

CLINICO-PATHOLOGICAL PROFILE OF PEDIATRIC ABDOMINAL TUBERCULOSIS IN A TERTIARY CARE TEACHING HOSPITAL IN WESTERN U.P.Sudesh K. Sagar¹, Anurag Agrawal², Dheeraj Kumar³, Sunil Kumar⁴**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVE: The aim of this study was to evaluate the clinic-pathological profile of children with abdominal tuberculosis. **METHODS:** A prospective study of children who presented with abdominal tuberculosis was conducted over a period of one year. Diagnosis was made on the basis of clinical profile, supportive investigations and gross morphological findings at surgery and proven caseating granulomas on histopathology. Antitubercular treatment was prescribed to all patients for 1 year. Patients were followed up till completion of ATT. **RESULTS:** Out of 21 patients, fourteen (66%) children presented within six weeks of their symptoms. The symptoms were loss of weight 19 (90.47%), pain abdomen 18 (85%), loss of appetite 16 (76.19%), fever 14 (66%) and altered bowel habit in five (23%) patients. The physical findings were palor and malnutrition 19 (90%), abdominal distension 60 (76.16%), pyrexia 14 (66%), peritonitis ten (47.64), ascitis five (23%), lump two (19.4%) and abnormal breath sound ten (47%). The supportive investigations were found supporting the diagnosis were proven histopathology 12(80%), lymphocytosis 14(66.6%), raised ESR 14(66%), positive mantoux 10(47.62%), and abnormal abdominal x-ray eight patients (38%). Resection and ileostomy was performed in two (13%) of cases. **CONCLUSION:** Children who present with abdominal pain for variable period of time should raise high index of suspicion for abdominal tuberculosis. Clinical presentation of abdominal tuberculosis in children is usually non-specific in nature and often requires laparotomy. During emergency surgery bypass operation and life saving measures in form of lleostomy, gives satisfactory results.

KEYWORDS: Abdominal tuberculosis, children, surgical treatment.

INTRODUCTION: Tuberculosis is responsible for high morbidity and mortality, especially in children, in developing countries including India.^[1] Diagnosis of extra pulmonary tuberculosis is usually difficult because of varied presentation and lack of sensitive tests.^[2] Abdominal tuberculosis is defined as tuberculosis involving intestines, peritoneum, lymph nodes and visceral organs like liver and spleen. The tubercular bacilli may reach the gastrointestinal tract via direct contact, through the ingested food, swallowing infected sputum and hematogenous route.

The problem with abdominal tuberculosis lies in the non-specificity of symptoms, lack of specific clinical signs and above all, the enormous difficulty in isolation of the organism. The rarity of literature available in abdominal tuberculosis in children makes the situation worse. It remains a considerable diagnostic challenge, specially in absence of pulmonary infection, as it can mimic various other gastrointestinal disorders. Various series comprising adult case of abdominal tuberculosis have been reported but there is paucity of literature on this disease in pediatric age group.^[3]

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Various methods of investigations have been reported as gold standard in the diagnosis of Abdominal TB in adult. However, there are difficulties in their applications in clinical practice in children. So, making an early diagnosis of abdominal TB in children, is still a challenge to physician. The present study was undertaken to document the presentation abdominal TB in children, analyze the profile of patients, and to know the most specific diagnostic tool for early diagnosis or management.

MATERIAL AND METHODS: The present prospective study was conducted on the cases of abdominal tuberculosis admitted in the Departments of General Surgery, Pediatrics and Tuberculosis and Pulmonary Diseases, during a period of one year. Informed consent from guardians of all children was obtained prior to recruitment in this study. Ethical clearance has been obtained institutional ethical committee. The criteria for diagnosis of abdominal TB were clinical suspicion, operative findings, granuloma on histopathology, demonstration of AFB and response to empirical anti-tubercular treatment.

All the children were subjected to detailed history and clinical examination. Urogenital tuberculosis is excluded from the study. All recruited patients underwent blood examination for Hb, TLC, DLC and ESR; routine urine and stool examination; AFB in stool; sputum examination for AFB; Mantoux test; ascitic fluid examination for protein, sugar and cells; radiology included plain x-ray chest, plain x-ray abdomen, barium meal follow through and Barium enema wherever indicated.

