
بسم الله الرحمن الرحيم

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قَالُوا سُبْحَانَكَ لا عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

(البقرة:الاية 32)

Gastrointestinal TB

By

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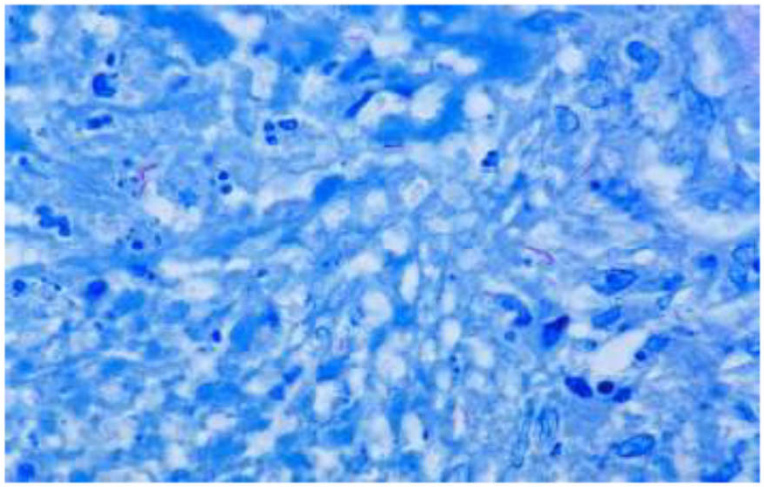
Gastrointestinal Tuberculosis

Agenda:

- Causative Agent
- Pathology: types and spread
- Clinical presentation
- Complications
- Diagnosis (laboratory, radiology and histopathology)
- Treatment

Bacterial agent:

- *Mycobacterium tuberculosis (90%), M. bovis (largely eliminated)*
- The tubercle bacillus is a Gram-positive, aerobic, non-motile, nonspore-bearing organism that is identified by the Ziehl–Neelson acid fast differential staining method (high content of mycolic acids in the cell wall)
- Culture of the organism is Löwenstein–Jensen medium, which requires an incubation period of 4 to 6 weeks.



Mycobacterium tuberculosis:
Ziehl-Neelsen stain

Lowenstein–Jensen Medium.

