SURGICAL MANAGEMENT OF INTESTINAL TUBERCULOSIS

Ain ul Hadi, Syed Murad Ali Shah, Mian Abdul Hafeez,
Nadim Khan, Mumtaz Khan, Syed Munawar Shah, Adil Bangash

Department of Surgery,
Postgraduate Medical Institute, Lady Reading Hospital, Peshawar

ABSTRACT

Objective: To study the outcome of various surgical procedures performed for intestinal tuberculosis.

Material and Methods: This study was carried out from July 2004 to June 2005 at Lady Reading Hospital, Peshawar on 30 operated patients of intestinal tuberculosis provisionally diagnosed on history, physical examination and x-ray findings. Emergency patients had a short work up including routine hematological, biochemical and chest radiography while those admitted electively had an ESR and upper gastrointestinal barium studies in addition to routine investigations. Final diagnosis was made after histopathology. Different operative procedures were performed according to the available facilities and preoperative condition of the patient.

Results: Study included 10 males and 20 females, ranging in age from 15-60 years with mean of 23.5 years. Twenty Seven patients (90%) were operated in emergency and 3 patients (10%) as elective cases. In 19 cases (63%); ileum was involved while combined ileum and jejunum in 6 cases (20%). Twenty patients (66%) had strictures in small gut. The most commonly performed procedures were resection and end to end anastomosis in the form of segmental resection (11 cases), strictureplasty in 7 cases and loop ileostomy (5 cases). Wound infection was the main post-operative complication (7 cases). The average hospital stay was 10 days. Mortality was 10% (3 cases).

Conclusion: Resection of the diseased segment is the standard procedure to relieve obstruction but in the presence of multiple strictures and limited bowel length, strictureplasty is a better alternative.

Key Words: Intestinal Tuberculosis, Intestinal Obstruction, Resection and Primary Anastomosis, Strictureplasty

INTRODUCTION

Intestinal tuberculosis, a form of abdominal tuberculosis is now rare in western countries. Approximately one third of the world's population is infected and about two million die each year of the disease. Intestinal tuberculosis occurs either as a primary form due to ingestion of contaminated milk or secondary to pulmonary tuberculosis in less than 1% patients. Less than 50% with intestinal lesions have coexistent pulmonary tuberculosis. The worst situation in underdeveloped countries is because of poverty, overcrowding and unhygienic circumstances which are notorious factors for its spread. Intestinal tuberculosis most commonly occurs in the 3rd and 4th decades of life.

In Pakistan, abdomen is commonly involved by tuberculosis. In 27% of patients, ileocaecal region is commonly involved while ascending colon is involved in 4.4% of cases. The clinical manifestations of intestinal tuberculosis are usually those of acute or subacute intestinal obstruction which include pain, vomiting, constipation and abdominal distension. These can be attributed to either mass (tuberculosis) or stricture formation (small gut and ileocaecal region).

The systemic manifestations of the disease include chronic ill health, anorexia, fever, night sweats, dyspepsia and weight loss. Despite advances in drug therapy and better diagnostic facilities, tuberculosis still has been called a 'great mimic', particularly in the abdomen, where its clinical presentations and radiological features resemble a variety of diseases like crohn's disease, ulcerative colitis, carcinoma and malabsorption syndrome.

Traditionally, the treatment has been conservative in the absence of complications. Surgery is indicated with the onset of
CLINICAL PRESENTATIONS

<table>
<thead>
<tr>
<th>Clinical features</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>30</td>
<td>100%</td>
</tr>
<tr>
<td>Weight loss</td>
<td>22</td>
<td>73.3%</td>
</tr>
<tr>
<td>Constipation</td>
<td>20</td>
<td>66.6%</td>
</tr>
<tr>
<td>Vomiting</td>
<td>17</td>
<td>56.6%</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>15</td>
<td>50%</td>
</tr>
<tr>
<td>Low grade fever</td>
<td>12</td>
<td>40%</td>
</tr>
<tr>
<td>Mass right iliac fossa</td>
<td>5</td>
<td>16.6%</td>
</tr>
<tr>
<td>Night sweats</td>
<td>4</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Table 1

complications including small and large gut obstruction, fistula formation, perforations with localized or generalized peritonitis and haemorrhage or failure of medical therapy.

Different surgical options for the relief of obstruction including resection anastomosis, bypass procedures, stricturoplasty and loop ileostomy have been described.

Resection anastomosis is the standard procedure for relieving intestinal obstruction while stricturoplasty, may be superior to resection anastomosis in dealing with patients with recurrent disease who have limited residual bowel length or in patients with multiple strictures.

This study was aimed to study the outcome of various surgical procedures performed for intestinal tuberculosis in our setup.

