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Original Research Article

Pattern of ileal perforation in our experience; a tertiary care centre in Eastern India

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ABSTRACT

Background: Perforation peritonitis is one of the common acute abdomen admitted in emergency department for emergency laparotomy. Pattern and aetiology of ileal perforation varies from developed and developing countries where infectious diseases are still highly prevalent.
Methods: This was a prospective study conducted over 3 years period in Indira Gandhi Institute of Medical Sciences, Patna. Total 118 patients were enrolled for this study after confirmation of ileal perforation on exploratory laparotomy.
Results: Out of total 118 patients 52 cases (44%) were in traumatic, typhoid causes perforation in 86% (57 cases) tuberculosis in 14% (9 cases) and 66 cases (56%) were in non-traumatic group, penetrating injury is more common than blunt trauma abdomen. Males are more commonly affected than females in among all cases of ileal perforation. Patients with traumatic ileal perforation seek early medical attention as most of the patients (44%) admitted within 12 hours after accident where as in case of non-traumatic cases 53% patients admitted after 2 days. Most common operative procedure performed is Loop ileostomy in case of non-traumatic perforation (49%) and Resection and anastomosis preferred in traumatic perforation (63%). Mortality rate is about 20% in all types of perforation.
Conclusions: In developing countries like India typhoid perforation is still most common cause of ileal perforation. Loop ileostomy is more preferred procedure in infectious cases but resection and anastomosis in case of traumatic perforation in our institute.

Keywords: Ileal Perforation, Non-traumatic perforation, Typhoid, Tuberculosis

INTRODUCTION

Ileal perforation is common acute abdomen problem admitted in surgical emergencies. It is vital to diagnose early as the prognosis depends on accurate diagnosis and its management. Worldwide incidence of typhoid fever is decreasing but still this is endemic in India.[1]

Ileal perforation may be categorised as traumatic and non- traumatic. Etiological factors associated with non-traumatic perforations are typhoid fever, intestinal tuberculosis, round worm infestation, malignant tumours of small intestine etc.[2] Traumatic perforation may be in the form of blunt abdominal trauma or penetrating injury causing perforation of ileum, may or may not associated with injury to other abdominal viscera.[3]

Advanced medical facilities have changed the etiological patterns of non-traumatic ileal perforation but still non-traumatic perforation is commoner than traumatic perforation in developing countries. But in western countries the typhoid and tuberculous perforation is rare. In developed countries most common aetiology remains vascular strangulation, foreign bodies ingestion,

diverticular diseases of small bowel, Meckel's diverticulum, crohns's disease, malignant disease, post radiation and iatrogenic.[4] The peritonitis due to typhoid in such seriously ill patient is rapidly fatal unless diagnosed and treated promptly.

Abdominal tuberculosis is still common disease today in India and this mainly affects terminal ileum and ileocecal junction. Abdominal tuberculosis usually presents as intestinal obstruction, perforation and may cause deleterious effect if not promptly managed.[5]

Trauma has been implicated as one of the common cause of bowel perforation since ancient times. Small bowel injury may be due to either blunt trauma or penetrating injury. Ileum and jejunum are the most common intraabdominal organs affecting due to penetrating injuies.[6]

Small bowel perforation due to penetrating injury of the abdomen is more common than blunt abdomen, as the use of fire arm injury has increased a lot in civilian practice. Road traffic accident is the common cause of blunt trauma abdomen. The reported incidence of bowel and mesenteric injuries after blunt abdominal trauma is approximately 1.3%.[7]

METHODS

This was a prospective study conducted over period of 3 years in Indira Gandhi institute of medical sciences, Patna after getting approval from institutional ethical committee.

Total 118 patients were enrolled in this study in which ileal perforation was suspected clinically and finding on x-ray abdomen and confirmed on exploratory laparotomy includes traumatic as well as non -traumatic.

Inclusion criteria

- Patients with both traumatic and non-traumatic ileal perforation, confirmed on laparotomy and gave consent to join this study.
- Patients ≥11 years of age.

