SURGICAL MANAGEMENT OF ABDOMINAL TUBERCULOSIS

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ABSTRACT

Objectives: To evaluate various surgical procedures for abdominal tuberculosis.

Material and Methods: This study was conducted in general surgical department of Pakistan Institute of Medical Sciences Islamabad from January 1997 to December 1999. The study included 50 consecutive cases of abdominal tuberculosis diagnosed on tissue histopathology. All these patients underwent laparotomy for management of their abdominal tuberculosis and at the same time tissue was obtained for confirmation of diagnosis.

Results: Laparotomy findings were, adhesions and bands in 25(50%), strictures in 21(42%), isolated enlarged mesenteric lymph nodes in 2(4%) cases and involvement of liver and appendix in one case each. Two or more of the above findings were present in most of the patients. The operative procedures performed were resection and end to end anastomosis in 16 strictures, stricturoplasty in 6, Rt hemicolectomy in one and resection and ileostomy in 3 strictures which were associated with proximal perforations. Lysis of adhesions was possible in 19(38%) cases. Only biopsy was taken in 8(16%) and in 2(4%) appendectomy was performed.

Conclusion: It was concluded that surgery is required for complications of abdominal tuberculosis and at the same time tissue is obtained for diagnosis.

Key words: Abdominal TB, Surgery for TB, Tissue diagnosis.

INTRODUCTION

Tuberculosis is a disease prevalent all over the world. It has been estimated that there are about 1500 million cases of tuberculosis worldwide, with an increase of 3-5 million each year.[1] The increasing incidence in developed countries is mainly due to an increasing incidence of HIV infection.[2] In the developing countries factors like poor case finding and improper treatment results in emergence of multidrug resistant (MDR) tuberculosis.[3]

Tuberculosis lesions have been found in the vertebrae of neolithis man in Europe and Egyptian mummies as early as 3100 B.C.[4] The disease was known to Hippocrates and he called it "pthisis" meaning to shrivel and waste away.[5] The term tuberculosis was first used by Gaspard lausent Bayb (1774-1816).[6]

In 1882 Robert Koch found out the tubercle bacillus as the causative organism of the disease.[7]

Initially the treatment of disease was isolation, fresh air, and good diet.[8]

In mid 20th century and later anti tuberculous drugs like streptomycin, isoniazid, ethambutal, pyrazinamide and rifampicin were found.[9]

Tuberculosis commonly affects lungs but it can affect virtually any organ system in the body.[10,11]

Abdominal tuberculosis presents most commonly with ascites however it can present in fibro adhesive form, like bands, adhesion and plastered abdomen. The intestinal type may present with mass in right iliac fossa or single or multiple strictures usually in the ilum,[12] but appendix and anorectal segment may also be involved.[15,16,17]

Tuberculosis presents both with systemic symptoms such as weight loss, night sweats, fever, malaise and anorexia and with symptoms and signs according to the site of involvement.[12]

The presentation of abdominal tuberculosis is not typical, but common symptoms are abdominal pain or discomfort, weight loss and diarrhoea.[15]

It may present as peritonitis with generalized or loculated ascites, lymph adenitis of mesenteric or retro peritoneal nodes or acute and subacute intestinal obstruction.[18]

The management of abdominal tuberculosis depends upon presentation and site and extent of involvement by the disease. It may be in the form of:

a. Conservative management

b. Diagnostic laparatomy.

c. Surgical management.

Certainly followed by antituberculous chemotherapy.

a. Conservative management

In the absence of complications like obstruction or perforation the treatment is conservative when diagnosis is strongly suspected from other investigations like.

i. Pulmonary tuberculosis with abdominal symptoms.

ii. Typical appearance on barium meal follow through or small bowel enema.[19]

iii. When diagnosis is established through laparascopic biopsy.[12]

iv. Most cases of subacute intestinal obstruction.

