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Experience with Abdominal Tb in Tropics

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Abstract:
INTRODUCTION: *Tuberculosis (TB) continues to be a multisystem disease posing the biggest diagnostic challenge to even the most experienced of clinicians.The term abdominal tuberculosis refers to tuberculous infection of the gastrointestinal tract, mesenteric lymph nodes, peritoneum and omentum, and of solid organs related to GIT such as liver, spleen and pancreas.Abdominal Tuberculosis comprises around 5 percent of all cases of tuberculosis worldwide.Abdomen is involved in 11% of patients with extra-pulmonary tuberculosis. Abdominal tuberculosis is an increasingly common disease that poses diagnostic challenge, as the nonspecific features of the disease which may lead to diagnostic delays and development of complications.*
Materials and Methods*: Case reports of the patients who had presented in the surgical outpatient or in the emergency department of NRI Medical college & General Hospital.Diagnosis is made based on the histopathological features and the intraoperative findings.*
Conclusion: *Variability in presentation of various forms of Abdominal Tuberculosis in the current scenario is therefore a cause for serious concern due to which the incidence of misdiagnosis continues to be high. Surgical management is indicated if there is any diagnostic uncertainty or other complications like intestinal obstruction, hemorrhage ,acute abdomen, fistula formation.*
Key Word*: Abdominal tuberculosis,Clinical presentation,diagnosis,histopathology,treatment.*

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I. Introduction

Tuberculosis (TB) continues to be a multisystem disease posing the biggest diagnostic challenge to even the most experienced of clinicians. The term abdominal tuberculosis refers to tuberculous infection of the gastrointestinal tract, mesenteric lymph nodes, peritoneum and omentum, and of solid organs related to GIT such as liver, spleen and pancreas[1].

Abdominal Tuberculosis comprises around 5 percent of all cases of tuberculosis worldwide[2].Abdomen is involved in 11% of patients with extra-pulmonary tuberculosis[3]. Tuberculosis of the abdomen may occur via reactivation of latent TB infection or by ingestion of tuberculous mycobacteria (as with ingestion of unpasteurized milk or undercooked meat). In the setting of active pulmonary tuberculosis or miliary tuberculosis, abdominal involvement may develop via hematogenous spread via contiguous spread of tuberculosis from adjacent organs (such as retrograde spread from the fallopian tubes) or via spread through lymphatic channels[4].

In general, clinical manifestations of abdominal TB depend on the form of disease and may include fever, weight loss, abdominal pain and/or distension, ascites, hepatomegaly, diarrhea, bowel obstruction, and abdominal mass. Abdominal tuberculosis is an increasingly common disease that poses a diagnostic challenge, as the nonspecific features of the disease may lead to diagnostic delays and development of complications[4].

Apart from the basic workup, Investigations like CT scan, EUS, Capsule endoscopy, Balloon enteroscopy, Ascitic fluid ADA, TB-PCR, GeneXpert, Laparoscopy are being increasingly used to diagnose tuberculosis[3]. Early diagnosis and initiation of antituberculous therapy and surgical treatment are essential to prevent morbidity and mortality[4]. Therapy with standard antituberculous drugs is usually highly effective for intestinal tuberculosis[3]. Surgery is usually reserved for patients who have developed complications or obstruction not responding to medical management[3].

II. Material And Methods

Case reports of the patients who had presented in the surgical outpatient or in the emergency department of NRI Medical College & General Hospital. To document the various presentations of abdominal tuberculosis. Diagnosis is made based on the histopathological features and the intraoperative findings.

CASE REPORTS:

CASE 1: A 18yr female patient presented to the surgery outpatient department with complaints of intermittent abdominal pain in the right lower quadrant since 1year and diarrhea since 6months and weight loss of 10kg in 1year.She had no reported medical history or any significant family history. On per abdomen examination mild tenderness present in the right iliac fossa. Laboratory investigations revealed mild anemia with hemoglobin of 9.8g/dl.

Serological testing for HIV was negative. Stool samples were negative for infectious organisms. The tuberculin skin test was negative. Her chest x-ray was showed no abnormalities.CT abdomen showing ileocaecal thickening with minimal ascites. Colonoscopy shows deformed ileocaecal valve and caecum appears deformed with edematous, nodular mucosa. A random colonic biopsy was taken. She underwent diagnostic laparoscopy and a peritoneal biopsy was taken. Intraoperative findings showing inflammatory changes in the ileocaecal region with adhesions. Biopsy shows chronic granulomatous inflammation and caseation necrosis caused by Tuberculosis without any signs of malignancy.

