

Original Research Article

Analysis of enteric ileal perforation: a prospective study in a tertiary care hospital

Prabu Shankar S.*, Sudarshan P. B., Sundaravadanan B. S.

Department of General Surgery, Saveetha Medical College and Hospital, Saveetha University, Kanchipuram, Tamil Nadu, India

Received: 25 January 2017

Revised: 27 January 2017

Accepted: 01 February 2017

***Correspondence:**

Dr. Prabu Shankar S.,

E-mail: prabushankardr@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Intestinal perforation as a complication of enteric fever is still a serious problem in developing nations. Enteric ileal perforation is associated with high morbidity and mortality and many patients present in a severe toxic state because of delay in diagnosis and late presentation to hospital.

Methods: A prospective study was conducted to assess the prognostic factors in enteric ileal perforation. Observations were made regarding symptoms, signs, duration of illness and presentation of patients to the hospital after acute episode. Per operative findings regarding site, size and number of perforations were recorded. Operative procedures were simple closure, ileostomy, or resection of diseased segment including right hemicolectomy done for associated caecal perforation and entero enteric anastomosis. Post-operative complications like wound infection, wound dehiscence, residual abscess, faecal fistula and deaths were documented.

Results: There were 50 enteric ileal perforation cases with a age range of 13-80 with a mean age of 30.7. Male: female ratio was 11: 1. 85% of patients presented within 48 hrs of onset of symptoms of perforation and there is significant mortality in patients who presented more than 48 hrs of onset of symptoms of perforation (57.14%). Mortality was high in multiple perforation group (40%) and also higher incidences of fecal fistula and wound dehiscence.

Conclusions: Age and sex have no bearing on the outcome. Perforation presentation interval, delay in surgery, number of perforations are important prognostic markers for typhoid ileal perforation.

Keywords: Enteric, Ileal perforation, Terminal ileal, Typhoid

INTRODUCTION

Intestinal perforation is a serious complication in developing country like India. Perforation of terminal ileum is a cause for obscure peritonitis and many patients present in a severe toxic state because of delay in diagnosis and late presentation to hospital.¹ Typhoid perforation is the commonest cause of ileal perforation in our country.² Apart from enteric fever, other causes for terminal ileal perforations are tuberculosis, malignancy, radiation/ischemic enteritis, crohn's disease, trauma.³

METHODS

The present study was a prospective study of 50 cases of enteric ileal perforation from May 2007- November 2009. All cases were admitted in Casualty as acute abdomen cases with features of peritonitis. Thorough history was taken and detailed clinical examination was done as per proforma. Observations were made regarding the symptoms, duration of illness, presentation of patients after the acute episode. The investigations carried out were complete blood count, ESR, renal function tests,

electrolytes, chest and abdominal X-rays, and abdominal ultrasound. Widal test was done pre-operatively only in cases with high suspicion of enteric fever otherwise it was done postoperatively if there was typical findings of enteric perforation. All patients were resuscitated and electrolyte abnormalities were corrected prior to surgery. Observations were made regarding symptoms, signs, duration of illness and presentation of patients to the hospital after acute episode. Exploratory laparotomy were done and per operative findings regarding site, size and number of perforations were recorded.

Peritoneal soiling was quantitatively measured and findings of typhoid ileal perforation like perforation along the anti-mesenteric border, gross terminal ileitis and hypertrophied Peyer's patches were noted. Operative procedures were simple closure, ileostomy, or resection of diseased segment including right hemicolectomy done for associated cecal perforation and entero enteric anastomosis.

Thorough peritoneal toileting done and drain placed. Postoperatively patients were started on intravenous fluids, antibiotics, analgesics, oral fluids were started after return of bowel sounds, drainage tubes were removed according to amount of drainage and their timings were recorded. Post-operative complications like wound infection, wound dehiscence, residual abscess, faecal fistula and deaths were documented.

RESULTS

Our series of 50 patients were ranging from 13 years to 80 years of age with a mean age of 30.7 (Table 1). The most common age group involved was 20-29, occupying 32% of the total.

Table 1: Correlation of age distribution and mortality.

Age (years)	No. of patients	No. of deaths
13-19	10	1
20-29	16	-
30-39	12	1
40-49	6	1
50-59	5	1
>60	1	-

Table 2: Signs at the time of presentation.

Signs	No. of patients
Distension	31
Fever (>101° F)	30
Tenderness	49
Guarding/rigidity	48
Obliteration of liver dullness	18
Bowel sounds	
Normal	7
Absent	30
Increased	13

Male: female ratio was 11: 1 in our study with a total of 46 males and 4 females (Figure 1). All the patients had lower abdominal pain with a mean duration of five days. Pain abdomen seemed to be the predominant symptom which brought them to the hospital (Figure 2). Fever was present in 44 pts and almost 66% of the patients in our study had presented with perforation in third week of fever or later (Figure 3). Tenderness, guarding and rigidity were the predominant signs in 98% of patients and were more in the right iliac fossa (Table 2).

Table 3: Perforation presentation interval.

