Original Article

Frequency of tuberculous intestinal perforation :What to do for perforation

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Objective: To determine the frequency of intestinal tuberculosis in patients of intestinal perforation presenting in surgical emergency and find feasible procedure like primary closure, resection anastomosis or ileostomy for perforation of gut along ATT.

Methodology: This descriptive, quasi experimental cross-sectional study was conducted at Department of Surgery, Bahawal Victoria Hospital, Bahawalpur, Pakistan from Feb 1, 2017 to February 30, 2018. It included 106 patients with intestinal perforation with age 12-70 years. Patients with history of typhoid, duodenal perforation and traumatic perforation were excluded. Patients were further scrutinized on clinical diagnosis and laparotomy was performed and diagnosis confirmed on histopathology. Procedures like primary closure, resection anastomosis or ileostomy done on set criteria. Anti-tuberculous drugs were started to all patients after histopathology report. Complications and mortality were noted.

Results: Out of 106 patients, 58 (54.72%) were between 36 to 50 years of age. Mean age was 36.90±8.16 years. 69 (65.09%) were male and 37 (34.91%) were females with male to female ratio of 1.9:1. A total of 19 (17.92%) patients had perforation. out of these 19, primary closure was done in 4 (21.05%), resection anastomosis in 7 (36.84) and ileostomy in 8 (42.1%). Procedural failure was noted in 2 (28.57%) patients of resection anastomosis out of 7. Complications were noted in 7 (36.84%) and mortality in 2 (10.52%) out of 19 patients.

Conclusion: Frequency of intestinal tuberculosis in patients of intestinal perforation is quite high (17.92%) in our region. We recommend primary closure of small perforation less than 1 cm on pliable, non-edematous gut, with no contamination with stable patient, ileostomy in inflamed gut having large or multiple perforation, stricture jumbled mass, unstable patients and resection anastomosis only for gut in which after resection of area of perforation or stricture gut is pliable non-edematous with no contamination in a stable patient. (Rawal Med J 201;43:593-597)

Keywords: Intestinal tuberculosis, intestinal perforation, emergency.

INTRODUCTION

Tuberculosis (TB) is the most important communicable disease worldwide as declared by WHO.[1] Thirty three percent of the world population is infected with TB.[2] It is a major cause of mortality in the developing countries.[3] The incidence is again on the rise in developed countries, due to immunocompromised situation.[4] Second to lung, abdomen is most commonly involved region.[5] Abdominal viscera, peritoneum or GIT may be involved.[6] Ulcerative, hypertrophic and ulcero-hypertrophic forms may present in GIT.[7] It has to be differentiated from malignancy, ulcerative colitis or inflammatory masses.[8]

It may present as sub acute obstruction or stricture[8] having frequency of 16%.[7] Although intestinal perforation is low due to fibrosis, it is associated with high morbidity and mortality. In recent years, intestinal perforation is again on rise.[7] This study was done to determine frequency of intestinal perforation due to TB and its complications and to find feasible procedure primary closure, resection anastomosis or ileostomy for perforation along ATT.

METHODOLOGY

This descriptive, quasi experimental cross-sectional study was conducted at Department of Surgery, Bahawal Victoria Hospital (BVH), Bahawalpur from February 1, 2017 to February 28, 2018 according to calculated sample size of 106 at 95%

confidence level. Non-probability, consecutive sampling was used. All patients of 12-70 years who presented at emergency department BVH with peritonitis and diagnosed as intestinal perforation were included in study. Patients with trauma or DU perforation were excluded. Further, the patients were scrutinized for tuberculous perforation on detailed clinical history, examination. Investigations including ESR, chest X ray, X-ray abdomen were done. In no patient CT was done, as diagnosis was clinical and confirmed on exploratory laparotomy, by taking biopsy confirmed on histopathology. The same team operated all patients under-supervision of same consultant.

After approval from the ethical review committee, 106 patients were selected. Informed written consent was taken from each patient. Laparotomy was performed in all patients and tissue was sent for histopathology. All the data were recorded along with demographic profile of the patients on pre-designed performa. Standard antitberculous chemotherapy was started to all patients on weight basis.

For the procedure adapted, the patients were divided into three groups. For the perforations less than 1 cm, no inflamed area around, no stricture, little contamination, no jumbled mass, primary closure of perforation was done. Second group with perforation more than I cm, or multiple close together, inflamed area less than 1 foot, little contamination, no jumbled mass, resection anastomosis was done. Third group with large or multiple perforation, large area of inflamed, gut, strictures, large contamination, jumbled mass, ileostomy/colostomy was done.

Data were analyzed using SPSS version 16.0. Stratification was done for age and gender and post-stratification chi square was applied. P-value $\leq$0.05 was taken as significant.

RESULTS

Age ranged from 12 to 70 years with mean age of 36.90±8.16years (Table 1). Out of the 106 patients, 69 (65.09%) were male and 37 (34.91%) were females with male to female ratio of 1.9:1. Frequency of intestinal TB in patients of intestinal perforation was found in 19 17.92% (19 patients). There was no significant difference between different age groups (Table 2) and also showed no significant difference between male and female (Table 3).

Table. Age distribution of patients (n=106).

Age (in years)	Number	%
12-40	48	45.28
41-70	58	54.72
Total	106	100.0

Mean 36.90 ± 8.16 years

Table 2. Stratification with respect to Age groups.

Age (years)	Intestinal tuberculosis		p-value
	Yes	No	
12-40	11 (22.92%)	37 (77.08%)	**0.223**
41-70	08 (13.79%)	50 (86.21%)	

Table 3. Stratification with respect to gender.