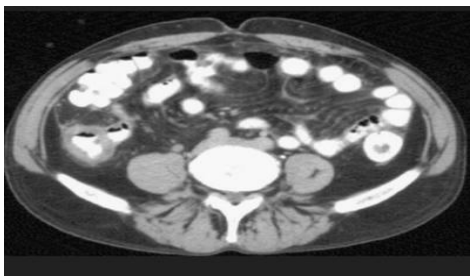

Fig 1: CT abdomen showing ileocaecal thickening and

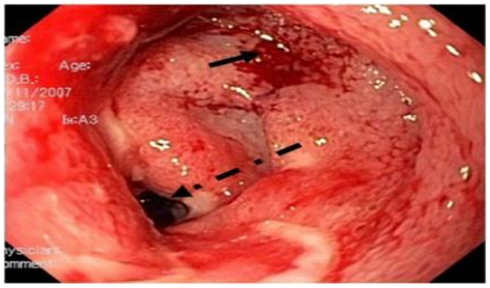

Fig 2: Colonoscopy showing edematous caecum

Ulcerative lesions

CASE 2:A 30year male patient presented to emergency department with severe dull aching abdominal pain, vomiting and diarrhea that lasted for 3 days. There is no significant past history or family history. On examination mild abdominal distension was noted. Diffuse abdominal tenderness was present with guarding and rebound tenderness. On X-ray erect abdomen, small bowel obstruction signs were observed with multiple air-fluid levels and distended loops of the small bowel. Patient underwent exploratory laparotomy with adhesiolysis and an omental biopsy was sent. Intra op findings showing a slimy layer covering the segment of ileum with multiple dense adhesions between the bowel loops and with the abdominal wall (Dense adhesions in peritoneum and omentum with content inside as small bowel looking like abdominal cocoon)Biopsy showing chronic granulomatous inflammation caused by tuberculosis.

Fig 3: x-ray erect abdomen showing multiple air in
fluid levels and dilated small bowel loops

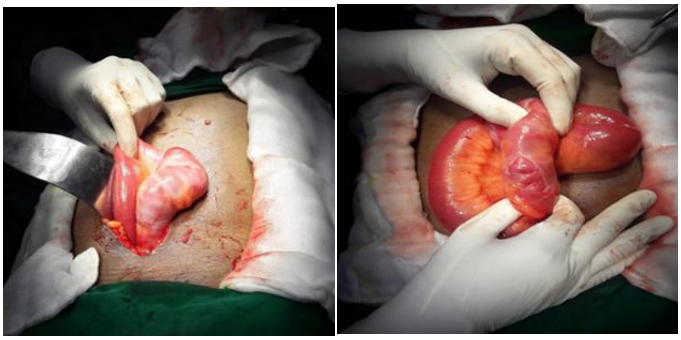

Fig 4 & 5: intraoperative images showing adhesions

peritoneum and omentum with small bowel loops

CASE 3:A 16year male patient came to the surgery outpatient with chief complaints of abdominal pain which is dull aching since 3months and constipation. There is history of evening rise of temperature and night sweats. There is history of similar complaints in the past 1yr. He is diagnosed with pulmonary TB 1year back and used ATT for 6months.On examination, there is mild tenderness in the right iliac fossa and umbilical region. X-ray abdomen shows calcifications, Mantoux test is positive. Patient underwent diagnostic laparoscopy and multiple enlarged mesenteric lymphnodes are noted with adhesions of peritoneum to the abdominal wall. Lymphnodes are taken and sent for biopsy which shows tuberculous lymphadenitis with chronic granulomatous inflammation.

