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Research Article

Experience with surgical management of intestinal tuberculosis at a rural teaching hospital

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ABSTRACT

Background: Tuberculosis is a major global health problem and still considered as a social disease in India reflecting the standards of living in a community. It possesses a diagnostic and therapeutic challenge to practicing surgeon in resource limited contries. The aim of the present study was to study different surgical management of Intestinal tuberculosis.
Methods: 100 cases of intestinal tuberculosis were studied over a period of three years in the department of General Surgery at Katihar Medical College with emphasis on surgical management of these cases.
Results: 64% of the cases were in the age group of 21-40 years. The sex incidence revealed a female to male ratio of 1.17:1 showing a female preponderance. Low haemoglobin value and high erythrocyte sedimentation rate with lymphocytosis were present in majority of the cases. Radiological finding in plain X ray abdomen was of definite diagnostic aid in cases of intestinal obstruction and perforation. On laparotomy, diagnosis was supported by presence of tubercles, macroscopic caseation, enlarged and calcified lymph glands, bands, adhesion and strictures. The commonest site involved was small bowel followed by the ileocaecal region. The commonest type of lesion was stricture, which mostly involved the small bowel followed by hyperplastic lesions which were more common in caecum and ascending colon. Acute complications of the disease were perforation and obstruction, which forced the patients to undergo emergency surgical treatment. Wound infection (30%) was the most common complication.
Conclusions: Multidisciplinary approach with high index of suspicion for the disease is required in these cases. Mostly a disease of low socio - economic people, health education and awareness among people is the need as this disease is very prevalent in this region.

Keywords: Abdominal tuberculosis, Distention, Intestinal, Obstruction, Perforation

INTRODUCTION

Abdominal tuberculosis particularly intestinal type is an increasingly common disease with non specific vague abdominal symptoms posing diagnostic challenge to the treating surgeon and development of complications. This condition is a great mimicker of other chronic abdominal pathology. A high index of suspicion of the disease should be there for early diagnosis of intestinal tuberculosis as tuberculosis (TB) is a life threatening multisystemic disease virtually affecting any organ system of human body.[1] Global burden of tuberculosis is nearly 12 million. According to World Health Organization report 2013, there were an estimated 8.6 million annual incidence of TB globally and 1.3 million people died from disease in 2012.[2] India has the world's largest tuberculosis cases which is around 26% of the world TB cases, followed by China and South Africa. There were an estimated 0.45 million new cases of multi-drug resistant TB worldwide in 2012. There is an increasing prevalence of immunocompromised individuals mainly due to acquired immunodeficiency

syndrome (AIDS) pandemic, immigrant population and deteriorating social conditions in developed countries and this leads to an increased incidence of TB.[3] Hematogenous spread from a primary lung focus that reactivates later or miliary tuberculosis, spread via lymphatics from infected nodes, ingestion of bacilli either from the sputum or from infected sources or by direct spread from adjacent organs is the mode for development of Intestinal TB.[4] Intestinal tuberculosis generally presents in three forms which are Ulcerative lesion, hyperplastic lesions and sclerotic lesions respectively. The Ileocaecal region is the most common site of involvement in abdomen. Even there may be a combination of any of the three. The presentation of tuberculosis in abdomen is varied and presents with different mode, viz, chronic, acute and acute on-chronic, or as an incidental finding at laparotomy for other diseases. The location and type of presentation accounts for the clinical picture which usually runs an indolent course and presents late with surgical complications especially acute or sub-acute intestinal obstruction due to mass (tuberculoma) or stricture formation in small gut and ileocaecal region or gut perforation leading to peritonitis.[5,6]

The treatment options of abdominal tuberculosis is both conservative (non-operatively) with anti-tuberculous therapy and surgical treatment is reserved for complications such as intestinal obstruction and bowel perforation with peritonitis.[7,8] The present study is undertaken to document the management of intestinal TB and generate data to address the issue efficiently in this region.

METHODS

This present study includes observation on surgical profile of 100 patients of intestinal tuberculosis admitted in the Department of General Surgery, Katihar Medical College and Hospital with the features suspicious of intestinal tuberculosis or with the complications of intestinal tuberculosis in the form of obstruction or peritonitis. The study includes the patients who were diagnosed either preoperatively, per operatively or by postoperative histopathological examination as the cases of intestinal tuberculosis. Prior approval from the Institutional Ethics Committee was duly obtained.

Methods of Collection of Data

- Detailed history taking
- Clinical Examination
- Routine Laboratory investigations
- Relevant special investigation
- Conservative management and
- Surgical interventions

RESULTS

The present series includes 100 cases of Intestinal tuberculosis admitted in the Department of Surgery, Katihar Medical College and Hospital. The various features of the disease were noted and drawn up in the following tables.