Exclusion criteria

- Patients below 10 years of age
- Peritonitis other than ileal perforation like gastric, duodenal, large bowel.
- Patients not willing to give consent for this study.

All patients underwent exploratory laparotomy; edge biopsy was taken from perforated margin of non-traumatic cases and sent for histopathological examination, specific treatment as per investigation report given to each patient and follow up done for the period of 6 months.

During the stay in the hospital all the data collected after taking proper history, physical examination, intraoperative findings, operative procedure performed, and post-operative complications including any mortality. Data tabulated and analysed.

RESULTS

In the present study total 118 cases of ileal perforation was taken into consideration, among that 52 cases (44%) were in traumatic and rest 66 cases (56%) were in non-traumatic group (Table 1).

Table 1: Aetiological assessment of all cases of ileal perforation.

Aetiology	No. of patients	Percentage
Traumatic	52	44
Non-Traumatic	66	56
Total	118	100

Among non-traumatic group 57 cases (86%) were due to typhoid and 9 cases (14%) due to tuberculosis (Table 2).

Table 2: Aetiological assessment of all cases of non-traumatic ileal perforation.

Aetiology	No. of patients	Percentage
Typhoid	57	86
Tuberculosis	9	14
Total	66	100

In traumatic group ileal perforation was seen mainly due to penetrating injury 27 cases (52%) and 25 cases (48%) due to blunt trauma (Table 3).

Table 3: Aetiological assessment of all cases of traumatic ileal perforation.

Aetiology Traumatic	Mode of injury	No. of patients	Percentage
Blunt	Fall from height	8	15
	Road traffic accident	14	27
	Blow (assault)	3	6
Penetrating	Fire arm injury	16	31
	Stab injury	11	21
Total		52	100

Total 57 cases of typhoid 45 (79%) males and 12 (21%) females were affected and the commonest age group affected is 3rd decade (21-30 years) of life in both males and females.

In tuberculous group most common age group involved is 31-40 years with incidence in male patient is 78% and in female patient 22% (Table 4).

Among total 52 patients with traumatic perforation, incidence in male patients seen in 35(67%) and in female 17(33%) with maximum age group involved is 31-40 years (Table 5).

Table 4: The age and sex incidence of non-traumatic perforation (typhoid and tuberculosis).

Age (year)	Typhoid						Tuberculosis					
	Male		Female		Total		Male		Female		Total	
	Cases No.	%	Cases No.	%	Cases No.	%	Cases No.	%	Cases No.	%	Cases No.	%
0-10	-	-	-	-	-	-	-	-	-	-	-	-
11-20	9	16	2	4	11	20	-	-	-	-	-	-
21-30	13	23	6	10	19	33	1	11	-	-	1	11
31-40	11	19	3	5	14	24	3	34	1	11	4	45
41-50	7	12	1	2	8	14	2	22	1	11	3	33
51-60	3	5	-	-	3	5	1	11	-	-	1	11
61-70	2	4	-	-	2	4	-	-	-	-	-	-
Total	45	79	12	21	57	100	7	78	2	22	9	100

Table 5: The age and sex incidence of traumatic perforation of ileum.

Age (year)	Male	%	Female	%	Total	%
0-10	-	-	-	-	-	-
11-20	5	10	1	2	6	12
21-30	6	12	3	6	9	18
31-40	11	21	7	13	18	34
41-50	9	17	5	10	14	27
51-60	3	5	1	2	4	7
61-70	1	2	-	-	1	2
Total	35	67	17	33	52	100

Regarding hospital admission, most of the patient (77%) admitted within 24 hour of accident but in case of non-traumatic perforation, they seek medical care after 2 days (Table 6).

Most common operative procedure followed in case of non-traumatic is loop ileostomy, 28 patients (49%) in typhoid and 4 cases (45%) in tuberculous because of associated with multiple perforation. In traumatic perforation resection and anastomosis was done in 33 cases (63%) followed by simple closure (Table 7).