MATERIAL AND METHODS

This study was conducted at Surgical 'C' unit Post Graduate Institute Lady Reading Hospital Peshawar from July 2004 to June 2005. In this study 30 patients of abdominal tuberculosis, admitted through the emergency and OPD, have been included. The actual figure may be greater as there are three surgical units with equal share to emergency and outdoor clinics. The data was collected on a pro forma and was analyzed manually and the results were evaluated.

After preoperative management, emergency laparotomy was performed in 22 patients (73.3%) while 8 cases (26.7%) with subacute obstruction were initially treated conservatively and later on explored when the obstruction was relieved. The final diagnosis was confirmed through laparotomy findings and then histological confirmation.

The different operative findings noted, include strictures in ileum and jejunum, mesenteric adenitis, peritoneal tubercles, adhesions, mass ileocecal region, ileal perforations and ascites.

The surgical procedures performed, include:

- Resection and end to end anastomosis for ileal strictures.
- Stricturoplasty for multiple strictures in ileum and jejunum.
- Right hemicolectomy and limited right hemicolectomy for ileocecal mass and strictures in terminal ileum.
- Loop ileostomy was performed in cases of ileal perforations.
- Lymph node biopsy was taken for histopathology, in addition to the above mentioned procedures.

Post operative management included intake/output record, I/V fluids and I/V antibiotics. Vital signs were monitored at regular intervals and necessary laboratory investigations like urea, creatinine and serum electrolytes were carried out as needed. Post operatively all patients were prescribed injection Streptomycin and then standard anti-tubercular chemotherapy at the time of discharge for a period of one year.

RESULTS

In this study 30 patients of gut tuberculosis were studied. Twenty seven (90%) were admitted through the emergency while only 3 cases (10%) from OPD. Ten patients (33.3%) were male and 20 (66.7%) were female with a male to female ratio of 1:2. All patients were 15-60 years old with mean age of 23.5 years. They all belonged to a low socioeconomic class. The following observations were made:

Presentation: The most common presenting feature was abdominal pain present in all 30 cases (Table-1). Pain was acute and short lived in 22 patients (73.3%) while in 8 cases, it was subacute and mild to moderate in severity. Weight loss was present in 22 cases (73.3%), constipation in 20 cases (66.7%), vomiting in 17 cases (56.6%). Twelve patients (40%) had low grade fever while night sweats in 4 cases (13.3%).

On examination there was abdominal distension in 15 cases (50%) and a palpable mass in the right iliac fossa in 5 cases (16.7%). Anaemia

<table>
<thead>
<tr>
<th>Site</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ileum alone</td>
<td>19</td>
<td>63.3%</td>
</tr>
<tr>
<td>Ileum + jejunum</td>
<td>6</td>
<td>20%</td>
</tr>
<tr>
<td>Ileocecal region</td>
<td>5</td>
<td>16.6%</td>
</tr>
</tbody>
</table>

Table 2
OPERATIVE FINDINGS

<table>
<thead>
<tr>
<th>Findings</th>
<th>No. of cases (n=30)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strictures</td>
<td>20</td>
<td>66.6%</td>
</tr>
<tr>
<td>- Ileal</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td>- Ileal-Jejunum</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td>Mesenteric adenitis</td>
<td>10</td>
<td>33.3%</td>
</tr>
<tr>
<td>Peritoneal tubercles</td>
<td>7</td>
<td>23.3%</td>
</tr>
<tr>
<td>Abdominal adhesions</td>
<td>6</td>
<td>20%</td>
</tr>
<tr>
<td>Mass ileocaecal region</td>
<td>5</td>
<td>16.6%</td>
</tr>
<tr>
<td>Perforation</td>
<td>5</td>
<td>16.6%</td>
</tr>
<tr>
<td>Ascites</td>
<td>2</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

Table 3

was recorded in 8 cases (26.7%). Abdominal tenderness was noted in 22 cases (73.3%) who presented to emergency either with acute intestinal obstruction or perforation due to ileal perforation.

Eight cases (26.7%) were admitted via emergency/OPD with either subacute obstruction or mild to moderate abdominal pain.

Site of involvement: Ileum alone was the most commonly involved site (especially distal part) in 19 cases (63.3%) which also included 5 cases of ileal perforations. Ileum together with jejunum was involved in 6 cases (20%) (2 strictures in ileum and 4 in jejunum) while ileocaecal region was involved in 5 cases (16.6%). No patient had colonic involvement. (Table-2)?