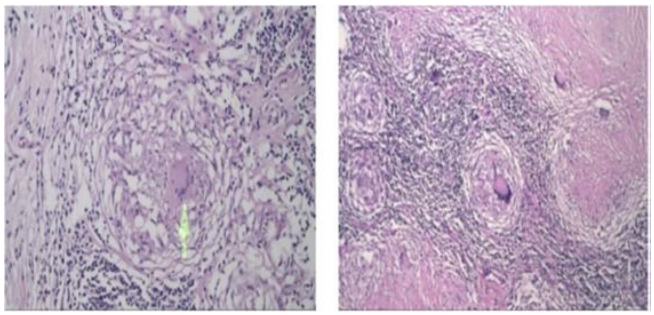

Fig 6: histopathological findings showing granulomas

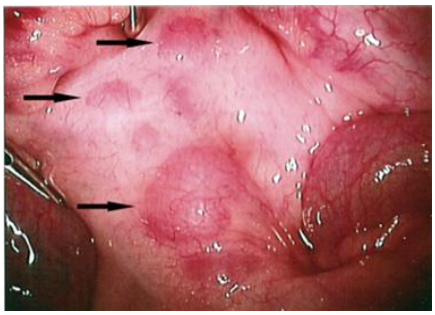

Fig 7 : enlarged mesenteric lymphnodes

CASE 4:A 23 year male patient presented with a history of left lower abdominal pain since 3days and bleeding per rectum which appears bright red in color with no change in bowel habits. On examination patient is febrile and on palpation, tenderness is present in the left iliac fossa. On digital rectal examination, fresh red blood was found and no irregular masses were palpated. Routine blood tests revealed normocytic anemia with a hemoglobin of 4.7 g/dL.A chest X-ray showed a suspicious right upper lobe shadow. flexible sigmoidoscopy demonstrated altered blood in the left side of the colon, but normal colonic mucosa. CT abdomen shows large fluid collection within the pelvis containing pockets of free intraperitoneal gas was identified with small bowel dilatation. Patient underwent emergency laparotomy and intraoperative findings are densely matted and adherent small bowel with a profuse thick gelatinous exudate, the small bowel surface and mesentery were covered in discrete nodules. Histopathological examination revealed granulomas consistent with peritoneal and small bowel tuberculosis

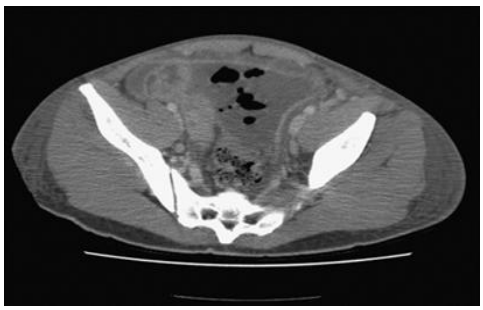

Fig 8: CT abdomen showing pelvic fluid collection

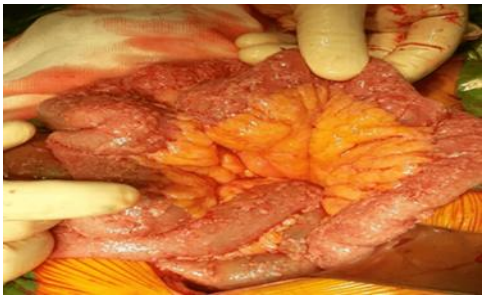

Fig 9: nodules covering small bowel and mesentery

CASE 5:A 45year male patient came to the emergency department with fever since 7days and abdominal pain since 1day.On examination, the patient is febrile and per abdomen findings showing distended abdomen with diffuse abdominal tenderness, guarding and rigidity present and sluggish bowel sounds. On x-ray erect abdomen showing free air under the domes of the diaphragm. Laboratory investigations showing elevated total leukocyte count.After adequate resuscitation patient was taken for emergency laparotomy. Intraoperative findings revealed purulent fluid of 500ml collected in the pelvis and perforation in the terminal ileum 15cm from the ileocaecal junction. Ileal perforation was trimmed along the margins and repaired with primary closure.The edges of the perforation were sent for histopathology and it revealed caseating epitheloid cell granulomas and Langhans gaint cells with inflammatory infiltrate. Later the patient was started on antitubercular therapy and remained well on follow-up.

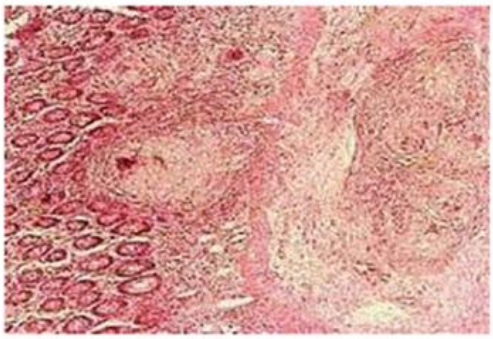

Fig 10: granulomatous inflammation

Fig 11: intra op image showing ileal perforation

CASE 6:A 34year male patient came to surgery opd with chief complaints of pain abdomen since 1week, history of fever present 5days back. On examination, patient is afebrile and per abdomen findings showing palpable mass in the right iliac fossa, tenderness present in right iliac fossa.USG abdomen showing ill defined hypoechoic lesion extending from right lumbar to right iliac fossa. Total leukocyte counts are within normal limits. CECT Abdomen showing short segment asymmetric circumferential enhancing wall thickening noted in caecum with adjacent fat stranding and enlarged lymph nodes. On Colonoscopy showing caecal ulceration with luminal narrowing biopsy was taken and sent for histopathology. Biopsy showing granulomatous inflammation and Mantoux positive and started on ATT.