Conservative management is in the form of nasogastric aspiration, intravenous fluids and anti tuberculosis therapy.[20] Anti tuberculosis therapy can be started early in injectable[21] or later in oral form.

b. Diagnostic laparatomy

CT abdomen echoguided aspiration cytology and laparoscopic biopsy should be performed to avoid unnecessary laparatomy. However when these facilities or expertise are not available or when diagnosis is not suspected preoperatively, a diagnostic laparotomy may be performed to establish the diagnosis and institute anti tuberculosis therapy.[13]

c. Surgical management

Surgical management is indicated with complication of abdominal tuberculosis[22] which are listed below:

i. Intestinal obstruction

ii. Perforation and generalized peritonitis.

iii. Bleeding

iv. Failure of conservative management

v. Failure of chemotherapy.

The type of surgical procedure depends upon the site of involvement, severity of pathology, condition of the patient and expertise available.[23]

Non complicated ileocacal involvement is treated conservatively however obstructed ileocacal region is managed by limited right hemicotomy[24] right hemicolectomy[25,26,27,28] and bypass (ileotransverse anostomosis).[21]

Strictures which usually occur in small bowel are managed by resection anastomosis[23] (for tight and scarred strictures) and stricturoplasty[24] (for partial non scarred strictures).

In cases of perforation usually with distal stricture, resection and primary repair or resection and ileostomy is performed.

In cases of adhesions, lysis is done, if not possible side to side anastomosis between collapsed and distended segments done, and biopsy is taken, when the abdomen is plastered, and abdomen is closed.

MATERIAL AND METHODS

This prospective descriptive study was conducted in General Surgery Department of Pakistan Institute of Medical Sciences (PIMS) Islamabad over a period of 2 years January 1997 to December 1999 (inclusive)

The study was conducted on 50 consecutive patients of abdominal tuberculosis. The age range was 13 years and above. All these patients presented either to surgical outdoor clinics or casualty department of PIMS. The patients were admitted to surgical wards. A detailed history was obtained and thorough clinical examination performed.

Each patient was investigated with routine investigations i.e. blood complete picture, blood sugar, blood urea, serum creatinine, serum electrolytes and urine analysis for commencement of conservative management. Each patient underwent investigations including ESR, mantoux's test, mycodot test, x-ray chest and abdomen and abdominal ultrasonography.

Some patients had further investigations where indicated including sputum for acid fast baulli (AFB) peritoneal aspirate and other fluids for biochemical and microscopic examination and contrast studies (Barium meal follow through and small bowel enema) to establish the diagnosis.

Conservative measures were started where indicated in the form of:

- Strictly nothing per oral.
- Nasogastric aspiration.
- Rehydration with saline and
- Ringer solution according to the state of dehydration and serum electrolytes.

- Broad spectrum antibiotics i.e. 3rd generation cephalosporin and metroniodzole.
- Maintaining intake and output records.

The patients who improved with conservative management and did not have a laparotomy were excluded from the study. Only those cases were included in the study that underwent laparotomy. Operative findings were recorded, surgical procedure was performed according to the site and extent of involvement and tissue was obtained for histopathology and final diagnosis was established on the basis of tissue histopathology in each and every case.

As it was a descriptive study not much statistics was involved, however where required mean, mode, median, standard deviation and p value were calculated.

RESULTS

Out of 50 patients operated 26(52%) were males and 24(48% were females with male to female ratio of 1.08:1. The age of patients ranged from 13-70 years with mean age of 29 year. The frequency distribution was positively skewed i.e. 35(70%) patients had the age below he mean age of 29 years and 38(76%) patients had age ranging between 13-30 years.

Table 2 shows per head monthly income of patients in Pakistan rupees at that time. The size of family ranged from 4-20 members. The frequency shows mean per head monthly income of 450 rupees with bimodal presentation of 250 and 375, median of 375 and standard deviation of 354.7 rupees. The distribution is positively skewed i.e. large number of scores 38(76%) had per head monthly income below mean income because of 450 rupees. 41(82%) patients had per head monthly income of 100-500 rupees. Patients in group A,B & D have t values of 2.351, 2.594 and 4.3699 respectively corresponding to P value of <.05, which is significant. While those in group C have t value of 2.812 corresponding to P value of >.1 which is non significant.

