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## Abdominal Tuberculosis in Children: Experience Over a Decade

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### ABSTRACT

*This presentation deals with 110 surgically proven cases of abdominal tuberculosis in the pediatric age group. The protean clinical profiles and complications of the disease entity made the clinical diagnosis difficult; the investigations were also found non-pathognomonic. The most common type of pathology seen was adhesive variety followed by nodal type. Strictures of the small bowel were uncommon and hyperplastic variety was rarely seen in the present series. The pathogenesis relating to various varieties has been suggested based on the vast experience from a single institution.*

**Key words:** Tuberculosis, Abdominal tuberculosis.

Despite considerable progress made in therapy and prophylaxis during the last quarter of the century, tuberculosis of various sites continues to be a major health problem in India. The disease is completely under control in the developed countries. However, for this very reason research on the various aspects of the disease has slowed down considerably.

Various series comprising adult cases of abdominal tuberculosis have been reported(1,2) but there is paucity of literature on this disease in children. This could be related to a relative rarity of the disease in the pediatric age group. Narasimha Rao *et al.* saw only 56 cases over a period of 15 years in a premier institution at Chandigarh(3).

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The manifestations of abdominal tuberculosis are variable and often defy early diagnosis. The purpose of this paper is to analyze the varied patterns of the disease entity as seen in children and study the related pathogenesis.

### Material and Methods

This study relates to experience gained in 110 children up to 13 years of age of surgically proven Koch's disease of the abdomen (excluding genitourinary) managed over a period of 10 years (1981-90) in the Department of Pediatric Surgery, S.M.S. Medical College and attached Sir P.M. Child Health Institute, Jaipur. The age and sex distribution of these patients have been displayed in *Table I*.

### Results

Fifty-six patients presented with history of pain in abdomen, constipation, abdominal distension and vomiting, a picture of acute intestinal obstruction; the duration of illness varied from one day to one month. Forty-three patients were grouped as chronic, with a duration of illness ranging from one month to six months. These patients presented with mild abdominal pain and constipation alternating with diarrhea. Twelve of these patients presented with a lump in the abdomen and six patients had entero-umbilical fistula discharging fecal matter. The remaining patients had unusual presenta-

tion, five clinically presented as acute appendicitis, three had acute entero-colitis with abdominal distension and three presented as acute intussusception. It was interesting to note that significant free fluid in the peritoneal cavity was seen only in two patients.

The constitutional symptoms such as failure to thrive, low grade fever were seen in 50% and 40%, respectively. Anorexia and loss of weight were the major complaints in 34% patients. In 86% patients, there was no other detectable tubercular focus. Seven patients had associated tubercular cervical/axillary lymphadenopathy.

On routine investigations, all patients had low hemoglobin (< 10 g/dl), 26 out of 33 patients investigated had low serum protein (< 3.5 g/dl) with reversal of albumin/globulin ratio. Skiagram of chest postero-anterior view was done for all, only seven patients showed primary complex and two had pleural effusion of the right side. Two had miliary tuberculosis of the lungs. Flat plate abdomen revealed multiple air fluid levels in obstructed patients, calcification was seen in only three patients. Contrast sinusogram was done in cases of entero-umbilical fistulae. Barium meal and/or enema was performed in nine of the patients presenting with lump abdomen. Since the last 4 years, abdominal sonography has been done in such patients. Gastric lavage was performed in 15 patients and it was always negative for acid fast bacillus.

Laparotomy was performed in all the patients through a wide transverse supraumbilical incision. On the basis of operative findings, the patients could be grouped under four categories (*Table II*):

**A. Adhesive Variety:** Seventy-seven patients had adhesive peritonitis. There were multiple adhesions with miliary tubercles

TABLE I—Distribution of Cases

Age (years)	No.
<1	13
1 - 4	33
5 - 9	39
10 -13	25

M : F :: 52 : 58

**TABLE II—Pathology on Abdominal Exploration**

Type of pathology	No.
1. Adhesive peritonitis	77
2. Adhesions with enlarged mesenteric lymph nodes	23
3. Strictures of small bowel	7
4. Hypertrophic ileo-cecal tuberculosis	3

studied all over the peritoneum and serosal surface of the bowel. The peritoneum was grossly thickened and vascular. The omentum was also thickened and studded with tubercles and adherent to the bowel and peritoneum. There were multiple dense adhesions and all the intestines were plastered up. It was virtually impossible to enter the peritoneal cavity without opening the lumen of the bowel.

**B. Nodal Variety:** Twenty-one patients had multiple adhesions with enlarged mesenteric lymph nodes, six of which had frank caseation. Another two patients in this category had significant free fluid in the peritoneal cavity. The obstructive symptoms were due to kinks and adhesions in the loops of the bowel and omentum to the glandular mass. One patient had enlarged lymph nodes in the root of mesentery pressing over the third part of the duodenum and causing partial obstruction.