III. Result

Table 1: Demographic distribution and approach of various cases

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
AGE (YEARS)	18	30	16	23	45	34
SEX(M/F)	F	M	M	M	M	M
CHIEF COMPLAINTS	Pain Diarrhea Weight loss	Pain Diarrhea vomitings	Pain Constipation Evening rise of temperature	Pain Bleeding PR	Pain Fever	Pain Fever
PAST/ FAMILY HISTORY	---	---	PTB & used ATT	---	---	---
EXAMINATION FINDINGS	Tenderness RIF	Abdominal distension Tenderness RIF Guarding Rebound tenderness	Tenderness RIF & umbilicus	Tenderness LIF DRE-glove stained with blood	Abdominal distension Tenderness RIF Guarding Rigidity Sluggish BS	Tenderness RIF Palpable mass in RIF
INVESTIGATIONS	CXR CT abdomen colonoscopy	x-ray erect abdomen	x-ray abdomen Mantoux test	CXR Sigmoidoscopy CT abdomen	X ray erect abdomen	Usg abdomen CECT abdomen Colonoscopy Mantoux test
MANAGEMENT	Diagnostic laparoscopy & peritoneal biopsy	Exploratory laparotomy & omental biopsy	Diagnostic laparoscopy & lymphnodal biopsy	Exploratory laparotomy & peritoneal biopsy	Exploratory laparotomy & perforated margins for biopsy	Colonoscopic guided biopsy

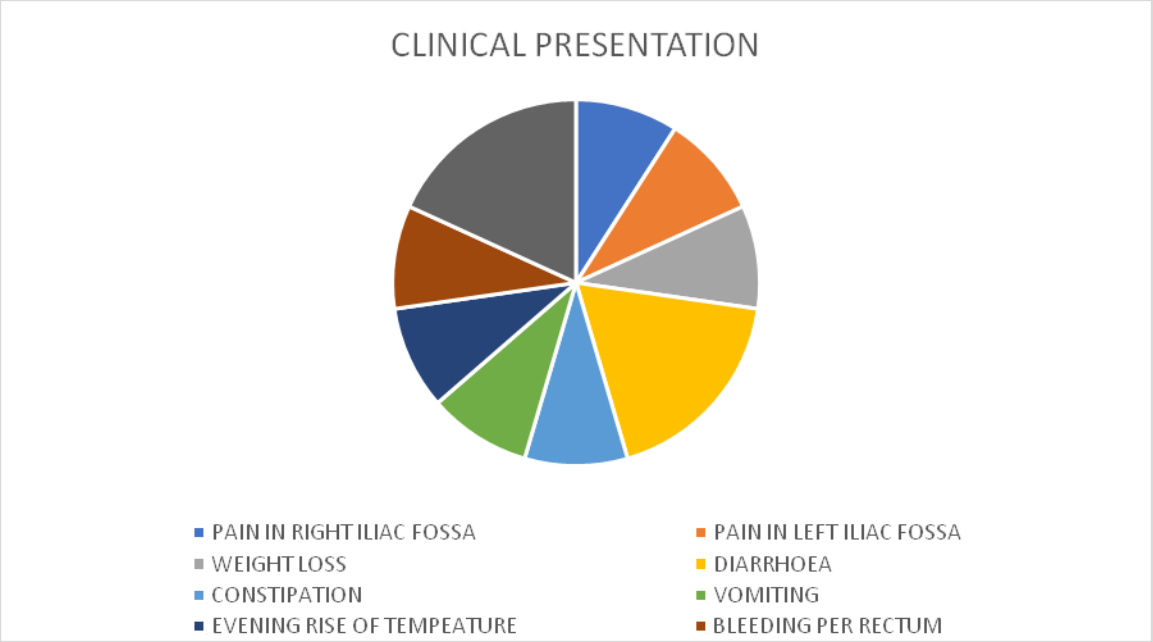

Figure 12: Pie diagram showing clinical presentation of patients

IV. Discussion

The commonest strain of tubercle bacilli causing infection in humans is the human strain of mycobacterium tuberculosis[5]. The organism reaches the gut through various routes. Direct ingestion of bacilli in sputum from an active pulmonary focus is still a very common way of acquiring infection besides the direct oral route. Haematogenous spread from lungs with later reactivation is also described. Isolated involvement of lymph nodes via lymphatics is seen in the abdomen wherein both mesenteric as well as retroperitoneal lymph nodes are affected[5]. Disease may present at any age but commonly seen in young adults with slight female predominance.

