

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



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قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ
الْحَكِيمُ

(البقرة: الآية 32)





Gastrointestinal TB

By

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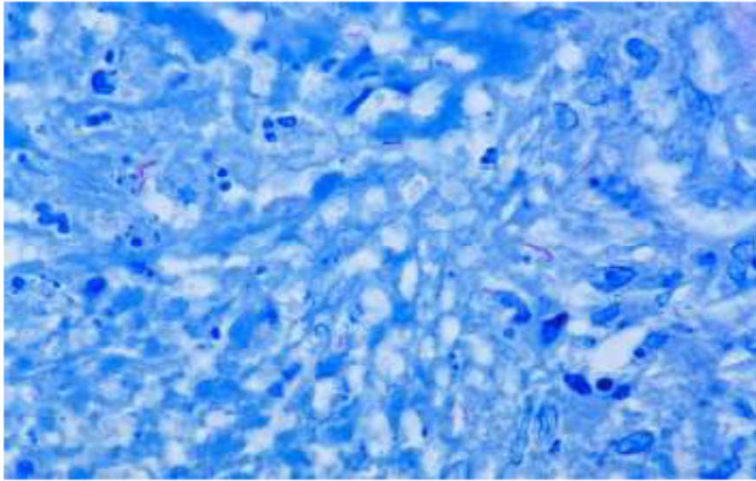
Gastrointestinal Tuberculosis

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
- 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

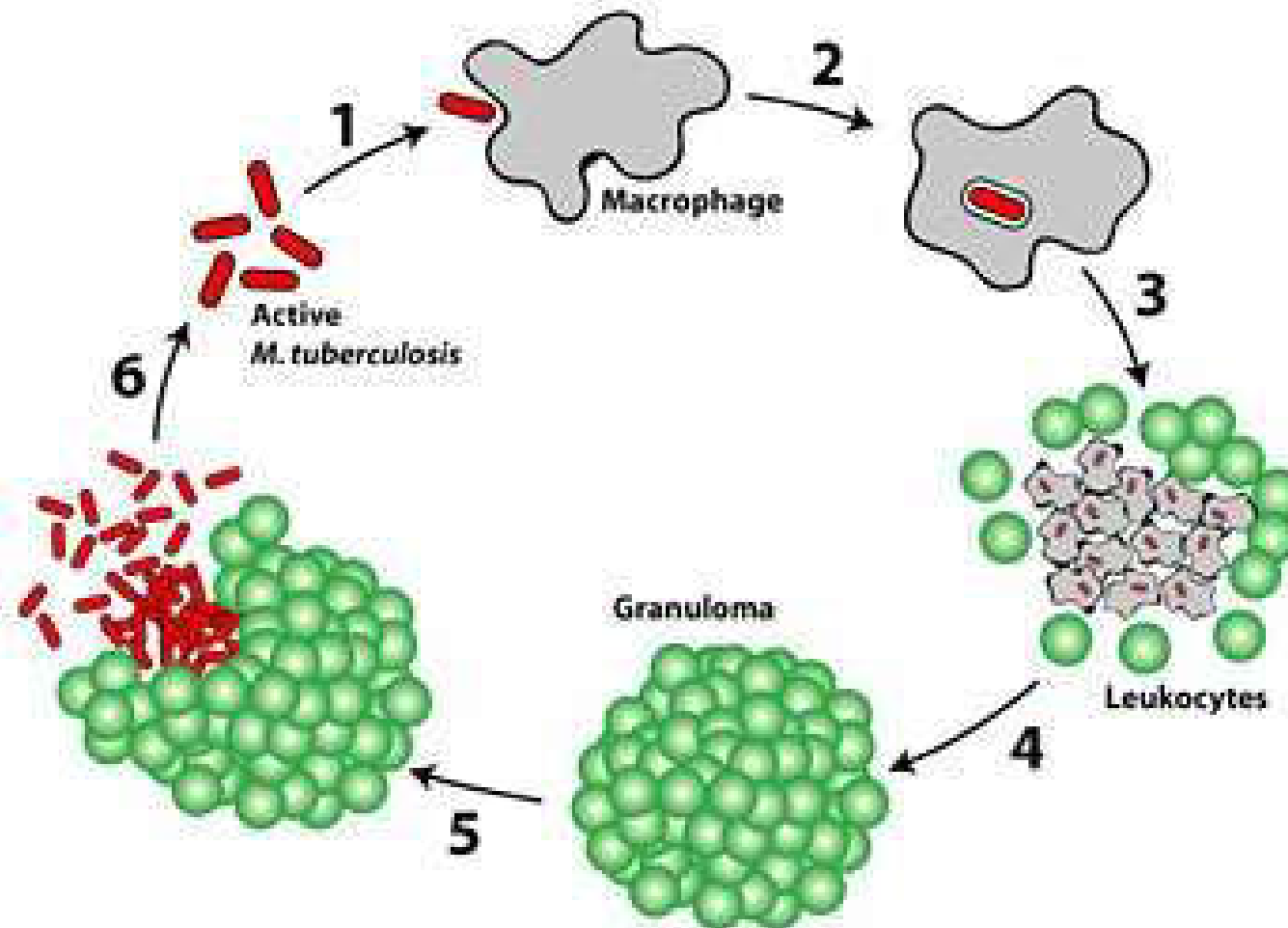
6 Routes.