Required surgical intervention was done. laparotomy and Peritoneal biopsy/FNAC; (Peritoneoscopy and guided peritoneal biopsy); histopathological examination of operated tissues including Mesentric lymph node, Intestinal tissue, peritoneum and omentum for tubercular lesion; Demonstration of AFB in resected tissues. Antitubercular treatment was given to all patients for 12 months. Follow up was done till completion of the anti-tubercular treatment.

OBSERVATIONS: A total of 21 pediatric patients were included in the study. Eighteen (90.29%) patients belonged to the low socio economic status. Fourteen (66.67%) patients presented within 6 weeks of onset of symptoms. The most common symptom was pain in abdomen 18 (85.71%). The other symptoms in decreasing order of frequency were weight loss, anorexia, abdominal distension, fever, cough, vomiting and alternating constipation and diarrhea. Most (n-19; 95%) patients were anemic and malnourished.

Most constant physical finding was abdominal distension, present in 16 (76.19%) cases. Lump in abdomen was present in only two (9.52%) cases. Two third of the patients (66.67%) had hemoglobin level less than 10 gm%. Fifteen (71.42%) patients had a normal leukocytes count while fourteen (66.67%) patients had a raised ESR. Mantoux test was found to be positive (10 mm or more with 5 TU PPD) in 47.62% patients. Ascitis was present in five cases (23.80%). Four (80%) patients had protein content more than 3.5gm%. The cell counts were >100 cell/mm³, with lymphocytic predominance in all the cases.

Two cases had pleural effusion and 4 cases (19.05%) had tubercular cervical lymphadenopathy. On plain X-ray abdomen, gas under right dome of diaphragm was present in 10 (47.60%) cases, multiple fluid and gas level was present in eight (38%) cases. Barium contrast study was done in only six patients, as most of the patients come to emergency and went for emergency laparotomy.

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The diagnosis of abdominal tuberculosis was based on histological examination of tissue biopsy in 15(71.4%) cases. Six (28.5%) patients were included on clinic-radiological ground. Out of them, two patients had cervical tuberculosis lymphadenitis on FNAC. These patients present with sub-acute intestinal obstruction with abdominal distention. Mesenteric lymph node biopsy confirmed tubercular lesion in 12 of 15 (80%) cases, even when bowel is showing non-specific changes. Acid fast Bacilli were demonstrated only in 4(26.27%) mesenteric lymph node and only one (6.67%) specimen of bowel.

In present study 10(47.61%) cases belongs to intestinal tuberculosis, two (9.52%) cases of peritoneal tuberculosis and nine (42.85%) cases of mesenteric lymph nodal tuberculosis. In intestinal form of tuberculosis, most common site of involvement is the terminal ileum, other site of involvement in decreasing order of frequency were caecum and jejunum. Stricture and perforation were the commonest finding.

During emergency, surgery bypass operation and life saving measures in form of ileostomy were performed when patients were in very low general condition and in routine surgery conservative resection were performed. Anti-tubercular treatment, comprising of four drugs (RHEZ) for first three months, followed by three drugs (RHE) for another nine months were given to all the patients. Two patients died during hospital stay post-operatively, so the mortality rate was 9.5%. in one year follow up all the surviving patients were doing fine.

DISCUSSION: The present study included 21 pediatric patients of abdominal tuberculosis with mean age of 7.45 yrs. Most (90%) of our patients belonged to the low socio-economic status and were malnourished. Pre-existing malnutrition is a risk factor for the development of tuberculosis. Malnutrition induced reduction in cell mediated immunity could play a role in the pathogenesis of disease. In present study, majority of the patients had acute symptoms and were admitted through emergency department with intestinal obstruction or perforation, requiring emergency surgical procedures like exploratory laparotomy.

In present study, the clinical manifestations of childhood abdominal tuberculosis were found to be non-specific. Abdominal pain was the commonest symptom. Other symptoms in decreasing order of frequency were loss of appetite and weight, fever, vomiting, alternating constipation and diarrhea. Alternate diarrhea and constipation are very common in adults, though it is relatively uncommon in children.