Intestinal tuberculosis is a rare entity of Tuberculosis. In children, peritoneal and nodal form of Tuberculosis is more common than Intestinal Tuberculosis. The ileocaecal region is the most commonly involved area of the GI tract, noted in up to 90% of cases of intestinal TB due to presence of Peyer's patches; and stasis of luminal contents favoured by ileocaecal valve. The bowel wall changes in imaging studies are presumably a manifestation of the well-known types of intestinal TB namely hypertrophic, ulcerohypertrophic, ulcerative and fibrous stricturing.

Peritoneal tuberculosis occurs in 4-10% patients of extrapulmonary tuberculosis. Follows either direct spread of tuberculosis from ruptured lymph nodes and intraabdominal organs or hematogenous seeding. Tubercular lymphadenitis accounts for about 25% cases of extrapulmonary tuberculosis.In abdomen, mainly mesenteric, peri-pancreatic, periportal & upper para-aortic group of lymph nodes involved. Lymph node may show caseation or calcification. Involvement of liver and spleen occurs as a part of disseminated and miliary tuberculosis.

In tropical sprue, celiac disease and Crohn's disease are common causes of apart from tuberculosis where inappropriate antitubercular treatment is common and should be discouraged[6]. The cause of malabsorption in intestinal tuberculosis is postulated to be bacterial overgrowth in a stagnant loop, bile salt deconjugation, diminished absorptive surface due to ulceration, and involvement of lymphatics and lymph nodes[6]. The clinical presentation exhibits great variability due to the complexities of the pathological process. As a result, the incidence of misdiagnosis and mismanagement is very high[6]. The chronic pattern of manifestation usually manifests with chronic pain accompanied with constitutional symptoms.A symptom complex which does not fit the picture of the disease despite close resemblance in symptomatology should raise the suspicion of abdominal tuberculosis. Based on severity of symptoms the patterns of presentation can be classified as acute, acute on chronic and chronic types. Acute presentation is usually associated with perforative peritonitis. Acute on chronic may manifest with severe excruciating pain accompanied with systemic symptoms usually seen in lesions affecting the IC junction. Severe mesenteric lymphadenitis with exuberant peritoneal reaction can also give rise to a sudden exacerbation of the disease symptoms.

A variety of laboratory tests are usually carried out with the hope to confirm diagnosis however results of laboratory tests are either negative or equivocal in a majority of cases. The gene X pert MTB/RIF assay though has low sensitivity for intestinal TB but high specificity for intestinal TB in endemic areas where

operation is not mandated. In presence of clinical manifestations and absence of definitive bacteriological proof, exploratory laparotomy is indicated for diagnostic purposes[7]. It is also helpful in differentiating abdominal TB from Crohn's disease. Imaging is a very important aspect of diagnostic studies. A chest x-ray that reveals active TB, or an old fibrotic lesion may be a strong indication of the presence of the disease process. Sonography is useful in a few cases which present with a lump, free fluid and lymphadenopathy. Enteroclysis and barium meal follow-through continue to be promising investigations for diagnosis.Contrast-enhanced CT scanning gives a broad preview of the peritoneal cavity. Diagnostic laparoscopy is a great adjunct to the diagnosis of abdominal tuberculosis as well. It not only provides direct visualization of abdominal TB but also enables one to obtain biopsy specimens from peritoneal surfaces as well as lymph nodes[8,9].

V. Conclusion

Variability in the presentation of various forms of Abdominal Tuberculosis in the current scenario is, therefore, a cause for serious concern due to which the incidence of misdiagnosis continues to be high. A high index of suspicion based on adequate knowledge of the risk of disease process and experience are pivotal in early diagnosis. This is the biggest diagnostic perplexity confronting the surgical community. An ideal and accurate diagnostic investigation continues to be an enigma for the surgeon. Surgical management is indicated if there is any diagnostic uncertainty or other complications like intestinal obstruction, hemorrhage, acute abdomen, fistula formation.

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