Routes of transmission

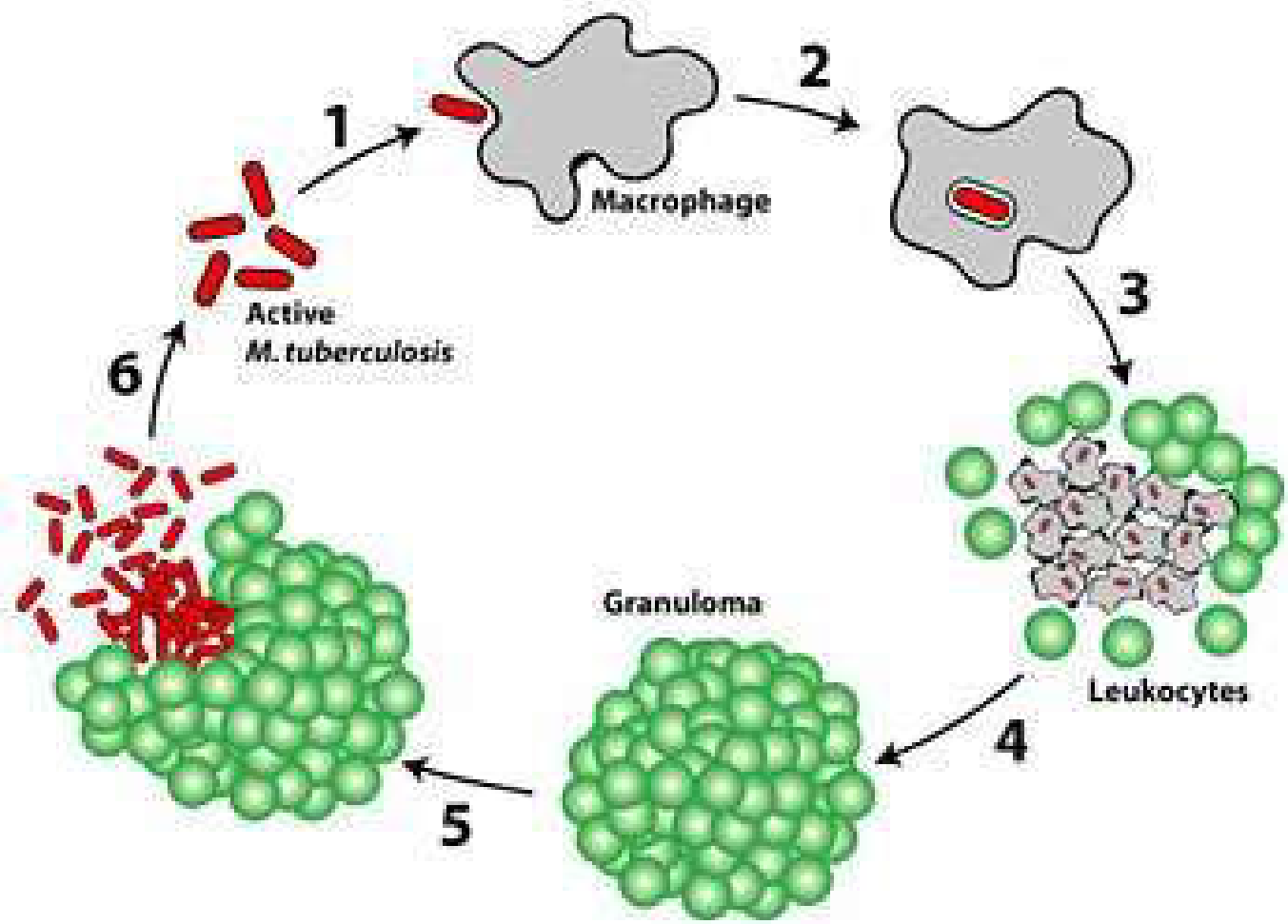
6 Routes.

1. Ingestion of contaminated food may cause primary intestinal tuberculosis.
2. Hematogenous spread- during the bacteraemic phase that may follow primary pulmonary tuberculosis
3. Swallowed sputum containing tuberculous bacilli
4. Spread from adjacent organs or Retrograde spread from female genital tuberculosis.
5. Through lymph channels from infected nodes.
6. Disseminated in the bile, since they are sequestrated and excreted from granulomas in the liver.

Pathology and pathogenesis

- Abdominal tuberculosis is either primary or secondary.
- **Primary abdominal tunerculosis** results from the ingestion of the milk or food infected with M.bovis.
- **Secondary abdominal tuberculosis** is caused by M.tuberculosis and is due to the other routes described.

Pathogenesis of M. tuberculosis



Pathogenesis

Bacilli in depth of mucosal glands → Inflammatory reaction → Phagocytes carry bacilli to Peyer's Patches → Formation of tubercle

Submucosal tubercles enlarge → undergo necrosis → Endarteritis & edema → Sloughing → Ulcer formation → Accumulation of collagenous tissue →Thickening & Stenosis

Inflammatory process in submucosa penetrates to serosa →Tubercles on serosal surface → Bacilli reach lymphatics

- Lymphatic obstruction of mesentery and bowel
- Thick fixed mass

- Regional lymph nodes
- Hyperplasia
- Caseation necrosis
- Calcification

Gastrointestinal Tuberculosis

Types:

1. ***Intestinal tuberculosis***

– **Ileocaecal region**

Ulcerative—60%.

Hyperplastic.

Ulcero-hyperplastic.

– **Ileal region, commonly**:

Stricture type.

2. ***Peritoneal tuberculosis***

• a. Acute.

• b. Chronic.

– i. Ascitic type.

– ii. Encysted (loculated) type.

– iii. Plastic (fibrous/adhesive) type.

– iv. Purulent type.

3. Tuberculosis of mesentery and its lymph nodes

4. Ano-recto-sigmoidal—

present as fistula, fissure, abscess, mass.