We observed high prevalence of malnutrition and anemia in studied children. The reason for malnutrition and anaemia was that most of the patients belong to the low socio economic group. Malnourishment can be because by the disease process itself. Abdominal Koch's was indicated by the presence of distention of abdomen in more than three fourth of the patients. Lump in abdomen were found in four (9.5%) cases while ascitis in five (23.80%) cases. Ascitis was present in cases with adhesive intestinal obstruction. Purulent ascitis was not found in any case. In present study, visible peristalses were found in five (23%) cases. Several authors have reported its incidence in the range of 20- 35%^[4]. It is commonly observed in patients with subacute intestinal obstruction.

In present study, moderate degree of anaemia, raised ESR and normal leukocyte count were the common hematological findings. Mantoux test was done in all cases and was found to be positive in only ten (47.62%) cases, indicating its insensitive nature. The use of mantoux test as a diagnostic test is controversial, some authors feel that a positive mantoux test is a good diagnostic aid. However,

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other believe that a negative tuberculin reaction is common in these patients due to immunological hyporesponsiveness related to the severity of the illness and consequent malnutrition.^[5] Examination of the ascitic fluid is an important step in the diagnosis of abdominal tuberculosis.

The protein content, more than 3.5 gm and the cell count >200 cell/cm, with predominant lymphocytosis, is characteristic of tubercular ascitis. We found protein content more than 3.5 gm% in 80% of cases and cell count more than 200 with lymphocytes predominance in all cases. In contrast to adults, cavitory lesions and tuberculous bronchiectasis were rarely encountered in children. In our study x ray chest was suggestive of tuberculosis in four (19%) cases. The incidence of associated pulmonary tuberculosis is decreasing due to modern chemotherapy and more awareness of people to pulmonary tuberculosis.^[6]

Plain X-ray abdomen is an important investigation as calcified mesenteric lymph nodes, multiple fluid levels, perforation and revealed gas under right dome of diaphragm. Though the Barium contrast study is the mainstay in the diagnosis of suspected abdominal tuberculosis and has been reported as the single most important investigation in establishing the diagnosis. But in our study barium study could not be done because most of the patients undergo for emergency laparotomy and diagnosis made by histopathology of the tissue biopsy. Six patients undergone barium study and shown multiple air fluid levels, suggestive of intestinal obstruction.

Demonstrating tuberculous granuloma is probably most important investigation for a definitive diagnosis of abdominal tuberculosis as we found in our observation. Mesentric lymph node histopathology was positive for tuberculosis in 80% of cases. Granuloma with gaint cells with casation was found in six (40%), granuloma with gaint cell without caseation was found in four (26.67%), while diffuse caseation was found in two (13.33%). In three (20%) cases non-specific changes were seen. We could not make comparison of bowel and mesenteric lymph node histopathology.

We obtained only three specimens of bowel and subjected to the histopathology. Bowel histology was positive in two cases. Remaining one case showed reactive hyperplasia, but the mesenteric lymph node from the same patient showed tubercular finding. It is an important observation which shows that intestinal tuberculosis may be completely missed if draining lymph nodes are not properly studied. We demonstrated AFB in mesenteric lymph nodes in 26.67% and in bowel in 6.67% cases. Thus overall demonstration of AFB was positive in 25% of tissue. Various authors have demonstrated AFB in the excised tissue in the range of 8% to 32% in adult cases.

With the continuous advances made in medical treatment, the indications for surgical intervention are decreasing. Now the indications for surgery are limited to obstruction, perforation and fistulae. Various authors^[7-9] have advocated that surgical treatment should be done whenever possible. However we did not attempt extensive dissection in any pediatric case, as most of the patients presented in emergency with low general condition and we preferred smaller procedure and life saving measures in form of ileostomy.