AGE AND SEX DISTRIBUTION (n = 50)

Age	Male	Female	Total
Below 20 yrs	7	6	13 (26%)
20 – 29 yrs	14	11	25 (50%)
30 – 39 yrs	–	3	3 (6%)
42 – 49 yrs	2	1	3 (6%)
50 yrs & above	3	3	6 (12%)
Total	26 (52%)	24 (48%)	50 (100%)

TABLE – 1

Mean age	=	29 years
Mode	=	25 years
Median	=	25 years
SD	=	14.8%

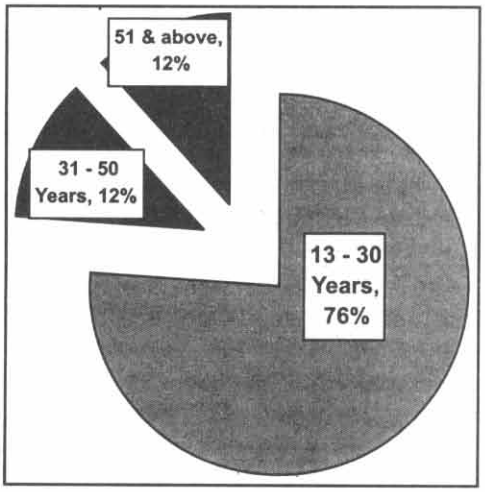

Chart 1

Table 3 shows operative findings of all 50 cases. Adhesions and bands were found in 25(50%) cases. Strictures in 21(42%) isolated enlarged mesenteric lymph nodes in 2(4%) and involvement of liver and appendix in one case each. Two or more of the above findings were present in most of the patients.

PER HEAD MONTHLY INCOME OF THE PATIENTS (n = 50)

Group	Income (Pak Rs.)	No. of pts	% age	t/z value	P value
A	100–500 per month	41	82%	2.351	< .05
B	501–1000 per month	6	12%	2.594	< .05
C	1001–1500 per month	2	4%	2.812	> .1
D	1501–2000 per month	1	2%	4.3699	< .0005

TABLE – 2

Mean income = Rs 450 per month
Median = Rs 375
SD = Rs 354.7
Family size = 4 – 20 persons

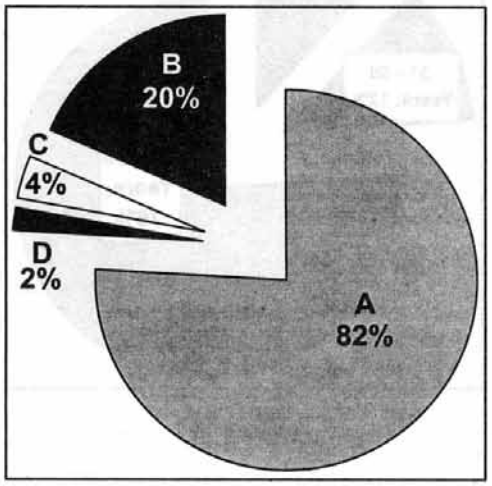

Chart 2

Table 4 shows the surgical procedures performed. In 21 patients 26 strictures were found. Resection of strictures and end to end anastomosis was done in 16 cases. Strictureplasty was done in 6 cases and right hemicolectomy in one case where stricture was very close to ileocaecal junction. In three cases where strictures were associated with proximal perforations resection and ileostomy was performed. Release of adhesions was possible in 19 cases (38%) out of 25. Five of them presented with perforations, in 3 of these cases ileostomy was performed. In other two cases perforation was primarily closed. In one of these the perforation was in proximal jejunum and the other had perforation in middle of small gut, but due to shortened mesenty the loop could not be brought out to the surface. Only biopsy was taken in 8 cases (16%) 6 of these had dense adhesions (plastered adhesion) while two had isolated mesenteric lymph node enlargement with no other pathology. In 2 cases (4%) appendectomy was performed.

A total of 8 patients (16%) had presented with peritonitis due to perforation. Five had perforation and adhesions and 3 had perforation and a distal stricture. 3 patients in this study died all of them had presented with diffuse perinotitis giving an over all mortality figure of 6% while 37.5% among those with diffuse peritonitis.