Duration (hours)	No. of patients	No. of deaths	Mortality (%)
<12	3	-	57.14
12 - 24	24	-	
24 - 48	16	-	
48 - 96	4	2	
>96	3	2	

Table 4: Surgical procedures.

Procedure	No. of patients	No. of deaths
Simple closure in two layers	24	0
Resection and entero enteric anastomosis	20	2
Ileostomy	6	2

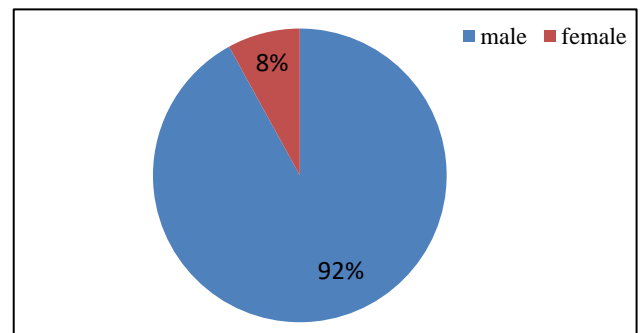


Figure 1: Sex distribution

85% of patients presented within 48 hours of onset of symptoms of perforation and there is significant mortality in patients who presented more than 48 hours of onset of symptoms of perforation (57.14%) (Table 3).

Air under diaphragm was present only in 36 pts (72%) and other non-specific features like localized ileus in right iliac fossa, dilated small bowel loops and ground glass appearance were seen in almost all cases in plain x-ray chest and abdomen. Blood culture was positive in 17 pts and widal was positive in 33 patients. Leucocytosis was present in only in 8 patients. The site of perforation was always within 60 cms from ileocaecal valve in our study. Single perforation (Figure 4) was present in 39 patients, two perforations were present in 6 pts and

multiple perforations (Figure 5) were present in 5 patients.

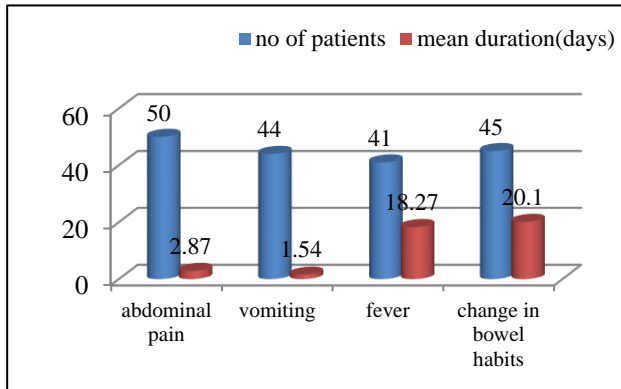


Figure 2: Presenting symptoms and mean duration.

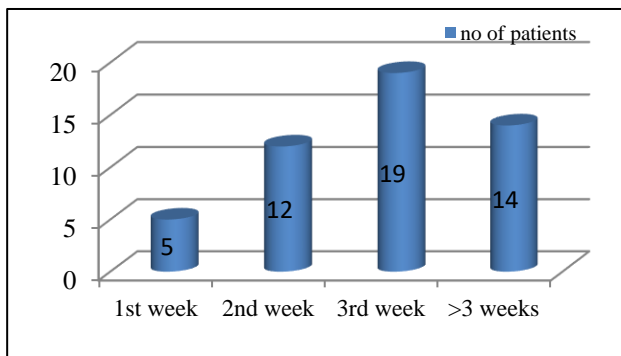


Figure 3: Timing of perforation.



Figure 4: Single ileal perforation.

Mortality was high in multiple perforation group (40%) (Figure 6) and also higher incidences of fecal fistula and wound dehiscence. Simple closure in two layers was done in 24 patients (48%), resection with end to end anastomosis was done in 20 patients. Ileostomy was done in 6 patients (Table 4).

Postoperatively patients were followed up for complications. Four patients (8%) died as they had irreversible septic shock. The most common complication

was wound infection (24%). Other complications were wound dehiscence (14%), residual abscess (12%) and faecal fistula (8%) (Figure 7).



Figure 5: Multiple ileal perforations.

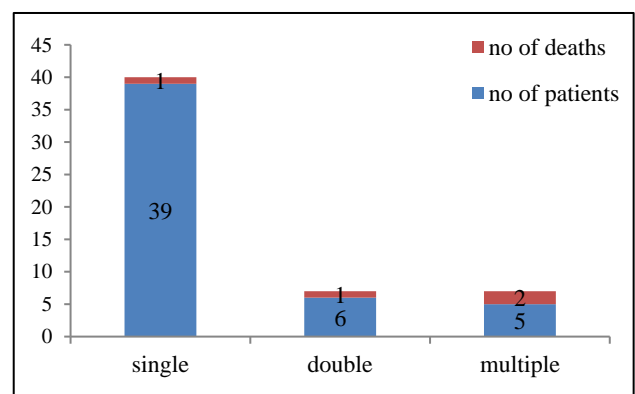


Figure 6: No of perforations and mortality.