After three months, when patient's condition improved, ileostomies were closed. In few cases, in which limited resection of involved segment was done and post operatively anti-tubercular chemotherapy was started. We did not face any surgical problem in these cases. Radical surgical intervention in low general condition patients should be avoided. We found bypass operation, followed by anti-tubercular chemotherapy, very useful in patients presented in emergency with stable general condition. In both cases of lump abdomen, laparotomy was done, histopathology of

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tissue shown Tuberculosis of ileo-caecal region. In both the cases resection and anastomosis were performed. Bypass operation followed by chemotherapy has been favored by many authors. In case of multiple perforations, involved segments were resected and anastomosis was done with peritoneal toilet and drainage. We found satisfactory results with these procedures. Similar procedures were also favored by other authors.^[9,10]

Two patients in present study expired, thus mortality rate was 9.5%. Both patients had multiple tubercular perforation with marked peritoneal and intestinal adhesions. First case was severely anemic with multiple perforation on ileum, in which resection and end to end anastomosis was done. In another case simple closure of perforation was done. In both the cases fecal fistula developed and the general condition of the patient deteriorated and expired on 4 – 6th post operative day. It was found that patient with regular follow-up and treatment had good recovery.

CONCLUSION: We found in present study that the presentation of abdominal tuberculosis in children is non-specific in nature and often require laparotomy for the definitive diagnosis and also for tissue diagnosis despite of availability of less invasive procedure like laparoscopy. During emergency surgery bypass operation and life saving measures in form of ileostomy, when patients in very low general condition and in routine surgery conservative resection given satisfactory results when combined with standard anti-tubercular treatment.

Symptoms/ Signs	No. of cases	Percentage
Weight loss	19	90.47
Pain in abdomen	18	85.71
Anorexia	16	76.19
Fever	14	66.66
Cough	10	47.61
Vomiting	7	33.33
Diarrhea/ constipation	5	23.80
Abdominal distension	16	76.19
Hepatomegaly	9	42.82
Doughy abdomen	8	38.09
Rigidity	7	33.33
Peripheral Lymphadenopathy	6	28.57
Visible peristalsis	5	23.80
Ascitis	5	23.80
Lump sign	4	19.04
Enterocutaneous Fistula	2	9.52
Lump abdomen	2	9.52
Splenomegaly	1	4.76

Table 1: Showing incidence of various symptoms/ signs

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Site	No. of case	Percentage
Intestinal	10	47.61
Duodenum	-	-
Jejunum	1	4.76
Ileum	5	23.80
Ileo-caecal	4	19.04
Colon & Rectum	-	-
Mesentric Nodal	9	42.85
Peritoneal	2	9.52

Table 2: Showing site of involvement in abdominal tuberculosis

Histological Findings	No. of Cases	%
- Granuloma with giant cell with caseation	6	40.00
- Granuloma with giant cell without caseation	4	26.67
- Non-specific changes (Catarhal lymphadenitis)	3	20.00
- Diffuse caseation	2	13.33
Total	15	100

Table 3: Showing mesenteric lymph node biopsy pathology findings

Histological Findings	No. of cases	%
• Tubercular perforation with matted bowel with mesenteric lymphadenitis	4	26.66
• Marked peritoneal adhesion with mesenteric lymphadenitis with perforation	2	13.33
• Ileo-coecal hyperthrophic mass with stricture with mesenteric lymphadenitis	2	13.33
• Obstructing band with adhesion with mesenteric lymphadenitis with perforation	2	13.33
• Encysted Ascitis	5	13.33
• Stricture ileum	2	13.33
• Stricture ileum & Jejunum both with perforation	1	6.67

Table 4: Showing operative findings in 15 patients

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Procedure	No. of cases	%
• Stricturoplasty	3	20.00
• Closure of tubercular perforation with adhesionolysis	3	20.00
• Resection & end to end ileo-ileal anastomosis	2	13.33
• Resection of ileo-caecal mass with end to end ileo-colic anastomosis with omentum biopsy	2	13.33
• Resection of perforated ileum with ileostomy	2	13.33
• Removal of Adhesion and Band	2	13.33
• Peritoneal & mesenteric lymph node biopsy	1	6.67
Total	15	100

Table 5: Showing various operative procedure done

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