 years
2. Congestive heart failure, Digitalis therapy
3. Recent transmural myocardial infarction
4. Cardiac dys arrhythmias especially atrial fibrillation
5. Hypercoagulable state
6. Hypovolaemia with hypoperfusion.



PATHOLOGY

Damage to the affected bowel portion may range from reversible ischemia to transmural infarction with necrosis and perforation.

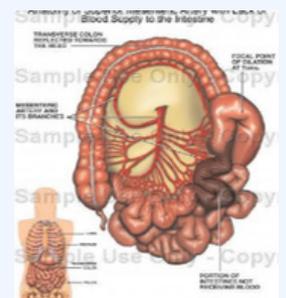
1. The early changes ,alteration in capillary permeability.
2. Mucosal sloughing may cause bleeding into the gastrointestinal tract.
3. As the ischemia persists, the mucosal barrier becomes disrupted, and bacteria, toxins, and vasoactive substances are released into the systemic Circulation.
4. the bowel wall becomes edematous and cyanotic. Fluid is released into the peritoneal cavity.
5. Transmural necrosis.

CLINICAL FEATURES.

(مهم)

Symptoms are nonspecific initially,

1. Medical history may be significant for presence of stroke, MI, or peripheral artery disease.
2. Patients may present with a long history of weight loss, postprandial pain, and phagophobia .
3. abdominal pain :severe, acute, unrelenting abdominal pain
4. vomiting
5. frank blood in the stools.



In early stage there are no signs but there are symptoms like sever pain but after 2-3 days the signs start appear.

Signs :

On abdominal examination ,the findings may be minimal.
> if signs of peritonitis present, consider bowel perforation

DIAGNOSIS

- 1.Clinical features: the high index of suspicion
- 2.Leucocytosis : >15000
- 3.ECG
- 4.Moderately Elevated serum amylase
- 5.Metabolic acidaemia
6. A doppler ultrasound,
- 7.CT scan, CT angiogram.
8. Angiography, selective S.M.A.

On plain films Late findings include

- > intramural air
- > air in the portal venous system.

If bowel perforation occurs:

- > free air in the abdomen may be observed



pneumatosis intestinalis

CT scan findings with a specificity greater than 95% include :

- > SMA or SMV thrombosis,
- > intestinal pneumatosis,
- > portal venous gas,



Treatment of Acute Mesenteric Ischemia :

*Treatment options depend on the etiology of intestinal ischemia, as well as on the hemodynamic stability of the patient. Generally speaking, nonocclusive AMI is treated medically, whereas occlusive AMI is correctable with surgery .

- 1.Angiographic: Vasodilators or thrombolysis .
- 2.Surgical: Embolectomy, revascularization, with or without bowel resection .
- 3.Long-term anticoagulation or antiplatelet therapy .
- 4.A “**second look**” laparotomy may be needed to reassess the viability of questionable areas of bowel .

SMALL INTESTINAL TUMOUR

Despite comprising 75% of the length and 90% of the surface area of the GI tract, the small bowel harbors relatively few primary neoplasms account 5% of all G.I. NEOPLASM and fewer than 2% of GI malignancies.

Factors suggested to explain the scarcity of small bowel lesions and the infrequency of their malignant transformation:

- * Rapid Transit of contents fluidity
- * High turn over rate of epith. Cells
- * Alkalinity of small intestinal Media.
- * High level of IGA.
- * High level of benzyl peroxidase”detoxify potential carcinogene”

BENIGN TUMOURS

- adenoma, MC
- leiomyoma
- lipoma
- fibromas
- fibromyxomas
- neurofibromas
- ganglioneuromas
- hemangiomas

CLINICAL FEATURES:

1. they invariably present difficult problems in diagnosis
2. Symptoms are often absent until the tumor has progressed to produce a complication. “ delayed complications”.
3. Even then, the presentation is often vague and nonspecific, intermittent pain, chronic anemia.
4. May present as one of the possible complications:
 - intestinal obstruction
 - intussusception
 - bleeding



Malignant small bowel tumors

1. adenocarcinoma, MC
2. sarcoma including gastrointestinal stromal tumor
3. carcinoid tumors,
4. lymphoma.

Adenocarcinoma is the most common type of small bowel cancer..

Risk factors for small intestine cancer

- Crohn's disease
- celiac disease
- Having inherited syndromes-
- Examples : Lynch syndrome, familial adenomatous polyposis (FAP)

Symptoms of small bowel malignant tumour

- Abdominal pain/cramping
- Unexplained weight loss
- Nausea/vomiting
- Blood in the stool
- Watery diarrhea
- Skin flushing
- A lump in the abdomen, abdominal distension, peritoneal signs of complication,



Imaging Studies

1. Plain abdominal x ray films may reveal partial or complete small-bowel obstruction.
2. Upper GI series with small-bowel followthrough show abnormalities in 53-83% of patients with small-bowel cancer.
3. Abdominal CT scan may elucidate the site and extent of local disease and the presence of liver metastases
4. MRI
5. Endoscopy
6. Endoscopic ultrasound

Treatment

Depend on the stage of small bowel cancer and how far it has spread Most likely a combination treatment of surgery, radiation, and chemotherapy will be used.

In lymphoma the chemotherapy is better than surgery.

المطب والجراحة

البنقة