5. Involvement of liver, spleen and other organs as a part of miliary tuberculosis.

6. Tuberculosis of the omentum.

7. Rare types:

– Oesophageal (0.2% of abdominal tuberculosis)

– gastroduodenal (1% of abdominal tuberculosis)

– retroperitoneal tuberculosis.

ILEOCAECAL TUBERCULOSIS

- Most common site of abdominal tuberculosis

- **due to:**

– Stasis
– Abundant payer's patches
– Alkaline media
– Bacterial contact time is more
– Minimal digestive activity and Maximum absorption in the area

- **Types:**

Ulcerative—60%.
Hyperplastic.
Ulcero-hyperplastic

Types

A. Ulcerative type:

- most common 60%.
- Circumferential transverse ulcers—with skip lesions.
- common in old, malnourished people.
- Long-standing ulcers cause fibrosis and later stricture formation. (Napkin ring stricture-- is common in ileal part).
- Bowel adhesions are common.
- Patient mainly presents with diarrhea, blood in stool, loss of appetite and reduced weight.

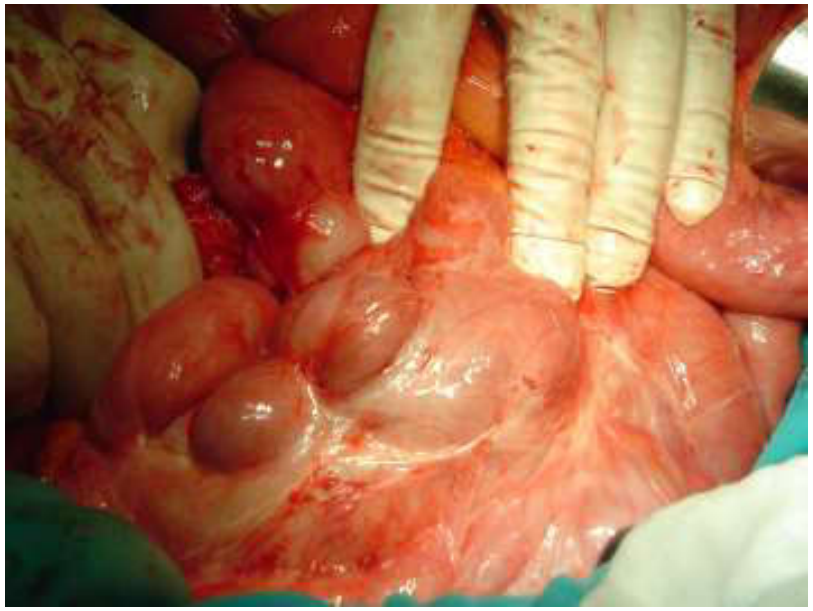
B. Hyperplastic type:

- 10% common, less virulent, seen in young well nourished individuals
- Fibroblast reaction in submucosa and subserosa causes thickening of bowel wall and lymph node enlargement, leading to nodular mass (tumor-like) formation.
- It is common in caecal part.
- It causes extensive chronic inflammation, fibrosis, bowel adhesions, nodal enlargement, often presents with mass in the right iliac fossa.
- When present as a mass, it can cause sub acute intestinal obstruction.
- Commonly primary form.

PERITONEAL TUBERCULOSIS

Pathology in Peritoneal Tuberculosis

- Enormous thickening of the parietal peritoneum with multiple tiny yellowish tubercles.
- Dense adhesions in peritoneum and omentum with content inside as small bowel looking like **abdominal cocoon.** It may precipitate intestinal obstruction.
- Multiple dense adhesions between bowel loops and between bowel and peritoneum and omentum



Types of Peritoneal tuberculosis

1. Acute type

- Mimics Acute Abdomen
- It is an on-table diagnosis
- Presents with features of peritonitis.
- It is due to perforation or rupture of mesenteric tuberculous lymph nodes

Types of Peritoneal tuberculosis

2. Chronic type

– Types of chronic TB peritonitis:

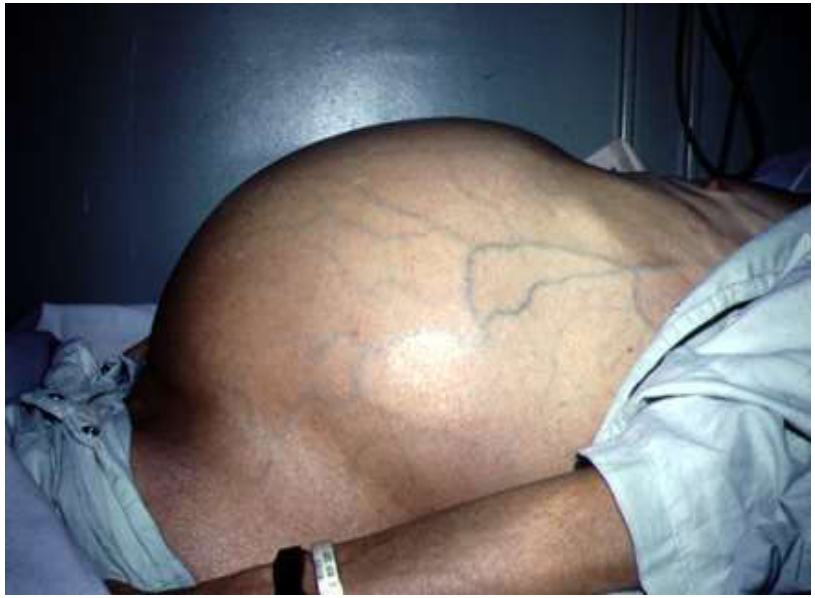
a) Ascitic form

b) Encysted form

c) Plastic form

d) Purulent form

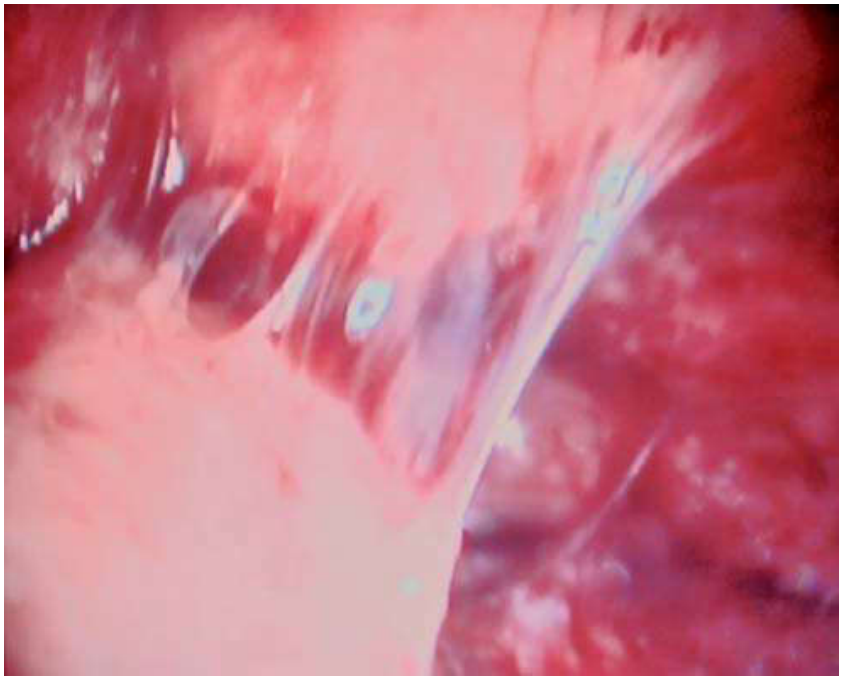
- **Ascitic form (TB Ascites)**
- distension of abdomen shifting dullness in moderate ascites,
- Less frequently the ascites is tense and detected by transmitted thrill.
- Ascitic tap reveals straw coloured fluid from which AFB can be isolated.
- Fluid is pale yellow, clear, rich in lymphocytes, with high specific gravity.



Encysted (Loculated) ascites

- Ascites gets loculated because of the fibrinous deposition.
- Dullness, which is not shifting, is the typical feature.
- They may present as intra-abdominal mass, which may mimic ovarian cyst, retroperitoneal cyst or mesenteric cyst.

