

A Clinicopathological Study of Abdominal Tuberculosis In Relation To Sub-Acute Intestinal Obstruction

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I. Introduction:

Abdominal tuberculosis usually caused by mycobacterium bovis but in India the organisms most commonly isolated from gastrointestinal tract lesions is mycobacterium tuberculosis. Abdominal tuberculosis is predominantly disease of young adults. Sex incidence is almost equal although some Indian studies have suggested a slight female predominance. The postulated mechanism by which the tubercular bacilli reach the GI tract are haematogenous spread from primary lung focus, ingestion of bacilli-infected sputum, direct spread from adjacent organ and also through lymphatic from infected lymph node. The ileocaecal region is the most common site followed by jejunum and colon. Abdominal tuberculosis subdivided into 3 types - i) involving of gastrointestinal tract, ii) involvement of peritoneum iii) involvement of mesenteric lymph node. No single laboratory investigation is pathognomonic for diagnosis of abdominal tuberculosis. Radiological investigations still the most important investigations but they often fail to reveal the classical changes described in various textbooks. Bacterial culture and immunological tests are rewarding but are not widely available, in addition often it is time consuming and expensive. A surgeon has to bear high index of suspicion while treating the patients of abdominal symptoms in our country.

It is therefore essential that a surgeon should be well acquainted with a general degree of awareness and knowledge of the disease, its various forms of presentation, the indication of surgical interventions and that types of surgery performed. Complete arrest or serious impairment of passage of intestinal content is termed as intestinal obstruction. In abdominal tuberculosis the bowel obstruction is predominantly sub-acute in nature.

II. Materials And Methods:

After approval of Institutional Ethics Committee and obtaining written and informed consent from each patient 40 in patients of presumptive diagnosis of abdominal tuberculosis of department of General Surgery of CNMC&H, Kolkata were enrolled for this study from a period of January 2013 to December 2013. All patients were evaluated by a standardized clinical history questionnaires, standardized physical examination and pre-defined set of routine laboratory tests like hematological investigations, sputum for AFB, Montaux test, ascetic fluid examination, radiological investigation like plain x-ray of abdomen, small bowel enema / barium enema, ultrasonography of whole abdomen, contrast enhanced CT scan, diagnostic laparoscopy and tissue diagnosis of the specimen obtained by colonoscopy or laparoscopy. Ascitic fluid and tissue from lymph node and peritoneum were sent for TB-PCR examination. TB-PCR examination from blood also done for those patients whose body fluid and tissue could not be collected. All patients were managed conservatively first and evaluated twice a day clinically and with the result of ordered tests. Patients those responded satisfactorily with conservative management were giving full course of anti-tubercular drug (category – I) otherwise surgical interventions is performed and operative findings and pathology are noted. Specimen sent for histopathological study. All patients were asked to report for follow up weekly for one month, twice in a month for two months, monthly for three months and thereafter bi monthly for rest 6 months. Two patients had recurrent obstruction during follow up period who were managed previously by conservative measures, they were treated by surgical intervention and completed antitubercular drug as per schedule. Three patients experienced drug induced hepatotoxicity during follow up period needed interruption of therapy; they were treated by American Tuberculosis Society guideline by the physician then the patient were symptom free and completed the course of antitubercular drug.

III. Results:

In this study all the patients were between 14-55 years of age. The youngest person included in this study was 14 years and the oldest person was 55 years. The age group which shows maximum involvement was 26-40 years of age group which comprise 17 patients (42.5%). Out of 40 patients there were 15 male patient and 25 female patients with a male to female ratio of 3:5. The clinical signs elicited and listed in table 1. 13 patient (32.5%) admitted in this hospital with features of sub-acute intestinal obstruction, 02 (5%) patients admitted in features of perforative peritonitis. 25 patients (62.5%) of abdominal tuberculosis patient was admitted with abdominal pain and discomfort without any features of intestinal obstruction.