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 sequestered and excreted from granulomas in the liver.

Pathology and pathogenesis

- Abdominal tuberculosis is either primary or secondary.
- **Primary abdominal tuberculosis** 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 previously.

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

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- 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.

 - Ulcerohyperplastic.

- **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 TB

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 (why?)

due to:

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

• Types of ileocaecal TB:

Ulcerative—60%.

Hyperplastic.

Ultero-hyperplastic.

Types

A. Ulcerative ileocaecal TB:

- It is the most common type (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
- 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 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 TB exist:**

Clinical presentation may be:

- Acute
- Acute on chronic
- Chronic
- Common in 25-50 years age group. Equal in both sexes.
- ***Constitutional symptoms:***
 - Anemia, 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

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)

Differential Diagnosis

- **Malabsorption**

- Coeliac disease
- Lymphoma
- Immunoproliferative small intestinal disease

- **Mass**

- Appendicular mass
- Actinomycosis
- Crohn's disease
- Caecal carcinoma
- Lymphoma

- **Ascites**

- Cardiac disease
- Renal disease
- Hepatic disease
- Malignancy

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.

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 > 3 gm%,
- SAAG < 1.1 Ascitic/blood glucose ratio < 0.96, WBC count usually 140 to 4000 cells/mm³ 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:

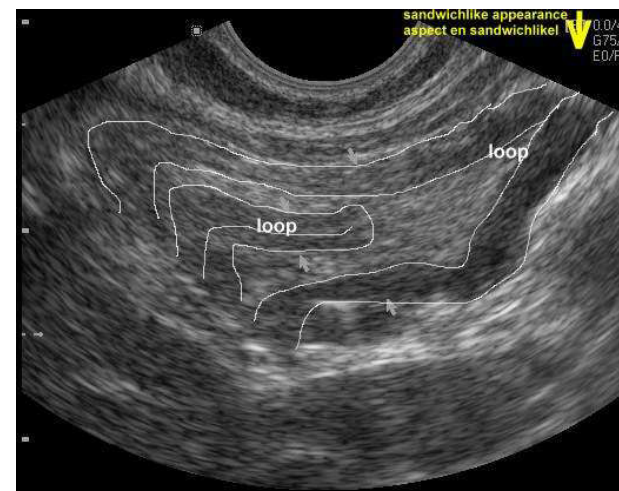
May show calcified lymph nodes
or granulomas in the liver, spleen,
pancreas.