LAPAROTOMY FINDINGS (n = 50)

Finding	No. of cases	%
Adhesions and bands	25	50%
• With enlarged mesenteric nodes	8	16%
• Plastered abdomen	6	12%
Stricture	21	42%
• Distal ileum	16	32%
• Ileum and jejunum	5	10%
• With enlarged mesenteric nodes	7	14%
Enlarged mesenteric nodes **(Total)**	17	34%
Isolated enlarged mesenteric nodes	2	4%
Appendix involved	1	2%
Liver involved	1	2%

TABLE – 3

OPERATIVE PROCEDURES (n = 50)

Procedure	No. of cases	%age
Strictures	25	42%
• Total strictures	26	
• Resection anastomosis	16	
• Stricturoplasty	6	
• Resection and ileostomy	3	
• Right hemicolectomy	1	
Adhesinolysis	19	38%
Perforations		
• Primary closure		
• Ileostomy	523	10%
Biopsy only		
• With plastered abdomen		
• With enlarged mesenteric nodes	862	16%
Appendectomy	2	4%

TABLE – 4

DISCUSSION

Abdominal tuberculosis is said to be a disease of young adults.[29] Most studies indicate that it most commonly occurs below 30 years of age.[30,31,32]

The same was observed in our study i.e. 76% patients were aged 13-30 years. In this study the age ranged from 13-70 years with mean age of 29 years. 70% of the patients had age below the mean age.

Males slightly predominate the females in our study (M:F=1.08:1). This is supported by other local studies. A study of 40 cases by Taj and Mumtaz from Lady Reading Hospital, Peshawar[21] had male to female ratio of 1.1:1. While another study of 30 cases from Sheikh Zaid Hospital Lahore by Naseer Baluch and Tufail[33] had male to female ratio of 2:1. Some studies had ever higher male incidence as that of 23 patients by Wilfred[15] from Tan Tock Seng Hospital Singapore had a male to female ratio of 2.83:1. However some reports show female predominance.[34]

A comparison with these studies is given in table no 4.

Some workers report that the disease is more common in males in the Western countries while in developing countries female predominate.[35] This may be due to the fact that in many third world countries the females assume a nursing role among the family members.[36] Globally the ratio of male to female tuberculosis patients is 1.5-2.1:1.[37] Each year 70% more smear positive males are diagnosed and notified to WHO. The reason why more males than females are diagnosed to have tuberculosis is not clear. Epidemiological information shows that there are differences between men and women in prevalence of infection, rate of progression from infection to clinical disease and mortality due to tuberculosis.[38] The conclusion of a recent workshop on gender and tuberculosis was that a combination of biological and social factors is responsible for these differences and that knowledge as well as research in this field is insufficient.[39]

SEX INCIDENCE: COMPARISON WITH OTHER STUDIES (n = 50)

Study	No. of patients	Male-female ratio
Taj et al, 1998,[21] LRH Peshawar	40	1.1:1
Naseer et al, 1993,[33] SZH Lahore	30	2:1
Welfred et al, 1989,[15] Singapore	23	2.8:3.1
Jamil et al, 1996,[5] PIMS Islamabad	23	1:1.3
Das & Shukla, 1976,[34] India	182	1:2.6
Manohar et al, 1990,[30] South Africa	145	1:1.4
Current study, 1999 PIMS Islamabad	50	1.08:1

TABLE – 5

LAPAROTOMY FINDINGS: COMPARISON WITH OTHER STUDIES

Study quoted Findings	Muzafar-uddin 1997[23] Pesha-war	Harvat et al 1998[41] USA	Taj et al 1998[21] Pesha-war	Jamil & Zafar 1996[5] Islam-abad	Naseer et al 1993[33] Lahore	Current study 1999 Islam-abad
Adhesions / bands	–	43%	23.5%	61%	66%	50%
Stricture	58%	–	27.5%	17%	60%	42%
Perforation	–	–	12.5%	39%	14%	16%
Isolated enlarged mesenteric nodes	–	8%	2.5%	–	66.7%	4%
Appendix involved	–	1%	–	–	–	2%
Mass abdomen	–	42%	12.5%	13%	–	–

TABLE – 6

Most of our patients were from low socioeconomic group. 82% had per head monthly income of Rs 500 or below. Similar observation is reported by other workers as well.[21,40] Taj et al[21] had 85% patients from low socioeconomic class. The patient in group D had highest per head monthly income with P value of <.0005 which is highly significant. But it would not be advisable to base results on it as there is only one patient in this group.