Table 6: The time interval between starting of symptoms and admission in emergency in cases of both traumatic and non-traumatic perforation.

	Non-traumatic		Traumatic	
Time in hours	Total no. of cases	%	Total no. of cases	%
0-12	5	8	23	44
12-24	6	9	17	33
24-48	14	21	8	15
48-72	35	53	3	6
>72	6	9	1	2
Total	66	100	52	100

Table 7: Types of operative procedure performed in different cases of ileal perforation.

Operative procedure	Typhoid		Tuberculosis		Traumatic	
	No. of cases	%	No. of cases	%	No. of cases	%
Simple closure	8	14	2	22	15	29
Resection and anastomosis	7	12	-	-	33	63
Simple closure with bypass (ileotransvese anastomosis)	14	25	3	33	4	8
Loop ileostomy	28	49	4	45	-	-
Total	57	100	9	100	52	100

Most common complication associated with different surgical procedures was wound sepsis in about 70% in all groups followed by partial wound dehiscence. Complication rate was higher in typhoid perforation with more cases of toxaemia and septicaemia (Table 8).

Table 8: Complication rate of all types of ileal perforation.

Complications	Typhoid		Tuberculosis		Traumatic	
	No. of patients	%	No. of patients	%	No. of patients	%
Wound sepsis	42	73	7	77	36	69
Partial wound dehiscence	28	49	5	55	23	44
Burst abdomen	8	14	1	11	12	23
Faecal fistula	7	12	1	11	9	17
Pneumonia	11	19	2	22	10	19
Toxaemia	6	11	-	-	-	-
Septicaemia	4	7	1	11	6	12

Overall mortality rate in this study was 19% with maximum number of deaths seen in typhoid patients. Death rate was also high in traumatic perforation 9 patients (17%) due to presence of associated injury (Table 9).

Table 9: Overall mortality rate in cases of different types of perforations.

Aetiology of perforation	Total no. of cases	No. of death	%
Typhoid	57	12	21
Tuberculosis	9	2	22
Traumatic	52	9	17
Total	118	23	19

DISCUSSION

Perforation peritonitis is common cases admitted in hospital require emergency surgical intervention.[8] Aetiology of ileal perforation varies from developed and developing nations. In India common non-traumatic causes are typhoid and abdominal tuberculosis.[9] In our study typhoid perforation is found as the most common cause of ileal perforation. Hollow viscus perforation due to blunt trauma abdomen is not common, but if there small bowel perforation is the most common.[10] Penetrating trauma abdomen like stab wound, fire arm injuries most commonly affects small bowel.[11] In this study non-traumatic ileal perforation is more common than traumatic causes and males in 3rd decade of life more commonly affected than females as in previous study shown by Jhobta RS et al.[12] This may be due to males are indulged in more outdoor activities than females in developing nations. Traumatic perforation is common in males 4th decade of life and common causes are road traffic accident, fire arm injury in our study and similar observation is done by Faria et al.[13] Traumatic perforation usually occurs at the stiff site and small bowel particularly ileum is the common site for pefoation.[14] Prognosis of these cases mainly depends on early diagnosis and timely intervention. There are many controversies regarding operative procedure of choice and depends on premorbid conditions of the patient, size and number of perforation, associated intraperitoneal contamination.[15] Authors performed loop ileostomy in about half cases in non-traumatic perforation and resection and anastomosis in traumatic perforation. Most of the patient in our setup seeks medical attention after 2 days of symptom appearance in case of non-traumatic peritonitis which leads to severe peritonitis and increase of complication rate of bowel anastomosis. Among the entire postoperative complication faecal fistula is the most dreaded complication due to primary bowel anastomosis with occurrence rate found to be about 12% in previous study.[16] Wound sepsis is the most common complication observed in our study. Post-operative complications and mortality rate are found to be high in patients admitted after the long elapsed time after the occurrence of symptoms and the hospital admission and similar observation found by previous study.[17]

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