- ***Plastic type***
- wide spread adhesions
- c/o recurrent colicky abdominal pain, diarrhoea, wasting, and loss of weight, mass in the abdomen, and doughy abdomen
- ***Differential diagnosis:*** *Peritoneal carcinomatosis*



- ***Purulent form***
- It is invariably due to tuberculous salpingitis
- presents as a mass in the lower abdomen containing pus, omentum, fallopian tubes, small and large bowel.
- Cold abscess gets adherent to the abdominal wall, umbilicus and may form an umbilical fistula.
- Patient commonly has got genito-urinary TB

Clinical presentation of Abdominal TB

- **Different clinical presentations of abdominal tuberculosis exist:**

Clinical presentation may be:

– Acute

– Acute on chronic

– Chronic

• Common in 25-50 years age group. Equal in both sexes.

• ***Constitutional symptoms:***

– Anaemia, loss of weight and appetite (80%).

– Diarrhoea—10-20%.

– Fever—50-70%.

– Over all Observed in 30% of patients

- **Abdominal pain** -most common symptom (90%), dull in mesenteric type; colicky in intestinal type
- **Mass in right iliac fossa,** (35%) which is hard, nodular, nonmobile, nontender with impaired resonance ---may mimic carcinoma caecum.

Atypical presentations:

- Lower GI bleed, fistula-in-ano, PID like pain, gastric disease symptoms, dysphagia, GI fistulae, perforation

Differential Diagnosis

- **Malabsorption**
- Coeliac disease
- Lymphoma
- Immunoproliferative small intestinal disease
- Mass
- Appendicularmass
- Actinomycosis
- Crohn’sdisease
- Caecal carcinoma
- Lymphoma
- **Ascites**
- Cardiac disease
- Renal disease
- Hepatic diseae
- Malignacy

Diagnosis

History and Physical examination

Patients with gastrointestinal tuberculosis commonly present with the following complaints

- Abdominal pain
- Anorexia
- Fever
- Change in bowel habits – diarrhea more common than constipation
- Nausea and vomiting
- Melena
- However, some patients may not manifest any symptoms of GI TB.

Complications of abdominal tuberculosis

- Obstruction—20%
- Malabsorption, blind loop syndrome
- Dissemination of tuberculosis to other areas of abdomen as well as extra-abdominal sites
- Faecal fistula
- Cold abscess formation
- Haemorrhage, perforation (rare)

Diagnosis

On examination, they are commonly found to have the following signs

- Weight loss
- Pallor and anemia
- Rectal bleeding
- Abdominal distension and ascites
- Hepatomegaly
- Splenomegaly
- Lymphadenopathy
- Abdominal mass

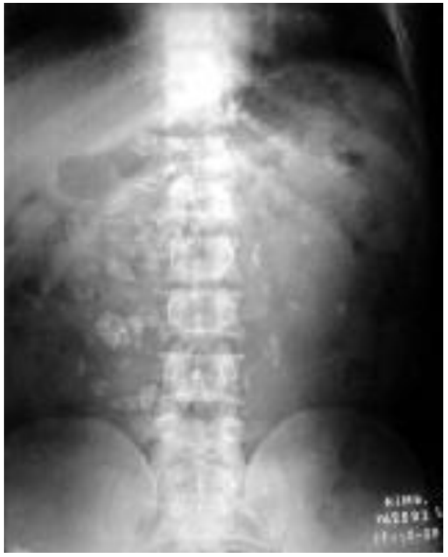
A family history of TB may not be evident in all patients. Thus, GI TB must be considered even in the absence of family history. Similarly, only a few patients may have concomitant pulmonary TB or a past medical history of TB.

Diagnosis

- **Laboratory investigations:**
- Anemia, leucopenia with relative lymphocytosis, raised ESR, hypoalbumenemia
- ***Mantoux test*** (positive in 50 to 100%)
- ***Ascitic fluid examination***
- Exudative, fluid protein>3gm%,
- SAAG<1.1 Ascitic/blood glucose ratio<0.96, WBC count usually 140 to 4000cells/mm^3 consist of lymphocytes predominantly,
- AFB(+<3%), culture(+<20%),
- ADA((98%sensitivity&95%specificity at cut off value 32 IU/L),
- **PCR for detection of mycobacterial DNA** in stool in case of diarrhea. PCR for Ascitic fluid sample for detection of mycobacterial DNA.