In our study, all patients presented with abdominal pain or discomfort. 14 (35%) patients out of 40 patients with features of abdominal lump. 18 (45%) patients presented with doughy feel of abdomen and 8 (20%) patients presented with ascites. Sputum microscopy was positive in 02 (two) patients (5%) and negative 38 (95%) patients in this study. TB –PCR from blood was done in 25 (62.5%) patients among this 19 patients (76%) showed positive result. TB-PCR from body fluid (ascitic fluid) and tissue (peritoneum and lymph node) was done in 15 patients and all these patients (100%) showed positive results. Chest X-ray was done in all 40 patients of this study. It showed no lesion in 3 cases (7.5%) while 10 patients (25%) show active lesion and 27 patients (67.5%) showed old healed lesion of pulmonary tuberculosis. Chest X-ray and Straight x-ray of abdomen in erect and supine posture was done in all cases of this series shows pneumoperitoneum 02 in 5% cases, distended gut loops in 17 (42.5%) and 21 (52.5%) cases findings were insignificant. USG of whole abdomen performed in all patients showed dilated gut loop in 12 patients. 05 (12.5%) patients shows enlarged mesenteric lymph node, in 8 (20%) patients ascites was found and 2 (5%) patients was showed pneumoperitoneum. Ascitic fluid ADA value is raised in all cases in this series. Contrast enhances CT scan done 7 (17.5%) patients showed dilated and thickened gut loops, enlarged mesenteric lymph node and ascetic fluid. Diagnostic laparoscopy done in 7 (17.5%) patients showed enlarged mesenteric lymph node and dilated gut loop. Parietal peritoneum and ascetic fluid collected during the procedure. Parietal peritoneum sent from histopathological examination and ascetic fluid sent for routine analysis as well as for TB-PCR. The tissue sent for histopathological examination were resected portion of the gut, mesenteric lymph node, pieces of peritoneum or omentum within singly or in combination obtained during surgical interventions. In this series 11 (27.5%) patients whose surgical or laparoscopic interventions done showed histopathological evidence of abdominal tuberculosis with characteristic findings of central necrosis epithelial cells and langhans giant cells.

IV. Discussion

Gastrointestinal tuberculosis is one of the major health problems in India. It can also affect peritoneum, mesenteric lymph node, omentum, liver, spleen and pancreas apart from gastrointestinal tract [1].The young(26-40 years) age group shows maximum involvement with female to male ratio 5:3[4,11].The clinical features of abdominal tuberculosis of acute, chronic and acute and chronic. Abdominal tuberculosis generally presents in adults with a triad of abdominal pain, fever and weight loss [2,5].Abdominal pain followed by fever and USG and CT findings are mesenteric lymphadenopathy commonly seen in paediatric population contrast to adult population where ascitis and thickened peritoneum are usual imaging findings[8,9]. The intestinal obstruction in abdominal tuberculosis is pre-dominantly sub-acute in nature. The obstruction may be intermittent and chronic and involves pylorus, duodenum, small intestine and large intestine [3, 4]. The ileocaecal region is the most common site of obstruction of abdominal tuberculosis followed by segmental or isolated colonic tuberculosis and jejunum, appendix, duodenum, stomach, esophagus and rectum [10]. Tuberculosis of stomach and duodenum accounts for 1% cases of abdominal tuberculosis. Tuberculosis of esophagus, rectum and anal canal are rare entity [6]. 9% cases of malabsorption syndrome in pediatric population of North India is found due to abdominal tuberculosis [15]. The Peyer's patches are very abundant in terminal ileum and M Cell associated in Payer's patches can phagocyte BCG bacillus [5]. Moreover increased physiological stress, increased rate of fluid and electrolyte absorption, minimal digestive activities are possible cause of ileocaecal involvement in abdominal tuberculosis [7]. The lesions in gastrointestinal tuberculosis morphologically divided into ulcerative type and hyperplastic type. Commonly well-nourished patients develop hyperplastic type whereas under nourished patients develop ulcerative and stricturous lesions. Caecum and adjacent large intestine commonly produce hypertrophic or ulcero-hypertrophic lesions [17]. In our study abdominal lump is palpable 25% cases. It is palpable in right iliac fossa comprises of terminal ileum, caecum, mesenteric fat and adjoining draining lymph node. The ileocaecal valve is incompetent in abdominal tuberculosis as both sides of valve are affected. It is one of the distinguished features that differentiate it from Crohn's disease [19, 20]. In our series active lesion in chest x-ray is found in 25% cases. This corroborates with the literature that one of the etiopathogenesis of abdominal tuberculosis is the reactivation of a dormant focus. Although findings of tubercular lesion in chest x-ray suggest the diagnosis of abdominal tuberculosis but a normal chest x-ray does not rule out [21]. Abdominal straight x-ray shows multiple air fluid level and dilated gut loops in case of sub-acute or acute intestinal obstruction. Calcification of mesenteric or retroperitoneal lymph node occasionally may be discovered in