Gender	Intestinal tuberculosis		p-value
	Yes	No	
Male	14 (20.29%)	55 (79.71%)	**0.386**
Female	05 (13.51%)	32 (86.49%)	

Table 4. Procedures for Perforation.

Site of perforation	Jejunum	Ileum	Colon	Re-do Ostomy/ Failure of procedure	P value
Primary Closure n=4	1(33.33%)	3(21.42%)	0	0	0.676
Resection Anastomosis n=7	2(66.67%)	5(35.71%)	0	2 (28.57%)	0.04
Ostomy n=8	0	6(42.85%)	2 (100%)	0	0.487
Total n=19	3	14	2	2 (10.52%)	-

Table 5. Mortality of procedures.

	Anastomotic leak	Wound Dehiscence	Persistent Peritonitis	Intestinal obstruction	Septi-cemia	Ileostomy stoma Dehiscence	Total	P value Chie-sq test
Primary closure n= 4	0	0	1 (25%)	0	0)	0	1(25%)	0.604
Resection anastomosis n=7	2(28.57%)	1 (14.28%)	0)	1 (14.28%)	0	0	4(57.14%)	0.015
ostomy n=8	0	0	0	0	1(12.50%)	1(12.50)	2(25%)	0.533
Total 19	2(10.52%)	1(5.26%)	1(5.26%)	1 (5.26%)	1(5.26%)	1(5.26%)	7(36.84%)	-

Procedures used are shown in Table 4 and complications Table 5. Of the 7 resection anastomosis, in 5 the gut was pliable, non-edematous non thickened so closure by Kocker method was done , in 3 gut was rigid, edematous, thickened, Halsted method was used but 2 of 3 leaked in Halsted method.

DISCUSSION

Tuberculosis is a leading cause of death in Pakistan[10] and Intestinal TB is common.[11] In our study, frequency of intestinal TB in patients of intestinal perforation was found in 17.92%. In a study by Sheikh et al,[8] frequency was 16%.[8] In another study,[12] mean age of the age range was 20-50 years with mean age 33.88±9.82 years. Significantly higher rate of intestinal TB was noted in malnourished patients.[12] Other than intestinal perforation, 15% patients presented with intestinal obstruction due to TB in a study.[13] A study from Pakistan reported 11% cases of intestinal obstruction due to TB.[14] Involvement of mesenteric vasculature by granulomatous inflammation was commonly associated with ulceration and perforation.

Among complications of intestinal TB, intestinal perforations are the most feared one and are associated with high mortality. Free tubercular perforation is very rare and accounts for only 1-10% of abdominal TB. It has a poor prognosis with mortality rate higher than 30%.[15] Free perforation in intestinal TB usually occurs in the terminal ileum, like our patients and it can occur even in patients during ATT. In 90% of the cases, perforation is solitary, but multiple perforations occur in 10-40% of patients and are associated with a poor prognosis, therefore immediate operative intervention is indicated.[16] Early diagnosis is the key factor and ATT remains main stay of treatment after the surgery.[17]

There is no standard guidelines regarding surgical treatment of perforation of gut as it is relatively rare in developed countries so rarely now the procedures are discussed in literature but we are facing it.[18] On the set criteria, out of 19 primary closure, 4 (21.05%) resection anastomosis, 7 (36.84) and ileostomy 8 (42.1%) was done. In a study out of 718 patients of acute abdomen, out of 70 cases of abdominal TB, in 64 surgery was done and preferred methods were resection with ileostomy 19 (29.7%), ileocolostomy 17 (26.6%), ileostomy without resection 3(4.7%), resection anastomosis 6 (9.3%) perforation closure 2(3.1%), stricturoplasty 4 (6.25%) appendectomy 7 (11%), biopsy only in 6 (9.4%).[19] In a retrospective study of 13 years of 119 patients, declaring resection anastomosis in 40 (33.6%) better than primary closure in 17 (14.2%) drain placement 4 (3.3%)but lost rest 57 patients as method not described.[18]

In our study, procedural failure was noted in 2 (28.57%) patients of resection anastomosis out of 7. It was anastomosis on turgid, edematous intestine that failed. It is evident that gut should be pliable, non-edematous for anastomosis. Two patients out of 3 in which anastomosis leaked were anastomosed by Halsted method, but it cannot be attributed to method because anastomosis was done in rigid

edematous gut. In rest 4, Kocker method was used but gut was pliable and non-edematous.

Complications noted in our study were in 7 (36.84%) out of 19. It is quite a high complication rate. Complication rate of 13.30-40% vs 6.6-30% has been mentioned favoring ileostomy vs primary closure.[20]

Regarding mortality, 2 (10.52%) out of 19 expired. It appears that it is systemic disease spread at presentation that is cause of mortality. In a retrospective study of 13 years, overall mortality of 15.2% was noted out of 119 patients, declaring mortality of 41% in primary closure and 21% in resection anastomosis.[18] Aston and Decosta have also recommended resection anastomosis with mortality of 30%.[21] Mukhopadhyay et al reported 3 patients of anastomosis leak out of 64 lead to multi-organ failure and death.[19]

CONCLUSION

Frequency of intestinal tuberculosis in patients of intestinal perforation is quite high in the region. We recommend primary closure of small perforation less than 1 cm on pliable, non-edematous gut, with no contamination with stable patient, ileostomy in inflamed gut having large or multiple perforation, stricture jumbled mass, unstable patients and Resection anastomosis only for gut in which after resection of area of perforation or stricture gut is pliable non-edematous with no contamination in a stable patients with anti-tuberculous therapy.

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