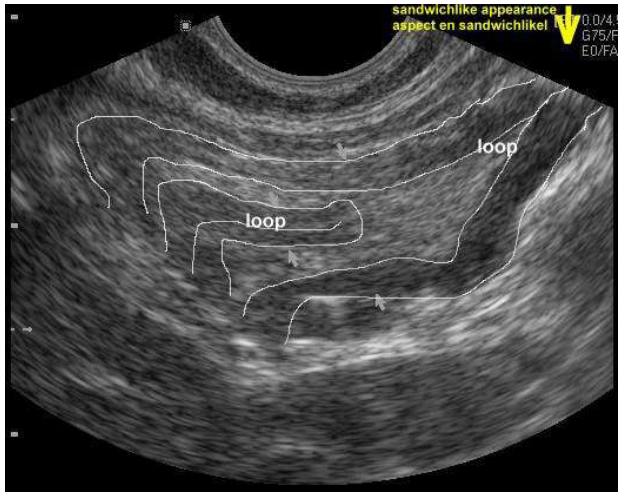
- ***Imaging studies***
- Chest X ray (associated PTB in 24 to 28%)
- Plain X-ray abdomen:

May show calcified lymph nodes
or granulomas in the liver, spleen, pancreas.
Other features include: dilated loops with fluid levels,
dilatation of terminal ileum and ascites



- **Barium studies:**

- **Ultrasound features observed in abdominal tuberculosis**
- Thickened bowel wall, mesentery, omentum, peritoneum
- Loculated ascites with fine septae



CT scan in abdominal tuberculosis

It is very useful and reliable investigation

It is done with oral contrast- CT

Findings are:

– Thickened bowel wall, thickened peritoneum

– Ileocaecal valve thickening

– Enlarged/necrosed/matted mesenteric nodes often with cold abscess

– Adhesions

– Mesenteric thickening and nodules

– Nodules in the peritoneum/solid organs like liver

– Loculated ascites

CT guided FNAC/biopsy/aspiration of fluid can be done

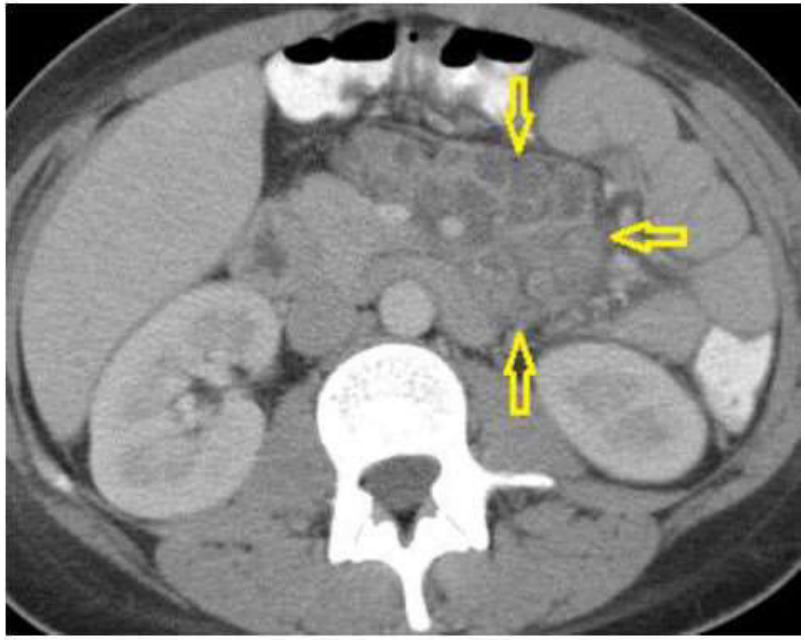
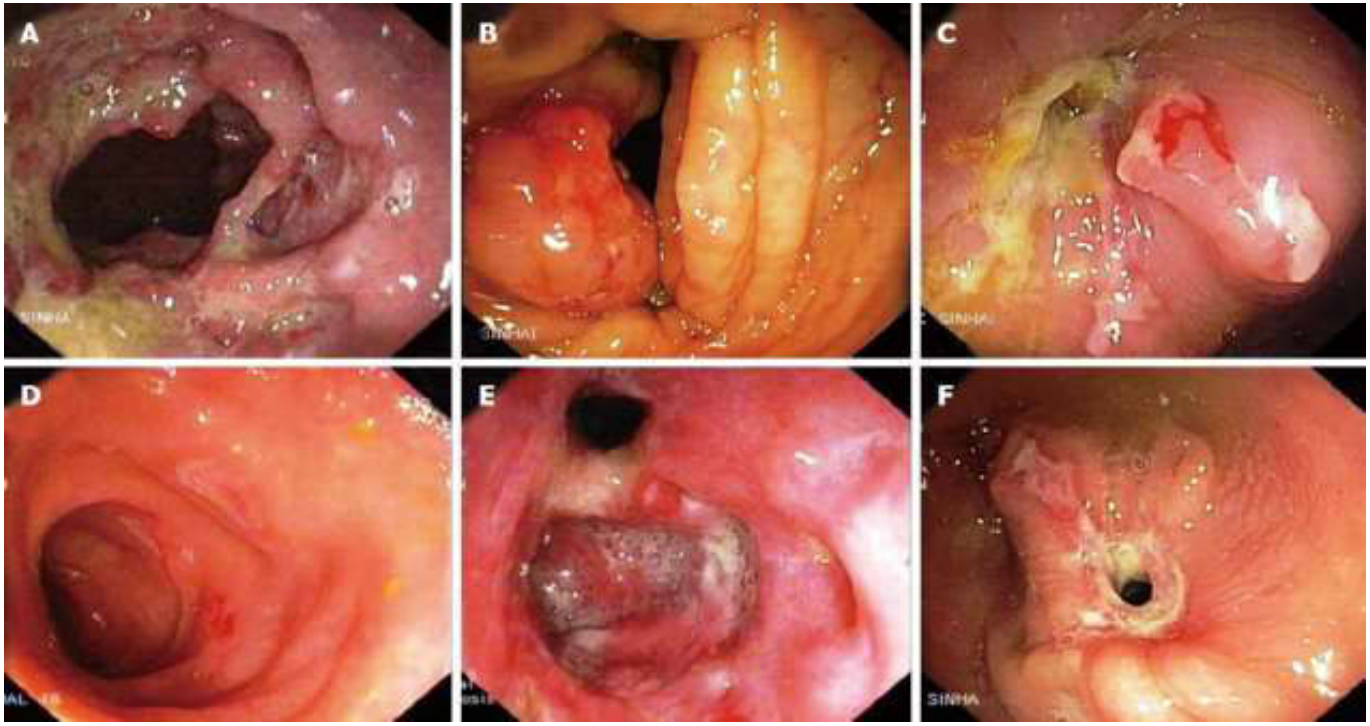
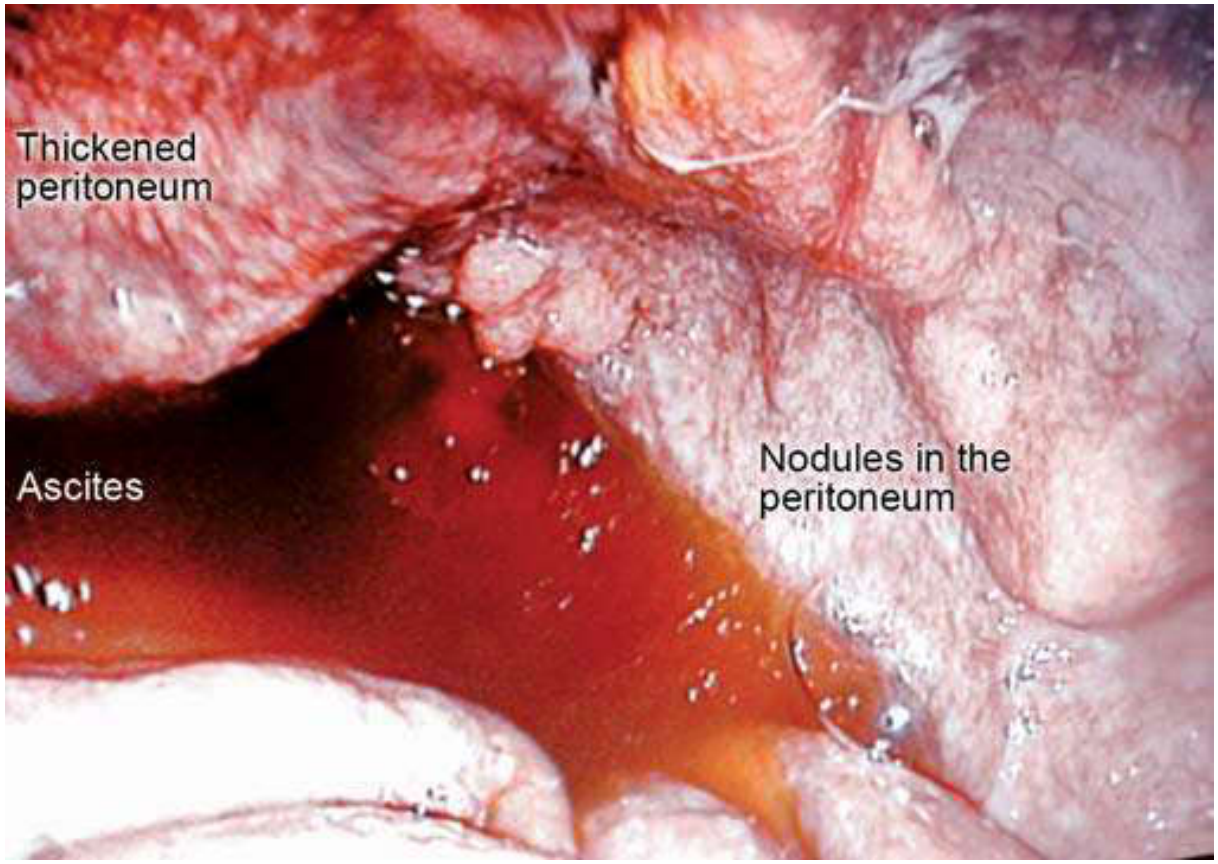