abdominal x-ray [6]. Barium meal follow through better demonstrate small intestinal lesions whereas barium enema visualized ileocaecal and colonic lesions. At early stage of disease double contrast barium enema delineate mucosal architecture and demonstrate ulcer [13]. Diagnosis of extra pulmonary tuberculosis is challenging and preoperative diagnosis of tuberculosis was made only 50% of cases in a study conducted by Das and Shukla [18]. New diagnostic technique polymerase chain reaction amplify trace amount of nucleic acid present in blood or ascites fluid. Sensitivity of TB- PCR from blood is 80-90%, whereas from ascites fluid is 99.9%. It is an effective diagnostic modality for early diagnosis where negative sputum microscopy, lack of granuloma or failure to culture mycobacterium tuberculosis. The major drawback of this test is that it can't differentiate between viable and non-viable mycobacterium and cost of the test is also high. A cost effective PCR is needed for developing countries like India [14, 18]. Various features of ultrasonography of whole abdomen in abdominal tuberculosis are mentioned in literature such as i) Intra-abdominal loculated or free fluid with debris and septa ii) inter-loop ascites shows "club sandwich" or 'sliced bread' sign due loculated fluid collection between radially oriented bowel loops, iii) Discrete or conglomerated (matted) lymphadenopathy gives heterogeneous echo texture. Caseation and Calcification highly suggestive of tuberculosis neither common in malignancy iv) concentric bowel loop thickening and ileocaecal region suggestive of tuberculosis in contrast to Crohn's disease where eccentric thickening at the mesenteric border of bowel loop is seen v) pseudo kidney sign – known as pulled up position of ileocaecal region to sub-hepatic area is present in abdominal tuberculosis [22]. USG guided paracentesis done in 8 patients in our study and the ascitic fluid / serum ADA ratio is easy and reliable marker or establishing diagnosis in tuberculosis. A cutoff value of greater than 33 U/L suggestive of tuberculous peritonitis. The sensitivity, specificity, positive and negative predictive value of this test is 100% [24, 25]. The presence of fever, elevated serum marker CA-125 label, normal serum CA19-9 and CEA associated with lymphocyte predominant benign ascites may establish tuberculous peritonitis [16]. Contrast enhance CT scan is highly sensitive test than ultrasonography for demonstration of high density ascites, bowel wall thickening and irregular soft tissue densities in omental area. Though not pathognomic the pattern of predominant peripheral rim enhancement with low attenuation at centre could be highly suggestive of tuberculosis. Non enhancement of contrast material is seen tuberculosis with HIV infection [23]. The laparoscopic findings in peritoneal tuberculosis can be grouped into three categories like i) thickened peritoneum with tubercles, ii) thickened peritoneum without tubercles and iii) fibro adhesive peritonitis [26,27]. Targeted biopsies are taken from 7 (17.5%) patients in our study and sent for histopathological examinations. Ascitic fluid aspirated during diagnostic laparoscopy had been sent for TB-PCR test shows 100% positivity. We managed 95% of cases of sub-acute intestinal obstruction due to tuberculosis conservatively followed by category 1 regime [28]. Only 5% cases required surgical intervention due to complication or cicatrization following antitubercular drugs administration. Conservative surgery preferred management in advent of modern chemotherapeutic drugs. Strictureplasty is an effective alternative for massive resection for tubercular stricture both adult as well as pediatric population [12]. Modified surgical procedures such as limited colectomy, ileoplasty are great value in chronically ill and emaciated patients [29, 30].

Competing Interest: The authors declare that they have not been benefited directly or indirectly from any third party.

V. Summary And Conclusion:

From this study, it is observed that abdominal tuberculosis is mostly a disease of young adults with slight female preponderance. The patient may have pulmonary tuberculosis before the development of abdominal tuberculosis or abdominal tuberculosis may develop concomitantly. A high index of suspicion is needed to make a diagnosis of abdominal tuberculosis otherwise it is likely to miss early opportunity of treating abdominal tuberculosis resulting high morbidity and mortality. TB-PCR is the important diagnostic test for confusing abdominal symptoms. Most of the cases of sub-acute intestinal obstruction can be managed successfully by conservative method followed by chemotherapy. Surgery is required for those who develops complications like acute or chronic obstruction, recurrent obstruction, perforation, fistulisation with intraabdominal abscess.

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