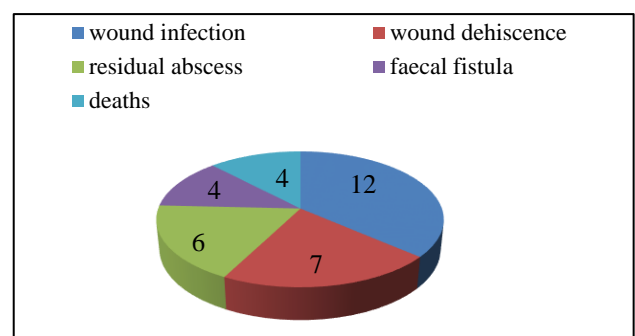


Figure 7: Post-operative complications.

DISCUSSION

Perforation of typhoid ulcer is one of the lethal complication of typhoid fever. Age of patients presenting with typhoid perforations is highly variable. 20-29 was the most common age group with mean age of 30.74. Males were predominantly affected.⁴ Age and sex were not predictors of outcome since mortality was evenly distributed. Abdominal pain is a consistent symptom with vomiting being the least tolerated symptom.⁴ Change in bowel frequency was ignored as a symptom. It is

convincingly proved that perforation occurs in the third week of fever.⁵ Guarding, rigidity and tenderness were the predominant signs and they were more in the right iliac fossa. Bowel sounds were equivocal. Most of the cases had normal or a low leucocyte count. Only few pts had leucocytosis. In most of the cases diagnosis was arrived based upon clinical features with supporting evidences of X-rays, USG abdomen and blood investigations. Perforation presentation interval is an important predictor of the outcome. In our study mortality of those who presented after 48 hours was high and no mortality in those who presented early. Adequate preoperative resuscitation with correction of fluid and electrolyte derangement forms the centre stage of treatment. Early laparotomy not at the compromise of the above policy seems to offer the greatest advantage to the patient. Perforation in the ileum occurs in the anti-mesenteric border within 60 cms from ileo caecal junction.

Single perforation is more common than multiple perforations. Patients with multiple perforations suffered serious complications like wound dehiscence, fecal fistula and death. Variations in operative procedures do not affect the mortality. Type of surgery performed was based on the general condition of the patient, number and location of the perforation and the degree of fecal contamination.⁶ Simple closure of the perforation was the most commonly performed procedure. Resection and entero enteric anastomosis was done in cases of multiple perforations and if the general condition of the patient was stable and ileostomy was done after resection if there was heavy contamination and general condition of the patient was not stable.⁷

In this study most common postoperative complication was wound infection and wound dehiscence.⁸ Faecal fistula was the most dreaded complication with dehiscence of primary repair or anastomotic site for which relaparotomy was done and ileostomy done after thorough wash.

CONCLUSION

Ileal perforation is one of the commonest cause of peritonitis and typhoid ileal perforation should be suspected by primary care physicians and referred at appropriate time so that postoperative complications, morbidity and mortality can be reduced. Age and sex have no bearing on the outcome. Perforation presentation interval, delay in surgery, number of perforations are

important prognostic markers for typhoid ileal perforation.

ACKNOWLEDGEMENTS

Author would like to thank Prof. S. Deivanayagam and Prof. N. Chakravarthi for their valuable guidance throughout this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Karmacharya B, Sharma VK. Results of typhoid perforation management: Our experience in Bir Hospital, Nepal. Kathmandu Univ Med J. 2006;4:22-4.
2. Wani RA, Parray FQ, Bhat NA, Wani MA, Bhat TH, Farzana F. Nontraumatic terminal ileal perforation. World J Emerg Surg. 2006;1:7.
3. Gupta S, Kaushik R. Peritonitis- the Eastern experience. World J Emerg Surg. 2006;1:13.
4. Ansari AG, Naqvi SQ, Ghumro AA, Jamali AH, Talpur AA. Management of typhoid ileal perforation: a surgical experience of 44 cases. Gomal J Med Sci. 2009;7:27-30.
5. Hosoglu S, Aldemir M, Akalin S, Geyik MF, Tacyildiz IH, Loeb M. Risk factors for enteric perforation in patients with typhoid fever. Am J Epidemiol. 2004;160:46-50.
6. Yeboah OM. Postoperative complications after surgery for typhoid ileal perforation in adults in Kumasi. West Afr J Med. 2007;26:32-6.
7. Chowdri NA, Wani NA, Malik AA, Fowzia F. A comparative study of simple closure versus resection with end to side ileo transverse anastomosis in non-traumatic terminal ileal perforation. Tropical Doctor. 2004;34(4):233-34.
8. Ansari AG, Naqvi SQ, Ghumro AA, Jamali AH, Talpur AA. Management of typhoid ileal perforation: a surgical experience of 44 cases. Gomal J Med Sci. 2009;7:27-30.

Cite this article as: Shankar PS, Sudarshan PB, Sundaravadanan BS. Analysis of enteric ileal perforation: a prospective study in a tertiary care hospital. Int Surg J 2017;4:899-902.