Fig. 1: Contrast enhanced abdominal CT of a 21 year-old female patient demonstrates multiple mesenteric lymphadenopathy forming a conglomerate mass (arrows) with 6 cm

- **Endoscopy:**
- **Colonoscopy:-** To rule out carcinoma
- Ulceration is the most common finding. Ileocaecal valve may be edematous or deformed.
- Nodules, ulcers, pseudopolypsmay be seen.
- Biopsy can be taken to eslablish the diagnosis
- A combination of histopathology and culture can establish diagnosis in 80% of cases


A
B
C
D
E
F

- **Laparoscopy:-** aids in direct visualisation, to collect ascitic fluid for analysis and to take **biopsy for histopathological examination.**
- It is the most effective method in diagnosis of peritoneal TB. 80 to 95% diagnostic accuracy. Characteristic finding include multiple, yellowish-white miliary nodules over peritoneum, erythematous, thickened and hyperemic peritoneum.


Thickened
peritoneum
Ascites
Nodules in the
peritoneum

Treatment

- **Medical treatment:**

  Anti tuberculosis treatments (ATT)
- **Surgical treatment:**

To manage complication such as obstruction, perforation and massive hemorrhage

- Surgery followed by full course of ATT

Medical treatment

- A standard four-drug regimen, consisting of isoniazid, rifampicin, pyrazinamide, and ethambutol, is recommended for ATT in intra-abdominal/gastrointestinal tuberculosis.
- These four drugs are used for the initial two months, followed by isoniazid and rifampin for an additional four months.
- Most treatment guidelines recommend a 6-month course of ATT for luminal TB.
- ATT is usually reported to be highly effective with good cure rates.

THANKS