Maximum incidence of the disease 34% is found in 31 – 40 years of age group, with age group 21-30 years being the second most commonest (30%). Least incidence of 4% was found in age group below 10 years and 61 to 70 years respectively (Table 1).

Table 1: Age distribution of cases.

Age group in years	No. of cases	Percentage
0 – 10	4	4.0%
11 – 20	12	12.0%
21 – 30	30	30.0%
31 – 40	34	34.0%
41 – 50	10	10.0%
51 – 60	6	6.0%
61 – 70	4	4.0%
Total	100	100.0%

There was a slight female preponderance of the disease as compared to male counterparts with ratio being 1.17:1 (Table 2).

Table 2: Showing incidence of the disease in different sexes.

Sex	No. of cases	Percentage
Male	46	46.0%
Female	54	54.0%

Most of the patients were anaemic in the present study (Table 3).

Table 3: Showing Hb level in the patients of intestinal tuberculosis.

Hb level (gm%)	No. of cases	Percentage
Below 6 gm%	0	0%
6 gm	4	4.0%
7 gm	6	6.0%
8 gm	8	8.0%
9 gm	12	12.0%
10 gm	32	32.0%
11 gm	12	12.0%
12 gm	12	12.0%
13 gm	6	6.0%
14 gm	4	4.0%
Above 14 gm	4	4.0%

The above table reveals that the total WBC count was normal in most of the cases. Only 16% of the cases showed increased WBC count (Table 4).

Table 4: Showing total count of WBC in the patients of intestinal tuberculosis.

Total WBC count (per cmm)	No. of cases	Percentage
Below 6000	4	4.0%
6000 – 7000	8	8.0%
7000 – 8000	14	14.0%
8000 – 9000	32	32.0%
9000 – 10000	14	14.0%
10000 – 11000	12	12.0%
11000 – 12000	6	6.0%
Above 12000	10	10.0%

In patients of intestinal tuberculosis, ESR was raised in almost all the cases (Table 5).

Table 5: Showing ESR in different patients.

E.S.R. (mm) (Westergren method)	No. of cases	Percentage
Below 10	2	2.0%
11 – 20	8	8.0%
21 – 30	32	32.0%
31 – 40	30	30.0%
41 – 50	12	12.0%
Above 50	16	16.0%

Among the patients of intestinal tuberculosis, on chest X ray evidence of active Koch's chest was present in 11 cases (Table 6).

Table 6: Chest X-ray findings.

S. No.	Chest X-ray findings	No. of cases	Percentage
1	Pleural effusion	6	6%
2	Cavity	16	16%
3	Healed fibrotic lesions	8	8%
4	Calcified hilar lymphnodes	10	10%
5	No demonstrable sign	40	40%
6	Not done	20	20%

Plain X-ray abdomen in erect posture demonstrated positive finding in 94% of the cases (Table 7).

Barium meal was done in 70 cases out of which positive signs were found in 54 patients (Table 8).

Barium enema x-ray was done in 10 cases only in which 2 cases showed positive results (Table 9).

Ultrasonography of the abdomen was done in 40 cases in which presence of lump was found in 24 cases and 16 cases presented with normal findings (Table 10).

Table 7: Results of Plain X-ray abdomen in erect posture.

S. No.	Plain X-ray abdomen findings (done in erect posture)	No. of cases	Percentage
1	Multiple air fluid level	20	20%
2	Free gas under diaphragm	20	20%
3	Distended coils of Intestine	34	34%
4	Calcified mesenteric lymphnodes	8	8%
5	Hazy appearance	12	12%
6	No obvious finding	6	6%

Table 8: Showing Barium meal follows through x-ray (done in 70 cases).

S. No.	Barium meal finding	No. of cases	Percentage
1	Dilatation and stasis	24	34.29%
2	Filling defect	18	25.71%
3	Pulled up caecum	12	17.14%
4	No demonstrable sign	16	22.86%

Table 9: Barium enema shows positive finding in 2 cases.

S. No.	Results of Barium enema x-ray	No. of cases	Percentage
1	Positive	2	20%
2	Negative	8	80%

Table 10: Showing ultrasound findings in intestinal TB.

S. No.	Ultrasound finding	No. of cases	Percentage
1	Presence of lump	24	24%
2	Normal	16	16%
3	Not done	60	60%

Among the site involved, maximum cases presented with involvement of Ileum (54%) followed by ileocaecal region (32%) while least number of involvement of cases was seen in colon and mesenteric lymph nodes (4%) respectively (Table 11).