**C. Solitary or Multiple Structures:** There was solitary stricture in three and multiple in four cases.

**D. Hyperplastic Variety:** Three patients had hyperplastic granulomatous ileocecal mass and rest of the small bowel was normal as encountered in the adults.

**TABLE III—Surgical Procedures Done**

Procedure	No.
Biopsy	
(a) Omentum & peritoneum	78
(b) Mesenteric lymph node	26
Resection anastomosis small bowel	5
Right hemicolectomy and ileotransverse anastomosis	1

The different operative procedures performed in the 110 patients have been tabulated in *Table III*. In the present series there was high incidence of the post-operative complications—14% patients had wound sepsis, 6% courted pulmonary complications and 3 patients had fecal fistula. In adhesive variety, 4% had persistent bowel obstruction and 4 patients required re-exploration for post-operative adhesions.

The mortality in this series was 9.1%. The chief causes of death were: (a) Post-operative persistent bowel obstruction in five patients; (b) Fecal fistula in two patients; and (c) Septicemia in three patients. All these ten patients presented late and were severely malnourished due to prolonged illness.

All the survivors responded well to the antitubercular treatment (three drug-regimen: INH-25 mg/kg OD, Rifampicin 10 mg/kg OD and pyrazinamide 20 mg/kg OD) administered for a minimum period of 9 months post operatively. None of these patients presented with features of acute intestinal obstruction in the follow-up period.

### Discussion

Before the advent of antitubercular chemotherapy, the incidence of gastrointestinal tuberculosis complicating pulmonary lesion was as high as 90%, but after the discovery of antitubercular drugs the inci-

dence fell to less than 5%(4). Primary tuberculosis of the intestine, however, without an antecedent or associated pulmonary tuberculosis has been fairly common(5-7).

Gastrointestinal tuberculosis is frequently associated with lesions of lymph nodes and/or peritoneum. Also, abdominal lymph nodal and peritoneal tuberculosis may occur without gastrointestinal involvement(8).

Abdominal tuberculosis of adhesive and nodal type was commonly seen in the pediatric age group without the involvement of the intestine. Adhesive variety was seen in 70% patients. This is in sharp contrast with the incidence of 4.7% quoted earlier by Tandon *et al.* (9). In these patients abdominal exploration and biopsy from the omentum and/or peritoneum was taken to confirm the diagnosis.

The operative findings and the course of the disease can be explained on the hypothesis that the disease process sets at the site of mesenteric lymphnodes. From these lymphnodes the disease spreads to the peritoneal cavity. Once the peritoneal cavity is involved, the disease spreads to the peritoneum, omentum, the serosal surface of the bowel, and even the surface of the solid organs. Because of the intense peritoneal reaction, the loops of the bowel and omentum get plastered-up. Despite the whole serosal surface of the bowel being studded with miliary tubercles, the strictures of the intestine were not associated. The degree of involvement was evidenced on the analogy of seed and soil behavior.

Nodal variety was observed in 21 patients and the cause of the obstruction was due to kinks and bands formed between mesenteric lymphnodes, omentum, and loops of the small bowel. The associated strictures or the involvement of the small bowel were not seen in this variety also. This indicates that the disease process is actively localized

to the mesenteric lymphnodes.

Patients with small bowel strictures and hypertrophic ileocecal tuberculosis have enlarged mesenteric lymphnodes which are secondarily affected. The pathogenesis relating to the small bowel strictures, entero-umbilical fistula and hyperplastic ileocecal tuberculosis is an established fact and hence needs no re-iteration. In this series, the solitary or multiple strictures of the small bowel were seen only in 7 patients and only three had hypertrophic ileocecal variety contrary to the experience of Narasimharao *et al.* (3). We did not encounter any case of small bowel perforation leading to active peritonitis, intraperitoneal abscesses or fecal fistula although Gandhi had quoted a high incidence (20%) of such occurrence in a recent article(10).

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## NOTES AND NEWS

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### SYMPOSIUM ON PEDIATRIC EMERGENCIES AND WORKSHOP ON PEDIATRIC INTENSIVE CARE

The Indian Academy of Pediatrics (Delhi Branch) with Sir Ganga Ram Hospital and Kalawati Saran Children's Hospital, New Delhi is organizing a "Symposium on Pediatric Emergencies" on October 10, 1993 and a "Workshop on Pediatric Intensive Care" on October 11 and 12, 1993. Selected problems of topical interest would be discussed by eminent faculty members who have been invited from all over India as well as abroad. A detailed scientific programme has been drawn up to encourage one to one interaction of the delegates with the faculty members.

#### Registration fee:

Dates	Symposium	Workshop	Both
From 01.9.93	250/-	400/-	650/-
Spot	300/-	No spot registration	

Cheques to be drawn in favour of "IAP - Symposium-cum-Workshop on PIC".

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