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

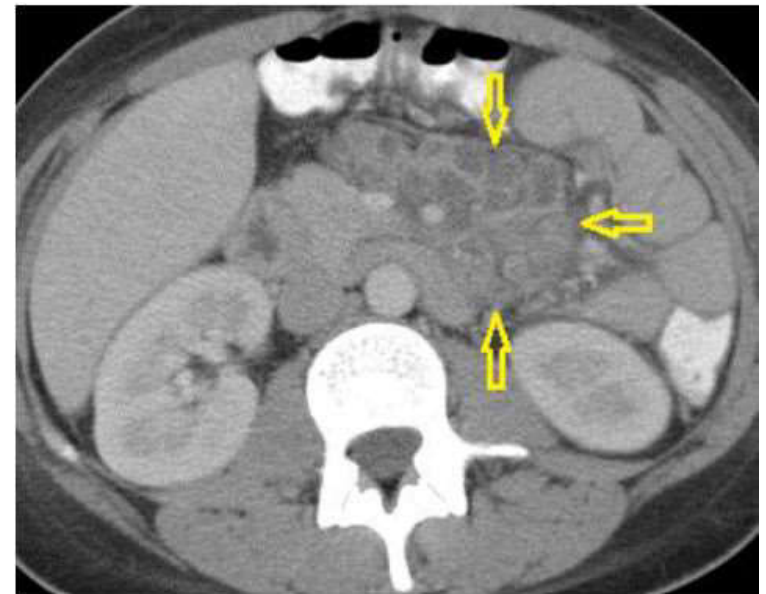
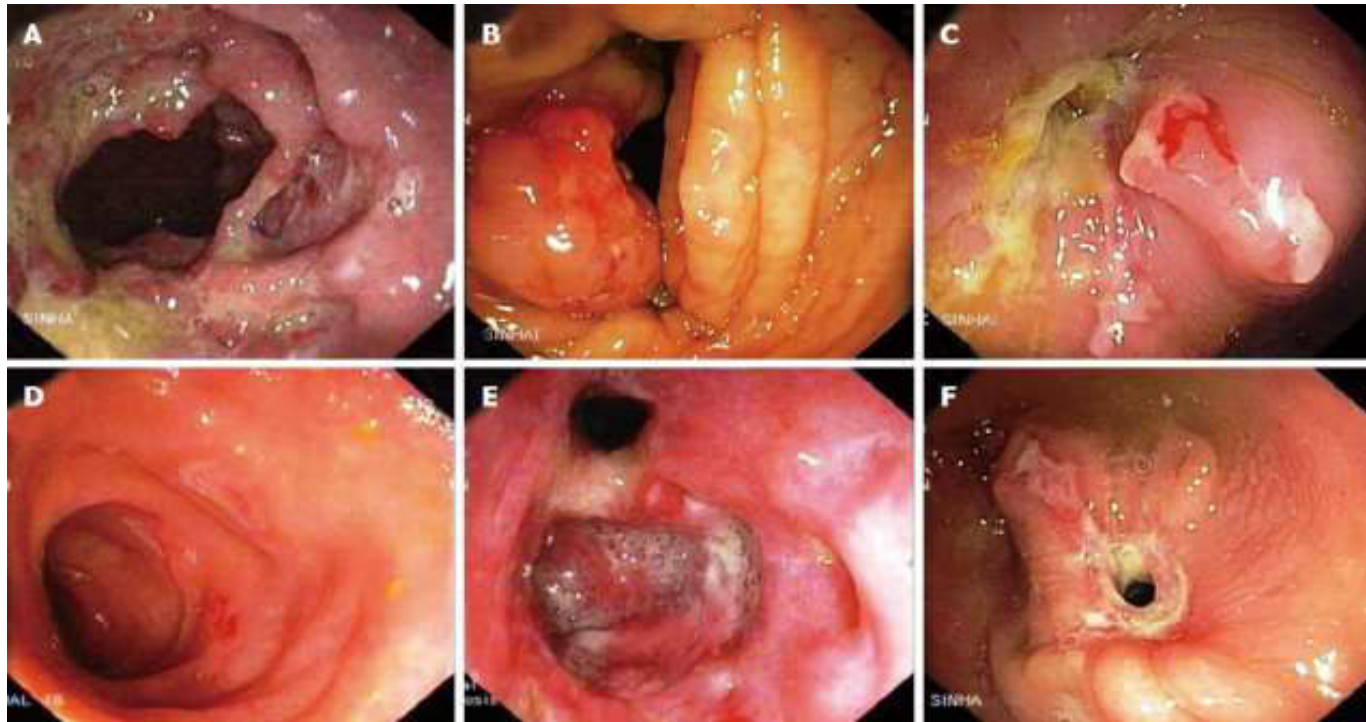
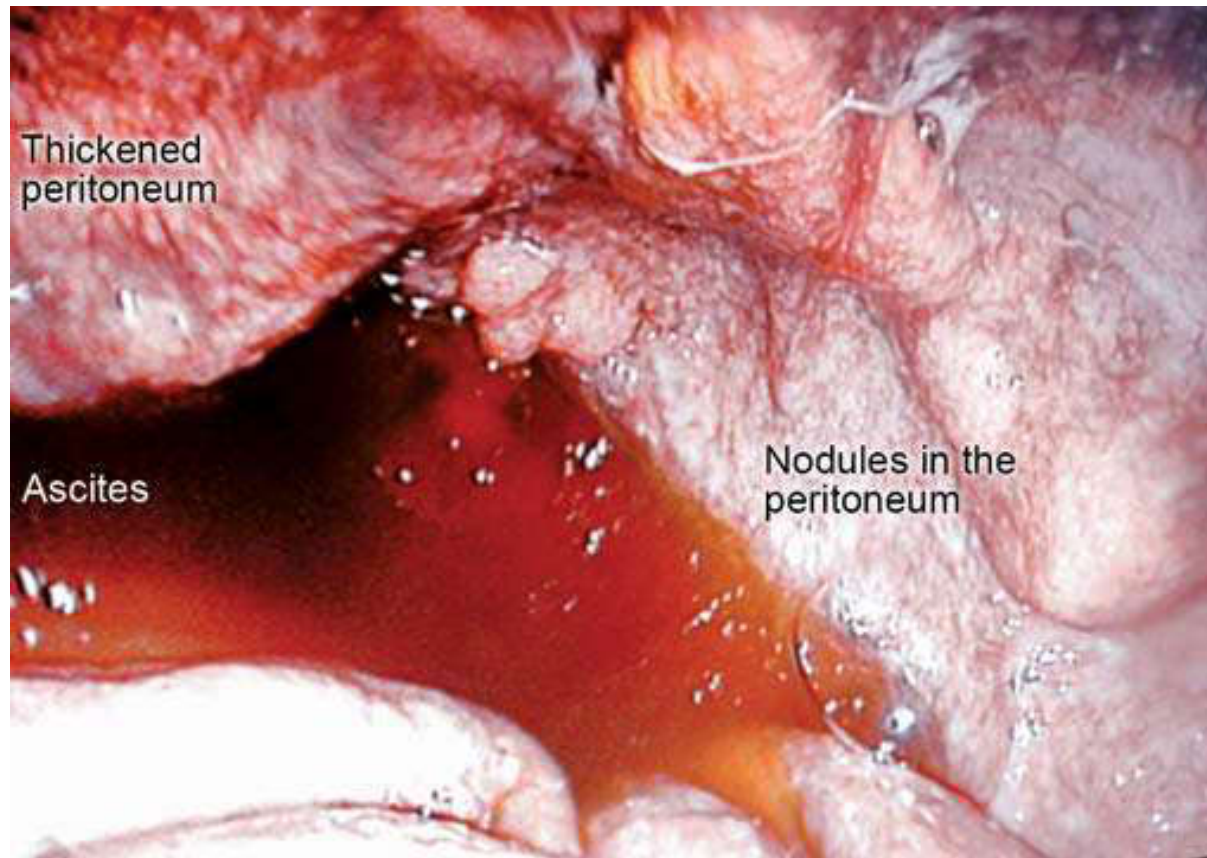


Fig. 1: Contrast enhanced abdominal CT of a 21 year-old female patient demonstrates multiple mesenteric lymphadenopathy forming a conglomerate mass (arrows) with 6 cm

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



- **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.



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