Stricture was the most common lesion in cases of intestinal tuberculosis (30%). Hyperplastic lesion was the next common lesion (20%). Tuberculous perforation with peritonitis was present in ten percent of cases. TB

lymphadenitis was present either alone or in combination with other lesions (Table 12).

Table 11: Showing the site of involvement.

S. No.	Site of lesion	No. of cases	Percentage
1.	Stomach and Duodenum	0	0%
2.	Ileum	54	54%
3.	Ileocaecal region	32	32%
4.	Mesenteric lymphnode alongwith involvement of any other site	28	28%
5.	Colonic stricture	4	4%
6.	Jejunum	6	6%
7.	Only mesenteric lymph nodes	4	4%

Table 12: Showing different types of tuberculous lesion.

S. No.	Type of lesion	No. of cases	Percentage
1.	Stricture	30	30%
2.	Hyperplastic	20	20%
3.	Ulcerative	6	6%
4.	Tuberculous perforation	20	20%
5.	Tuberculous lymphadenitis (with or without any of the other lesions)	16	16%
6.	Stricture with omental cake	4	4%
7.	Miliary tuberculosis	8	8%
8.	Plastering of intestine and peritoneum	4	4%

Table 13: Shows various modalities of treatment in intestinal TB.

S. No.	Name of the operation	No. of cases	Percentage
1.	Conservative ileocaecal resection or limited right hemicolectomy	24	24%
2.	Right hemicolectomy	12	12%
3.	Ileotransverse anastomosis	16	16%
4.	Strictureplasty	30	30%
5.	Simple closure of perforation	4	4%
6.	Resection and anastomosis	4	4%
7.	Conservative treatment	10	10%

Surgical management was done in most of the cases with strictureplasty done in maximum cases (30%) followed by conservative ileocaecal resection or limited right hemicolectomy (24%). Closure of perforation and resection and anastomosis was done in 4% of cases. Conservative treatment was done in 10% of cases (Table 13).

Most common operative complication was wound infection (30%) followed by patients with diarrhea (20%). 16% patients developed bronchopulmonary complications. Shock was the least common complication in patients of intestinal TB (2%) (Table 14).

Table 14: Showing different postoperative complications in Intestinal TB patients.

S. No.	Post operative complications	No. of cases	Percentage
1.	Wound infection	30	30%
2.	Diarrhoea	20	20%
3.	Gaping of wound	12	12%
4.	Faecal fistula	12	12%
5.	Anastomotic leak	4	4%
6.	Shock	2	2%
7.	Bronchopulmonary complication	16	16%
8.	Death	4	4%

Majority (50%) of the patients stayed postoperatively were between 8 – 10 days. Six patients stayed for around 1 month with faecal fistula.

Table 15: Showing postoperative stay in hospital.

No. of days	No. of cases	Percentage
0 – 7 days	26	26%
8 – 10 days	50	50%
11 – 14 days	10	10%
15 – 20 days	8	8%
21 – 30 days	6	6%

DISCUSSION

Tuberculosis is a major global burden and in recent years there has been increasing incidence of the disease due to increasing incidence of AIDS in both developed and developing nations and carries significant morbidity and mortality.[7,9]

In present series of work, 100 cases of intestinal tuberculosis have been studied in the Department of Surgery, Katihar Medical College and Hospital.

In our study, it was found that the disease maximally affects younger people (mostly 20 to 40 years of age). This observation is similar with the work of other researchers who reported it to be more common in young people at peak of their productive life and almost all

observed maximum incidence of the disease the second and third decades in these patients.[10,11]

In this review, females were slightly more affected than males, an observation which is in accordance with the results of other workers.[12,13] Other authors have reported male predominance.[5] Some authors report that the disease is more common in males in the western countries while in developing counties the females predominate.[14] It was difficult to find any reasons for this gender differences and there are no literature regarding this which could be found.

Haematological examination of patients with abdominal tuberculosis helped very little in arriving at a diagnosis. Varying degrees of anemia was found in nearly all cases of the series. 62% of the patients were having haemoglobin values upto 10 gm% or less. Wig & Chitakara, Segal et al reported moderate degree of anaemia in their series at abdominal tuberculosis. Anaemia may be attributed to parasitic infestations, low nutritional diet and diseased mucosa leading to defective assimilation of food and interference with the absorption.[15,16]