However much work is required in this regard to know that why tubercle bacillus has affinity to poverty and whether tuberculosis may become more common in high class in future or not, despite of poor people working in this kitchens.

OPERATIVE FINDINGS

On laparatomy is our study 25 patients (50%) had adhesions and / or bands, 21(42%) had strictures in small bowel (most commonly in distal ileum 16). 2 cases (4%) had isolated enlargement of mesenteric lymph nodes and one case each had involvement of appendix and liver. More than one of the above mentioned findings were present in most of the patients but they were grouped as above according to the predominant site of involvement. Adhesions and strictures were mostly associated with mesenteric lymph node enlargement (17 cases 34%). Perforation was present in 8 cases (16%) associated with adhesions in 5 cases and distal strictures in 3 patients. These results are compared with other studies in table no 6.

Strictures are reported to be 66%, ileocaecal mass in 20% and perforation in 14% cases by Naseer Baluch et al.[33] Peritoneal involvement and adhesions are reported to be 61%, strictures in 17%, ileocacal mass in 13% and perforation in 39% of the cases reported by Jamil and Zafar.[5] Muzafaruddin[23] reported strictures in 58% and ileocacal mass in 29% cases. KD Horvath[41] reported peritoneal involvement in 43% ileocacal mass in 42%, mesenteric lymph nodes in 8% and appendix in 1% of the cases. Taj Muhammad et al[21] reported strictures in 27.5% ileocacal mass in 12.5% isolated mesenteric lymph node involvement in 2.5% and perforation in 12.5% of the cases. Our results regarding operative find-

ings in one way or the other are comparable to the above-mentioned studies. However none of our patient had ileocacal mass and a lesser number of patients (8%) presented with perforations. This may be due to early presentation of our patients.

OPERATIVE PROCEDURES

In the current study we had resection of strictures and end to end anostomosis in 16 cases (32%) stricturoplasty in 6 cases (12%) release of adhesions in 19(38%) ileostomy in 6(12%) presenting with ileal perforation, biopsy only in 8(16%) and right hemicalectomy in one case.

Naseer Baluch et al[33] performed resection and end to end anastomosis in 47% cases, right hemicolectomy n 33.2%, ileostomy, stricturoplasty and biopsy only in 6.6% each.

Muzafaruddin[23] performed stricturoplasty in 72.4% cases, resection in 15.5% and bypass ileotrnasverse anastomosis in 12% of the patients.

Taj Muhammad et al[21] performed resection and end to end anastomosis in 27.5%, release of adhesions in 22.5% stricturoplasty and right hemicolectomy in 10% each, ioeotransverse bypass and ileostomy or jejunostomy in 7.5% each.

The operative procedures are adopted according to the area of involvement, stage of the disease, condition of the patient, expertise available and of course preference of the surgeon. Therefore it is difficult to standardize and match these procedures. However less number of right hemicelectomies in our study may be due to the fact that no one of our patient presented with mass in RIF.

Our overall mortality was 6% and 37.5% in those presenting with diffuse peritonitis. The overall mortality is reported to be 6% by Wells et al.[42] 11% by Slicar et al and 8% by Alquorain et al. Similarly mortality among patients with diffuse peritonitis was reported to be 20% by Bhansali et al[16] 42.8% by Fakhar et al[45] and 50% by Hulnick et al.[32]

Therefore our overall mortality figure of 6% is comparable with that of Wells et al (6%) and Al Quorain et al (8%) and our mortality rate of 37.5% in diffuse peritonitis group is less than that reported by Fakhr et al (42.8%) and Hulmick et al (50%) while it is more than that of Bhansali et al (20%).

CONCLUSION

- Surgical procedures should be reserved for complications of the disease.
- Due to variable presentation and involvement, the surgical procedure performed can not be standardized and these may be adopted according to individual patient.

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