Abdominal TB:
5 min talk

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1. Background

- TB is still rampant in LMIC (1-2 per 1000 children)
- Chest, meninges and LN are commonly involved
- Infants are more likely to develop severe, miliary TB
- Abdominal TB is more common in children >5 years
- It is a cause of 15% of intestinal obstruction

2. Pathophysiology

- **At risk children** (adult contact, low socioeconomic- poorly ventilated household, endemic areas, malnourished, HIV)
- **Mycobacterium tuberculosis** is the most common cause
  - From **Primary lung** (ingested sputum, hematogenous)
  - From **LN** (through lymphatics)
  - **Milk** (mycobacterium bovis)
- Immune system terminates growth in 2-3wk (caseating granulomas.)

3. Classification

- **TB lymphadenopathy** (mesenteric, retroperitoneal)
- **Peritoneal TB**
  - Acute
  - Chronic: wet (ascitic), encysted (loculated), fixed (fibrotic), dry (plastic)
- **Visceral TB** : Liver, spleen, pancreas, *genitourinary*
- **Gastrointestinal (60%)**: Esophageal, gastric, duodenal, jejunoileal, colorectal

3.1. Gastrointestinal

- Ileocecal is the most common (inc stasis, fluid and electrolyte absorption, minimal digestive activity and inc lymphoid tissue)
    - followed by colon and jejunum (others are rare)
- **Granulomas** in submucosa,
- **ulcer** (superficial- doesn't penetrate beyond muscularis, transverse oriented)
- **Strictures** occur with cicatrical healing of ulcers

3.2. Peritoneal

- More common in older/adolescent
- Peritoneal thickening, peritoneal tubercles
- 4 types, a combination may occur
  - **Wet** - Ascites
  - **Encysted** – mass (loculated ascites, enlarged LN or matted omentum
  - **Dry** - adhesions (subacute abdominal obstruction)
  - **Fibrotic** – mass with mesenteric and omental thickening, with matted bowel loops felt as lump(s)

3.3. Lymphadenitis

- Bowel loops may get involved in the inflammatory process
- Can cause subacute obstruction.
- lymph nodes can also obstruct the bile duct, pancreatic duct, duodenum, IVC and ureter

4. Clinical presentation

- Usually presents as subacute intestinal obstruction
  - **Acute, chronic**, acute on chronic (1-14 mo)
  - **Constitutional symptoms** (fever, wt loss, night sweaht, anoreixa)
  - **Diarrhea/constipation** (may simulate HD in younger children; chron's, amoeba, malignancy in older children)
  - **Pain-** colicky (obstruction), dull continuous (mesenteric LAP)
  - **Physical** – features of ascites, mass, obstruction, peritonitis

4.1. Presentation as Acute Abdomen

- Ruptured LN
- mesenteric abscess
- Peritoneal TB
- involvement of appendix
- acute obstruction
- Bowel perforation

5. Imaging

- **CXR** – evidence of TB support diagnosis but absence doesn't rule it out
- **Abd Xray** – feature of obst., pneumoperitoneum, enterolith, calcified LN
- **US** – for peritoneal & nodal TB. May also find thickened bowel loops
- **CT** - more accurate in detecting LN and bowel wall thickening
- **Barium meal & enema** – together positive in 80-85%

*__Ascitic fluid analysis__ – most useful test to establish diagnosis

6. Role of surgery

- Laparotomy is best done after 2 wks anti-TB (dec spread of active infection)
- Emergency surgery may be required in 25-30%
  - Perforation
  - acute obstruction (not responding to conservative)
  - acute peritonitis
  - Haematochezia (severe)
- High mortality (4-12%) due to associated Malnutrition, anemia, hypoalbuminemia

6.1. Diagnostic

- **laparotomy**: if imaging is in doubt (suspect malignancy)
    - Mesentric LN are best biopsied than intestinal lesions (better yeild)
- **Laparoscopy:** difficult due to adhesion (risk perforation & chronic TB fistula)

6.2. Laparotomy for active disease

- **Aim:** minimize trauma and relive symptoms (can't eradicate)
  - **Stoma** – double barrel, limit resection (just ileocecal instead of hemicolectomy)
  - **Side-side Anastomosis-** hazardous in presence of active disease (risk fistula, recurrent obst, blind loop syndrome)
  - **Closure of perforation-** may be attempted with close watch for reoperation

6.3. Laparotomy for stricture

- Some obstructing lesions may resolve with anti TB alone ~6mo
- Need surgery if lumen reduced by half or cause proximal dilatation
  - **Stricturoplasty** (incise anti-mesentric and close transversely in 2 layers)
  - **Resection-anastomosis** – long segment stricture or multiple stricture

7. Complications

- may be initial presentation or develop during course of treatment
  - Subacute intestinal obstruction
  - Adhesion
  - Stricture
  - Malabsorption
  - Short bowel syndrome
  - Intestinal perforation
  - Fecal fistula