Operative findings: All 30 patients were explored (Table-3). Twenty two (73.3%) patients presenting with intestinal obstruction or perforation underwent emergency laparotomy after haemodynamic resuscitation while 8 patients (26.7%) were operated on elective operation list. The most common finding was stricture in 20 cases (66.6%) out of which 14 were in ileum alone and 6 in both ileum and jejunum. Mesenteric adenitis was found in 10 cases (33.3%). Other findings include peritoneal tubercles (7 cases), abdominal adhesions (6 cases), mass ileocaecal region (5 cases) and ileal perforation (5 cases). Ascites was present in only 2 cases (6.6%).

Operative procedures: All 30 patients were managed by surgical intervention. Resection anastomosis and Heineke-Mikulicz stricturoplasty was performed in the majority of patients (25 cases-83%). Resection of the distal ileum and end to end anastomosis was done in 11 cases (36.7%) for ileal strictures while stricturoplasty for multiple strictures in the ileum and jejunum was done in 7 cases (23.3%). Other procedures performed included right hemicolectomy for ileocaecal mass in 4 cases (13.3%), limited right hemicolectomy one for ileocaecal mass and two for strictures in the terminal ileum.

Loop ileostomy was done in 5 cases (16.7%) for ileal perforations. Mesenteric lymph nodes were taken for histopathology in 12 cases (40%) in addition to the above mentioned procedures for the confirmation of diagnosis (Table-4).

Post operative complications: Seven patients (23.7%) had wound infection (Table-5). Respiratory tract infection occurred in 5 cases (16.7%). Three out of 30 patients (10%) developed anastomotic leak. Post operative intra abdominal abscess occurred in 2 cases (6.7%) while 2 patients (6.7%) developed wound dehiscence.

The average hospital stay was 10 days (7-13 days). The mortality rate was 10% (3 cases).

Follow up: Post operatively patients were put on standard anti-tubercular chemotherapy for 12 months and were advised to attend the OPD for follow up but only twelve (40%) patients completed chemotherapy and cured while rest of the patients were lost to follow up. Five cases of loop ileostomy were advised to come to OPD after 3 months for closure of their stomas. These were closed with out any morbidity and mortality.

DISCUSSION

Intestinal tuberculosis has been reported in all age groups but most commonly occurs in the 3rd and 4th decade of life. In the present study majority of the patients were aged 15-60 years (mean age 23.5 years) which is also supported by different local studies. The male to female ratio was 1:2 and is the same as reported by various authors in their studies.

The clinical features encountered in this study included abdominal pain, nausea, vomiting, abdominal distension, constipation, weight loss and low grade fever. These presenting features have also been reported in various studies conducted in different parts of the country which mean that abdominal tuberculosis presents with almost similar clinical features and later on similar complications in this part of the world.

Intestinal tuberculosis often presents with vague symptoms which are responsible for the delay in diagnosis and is often diagnosed on the operation table. Patients remain undiagnosed for long periods and remain on symptomatic treatment. Complications like acute intestinal obstruction are common. Therefore all patients with vague abdominal pain and ill health of significant duration should be dealt with high degree of suspicion for tuberculosis. In the present study, 27 patients (90%) had been admitted as emergency cases, showing the high rate of complication of
SURGICAL MANAGEMENT OF INTESTINAL TUBERCULOSIS

OPERATIVE PROCEDURES

<table>
<thead>
<tr>
<th>Procedures</th>
<th>No. of cases</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resection and end to end anastomosis</td>
<td>11</td>
<td>36.7 %</td>
</tr>
<tr>
<td>Right Hemicolectomy</td>
<td>4</td>
<td>13.3 %</td>
</tr>
<tr>
<td>Limited right hemicolectomy</td>
<td>3</td>
<td>10 %</td>
</tr>
<tr>
<td>Strictureplasty</td>
<td>7</td>
<td>23.3 %</td>
</tr>
<tr>
<td>Loop ileostomy</td>
<td>5</td>
<td>16.7 %</td>
</tr>
<tr>
<td>Lymph node biopsy</td>
<td>12</td>
<td>40 %</td>
</tr>
</tbody>
</table>

Table 4

The definitive diagnosis of abdominal tuberculosis requires either a positive bacteriological culture or histological evidence as compared to Montoux Test or radiographic features on contrast studies like mucosal oedema, Stierlin's sign and string sign.1

Laparotomy is the most reliable procedure to fully examine the peritoneal cavity and take biopsy with ease.2,3 In experienced hands, laparoscopy may be the procedure of choice.4 In this series the diagnostic criteria was laparotomy findings and then histological confirmation.

Abdomen is a common site of involvement for tuberculosis in Pakistan5 and has been reported to be the common cause of intestinal obstruction.6 Intestinal tuberculosis can affect any part of the gastrointestinal tract but the more common sites of involvement are the distal ileum and ileocecal region. Occasionally it may involve unusual sites i.e. appendix and the anorectal region.7 In the present study, 63.3% lesions (19 cases) were found in the distal ileum and 20% (6 cases) were both in the ileum and the jejunum. While the ileocecal region was involved in 5 cases (16.6%).