In 16% cases there was leucocytosis, leucopenia was not present in any case. In differential leucocyte count, polymorphonuclear leucocytosis was found in 8% and eosinophilia in 16% cases but lymphocytosis was present in 64% cases. Lambrianides and Ackroyd found leucocytosis in 7.5% cases with a series of 28 patients of abdominal tuberculosis.[17] Raised E.S.R. was constant feature of almost all the cases of this series. Even Manohar et al found raised E.S.R. in almost all cases.[18]

Radiological examination was one of the important diagnostic aid in the present series. Chest x-ray was carried out in 80 patients out of which 10 cases showed calcified hilar lymphnodes, cavity was found in 16 cases, pleural effusion was in 6 cases and 8 cases showed healed fibrotic lesion while no demonstrable signs were detected in 40 cases. Manohar et al found that chest x-ray revealed positive findings in 40.8% cases. Chandra and Basu explained that associated pulmonary lesion was not a conclusive proof of aetiology.[18,19] In the present series chest radiographs were of little value in arriving at the diagnosis.

Plain x-ray of abdomen was done in 100 cases in erect and supine position out of which multiple air fluid levels were observed in 20 cases distended coils of intestine in 34 cases, gas under diaphragm in 20 cases, calcified mesenteric lymphnodes in 8 cases and hazy appearance of abdomen was found in 12 cases. Similar were the observation of Bhansali who observed fluid levels in 91 cases out of 139 cases with acute presentation. Prakash observed fluid levels in 80 cases and dilated loops of bowel in 40 cases of 223 cases presenting with obstructive features.[20,21] Thus x-ray of abdomen was found to be more useful in acute and subacute obstructive cases as well as in perforation of intestinal tuberculosis.

Ultrasonography of abdomen was done in 40 cases out of which 24 cases had abdominal mass. Ultrasonography could be helpful in diagnosis of abdominal tuberculous lymphadenopathy. In the present series, the ileum was the commonest affected part of the intestine in 54% of cases; ileocaecum was involved in 32% of cases. None showed lesion in the stomach and duodenum. The most common site of GI involvement is the ileocecal region which is involved in 64% of cases of gastrointestinal TB.[22] The terminal ileum is more commonly involved because of the various contributing factors like stasis, presence of abundant lymphoid tissue, increased rate of absorption at this site and closer contact of the bacilli with the mucosa.[23,24]

In this series 10 cases were treated conservatively. The remaining 90 cases underwent definitive operative procedure. Chen WS et al treated 16% cases conservatively and 84% cases with surgical intervention in his series.[25] Intestinal resection were favoured in cases of ileocaecal and large bowel lesions and when feasible a conservative resection was performed. In cases of small intestine lesion, treatment varied with nature and extent of lesions. In hyperplastic lesions leading to tubular strictures or multiple annular lesions in a short segment of bowel, limited resection was preferred in fit patients, and bypass operations was undertaken in cases with acute intestinal obstruction with poor general condition. The diagnosis in each case was made on the operating table and later on confirmed histopathologically. Postoperatively they were given full course of anti-tuberculous drugs.

We had twenty percent cases of perforation in the small bowel. In two cases there was a perforation in the ileum with stricture where stricturoplasty was done along with closure of perforation. In other two cases of perforations in the terminal ileum, both perforations were closed and ileo-transverse by pass was carried out proximal to the site of the perforations. In sixteen cases of solitary perforation in the small bowel (ileum), simple closure of perforation was done. These patients had uneventful recovery and discharged from the hospital with advice to continue the antitubercular drugs. Seventy four patients of abdominal tuberculosis were diagnosed pre-operatively were kept under antituberculous umbrella for at least two weeks. Sixty four patients were properly prepared for surgery and their general health and nutritional status were brought to an acceptable standard before they were accepted for surgery. Various surgeries like right hemicolectomy and resection anastomosis, colostomy was done in these cases.

Overall results of the present series were quite good. Of 100 cases studied upon in this series, post-operative complications were mild except in four cases were various complications like anastomotic leak were

observed, wound sepsis was observed in 30% of cases. In 12% cases were gaping of the wound. 16% cases showed the features of pulmonary complications. Four cases of death were reported. In post-operative period hospital stay was 8-14 days in 60% of cases.

CONCLUSIONS

Intestinal tuberculosis is more common where pulmonary tuberculosis has high incidence. Though gastrointestinal TB usually involves the ileocecal region, it can virtually affect any part of GI tract with non specific symptoms. Various imaging features and radiological signs are useful in making a diagnosis along with a high degree of clinical suspicion. In recent years, molecular and immunological techniques are increasingly used for rapid diagnosis in suspected cases of abdominal TB. Gastrointestinal TB is managed both with antituberculous drugs and surgery. Surgery plays a very important role in acute abdominal catastrophes resulting from adhesions, perforations and strictures.

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