The different operative findings noted peroperatively have been of similar frequency as compared with studies from different parts of the country.1,5,10 These similarities show that intestine is a common site of involvement and result in almost similar complications if not treated in time.

The surgical procedure depends on the site, type and extent of the lesions. Previously patients were treated with palliative bypass. How ever the incidence of recurrent obstruction, blind loop syndrome, fistula and cold abscess was high.11 Effective chemotherapy, antibiotic cover and change in surgical policy have lowered the incidence of these complications.12 More stress is now laid upon resection procedures. Resection and primary anastomosis is the conventional and standard method for relieving intestinal obstruction.13 Strictureplasty, which is a relatively recent procedure, is an effective and safe method of relieving gut obstruction due to tuberculous strictures.14 It might be superior to resection anastomosis in dealing patients with recurrent disease who have limited bowel length or with multiple strictures where resection will lead to short gut syndrome (in case of distal ileum).16-17

It can even be safely performed in cases with coexistent gut perforation.18 If multiple strictures are close together, then limited resection with end to end anastomosis is recommended instead of strictureplasty.19 For ilececal tuberculosis, palliative ileotransverse bypass was the main treatment in the past but now right hemicolectomy is the preferred procedure.23,24 Bypass procedures is only advisable in very advanced lesions.2 In the present series the resection rate was 60% (18 cases) which included segmental resection, right hemicolectomy and limited right hemicolectomy. This figure is higher when compared to 50% of A Zafar25 but less than 75% and 70% reported by Sadiq M and Baluch NA et al respectively.26 The reason for this variation might be the different sites and extent of intestinal involvement by the tuberculous lesions which influence the surgical procedure being performed. Different studies give different values of strictureplasty which may be as low as 6.6% and high up to 72%.5,10 Actually the number of strictureplasties depends on the site and number of strictures present. There is no restriction to the number of strictureplasties7 and in some cases more than 33 have been performed.29 In western literature, the effectiveness and safety of strictureplasty is well documented as compared to our local studies.12,29

In this study 23.3% (7 cases) of strictureplasties performed, do not tally with 6.6% of Baluch et al3 and 72.4% of Sadiq M.5 In fact too many strictures, far away from each other and located in the proximal part of the small intestine, increase the number of strictureplasties and this could be the main reason for this variation from the above mentioned studies.

In cases of faecal peritonitis due to gut perforation and intra abdominal abscess, loop
Ileostomy is a safe procedure than primary anastomosis. In our study ileostomy was brought out in 5 cases (16.7%) which is higher than 6.6% in another local study. The main reason was peritoneal contamination due to ileal perforation and subsequent peritonitis which was an unfavorable condition for resection and anastomosis.

The post operative complications encountered in this study are acceptable when compared to local studies. In fact wound infection, anastomotic leak, intra abdominal abscess and wound dehiscence are attributable to unfavorable circumstances encountered at the time of surgery such as haemodynamically unstable condition of the patient, emergency surgery, unprepared bowel and intra abdominal contamination.

Three patients died postoperatively due to peritonitis. One presented initially with ileal perforation and peritonitis while other two developed anastomotic leak and intra abdominal collections. They were re-explored and then underwent repeated peritoneal lavage but they did not survive. So the overall mortality was 10% (3 cases) which is slightly lower than 13% reported by Ahmad et al. Actually the mortality rate, as observed in various studies, ranges from 6% to 45%.

In most of the studies, a 12 month regimen is recommended. In the current study, all patients were prescribed anti tuberculous therapy for 12 months. Follow up in the OPD showed no significant drug side effects with good response and patients remained asymptomatic with progressive improvement. Patients with delayed complications like adhesive intestinal obstruction were received in the emergency and treated conservatively.

Recently a short course chemotheraphy for a period of six months with favorable results is recommended. Patients with loop ileostomies (5 cases) for ileal perforation were given a time period of 3 months so that the diseased gut could recover and later on be anastomosed safely.

CONCLUSION

In favorable conditions, resection anastomosis is the standard procedure for relieving obstruction. But in cases of multiple strictures and limited residual bowel length, stricturoplasty is a preferred procedure to reduce complication like short gut syndrome and malabsorption.

REFERENCES

17. Agarwal P, Malpure S, Rajashankar S, Dhende


Address for Correspondence:
Dr Ain ul Hadi
Department of Surgery,
Postgraduate Medical Institute,
Lady Reading Hospital,
Peshawar.