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Original Research Article

Gastro intestinal perforations: an audit from a tertiary care teaching hospital, Mysore, India

Shashikumar H. B., Madhu B. S., Shyama S.*

Department of General Surgery, Mysore Medical College and Research Institute, Mysore, Karnataka, India

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***Correspondence:**
Dr. Shyama S.,
E-mail: sshyamas09@gmail.com

ABSTRACT

Background: Peritonitis secondary to hollow viscus perforation is one of the most frequently encountered surgical emergencies in India. The objective of this study was to study the demographic and clinical profile of gastro intestinal perforations and surgical procedures done for the same in a tertiary care teaching hospital.
Methods: This study was performed on 46 cases of hollow viscus perforation admitted in K. R. Hospital from January to June 2018. The presenting symptoms, age and sex profile, risk factors, site of perforation, the surgical procedure they underwent, post-operative complications were assessed and analyzed.
Results: The most common age group affected was 21-30 years out of which 89.1 % were males. Gastric perforations were the most common type (56.5%) and jejunal perforations were the least common (6.5%). Abdominal pain was the main presenting symptom in all the cases. Fever was found to be a significant history in cases of ileal perforation (p=0.001) as was history of trauma in cases of jejunal perforation (p=0.001). Guarding, rigidity and air under the diaphragm were seen consistently in most cases. Graham's patch repair was the most common surgical procedure performed. Ileostomy was the most common surgery done for ileal perforations. Wound infections were the most common post-operative complication observed and death occurred in 13% of cases mostly due to sepsis and cardio pulmonary complications.
Conclusions: This study showed an increased incidence of perforation in younger age group which is alarming. The rise in the frequency of gastric perforations points towards an unhealthy lifestyle and dietary habits.

Keywords: Gastro intestinal perforations, Graham's patch repair

INTRODUCTION

Peritonitis secondary to hollow viscus perforation is one of the most frequently encountered surgical emergencies in India. In contrast to western countries upper abdominal perforations are more common in India and the spectrum of etiology of perforation continues to be different from that of western countries.[1] Despite advances in surgical techniques, antimicrobial therapy and intensive care support, management of peritonitis continues to be highly demanding, difficult and complex.[2] Perforation is the second most common complication of peptic ulcer disease.

Gastrointestinal tract perforations can occur for various causes such as infective etiology, peptic ulcer, inflammatory disease, blunt or penetrating trauma, iatrogenic factors, foreign body or a neoplasm, requiring an early recognition and, often, urgent surgical intervention. Infectious diseases like typhoid, tuberculosis and HIV infection are the common causes in the developing countries whereas non-infectious

conditions like malignancy and diverticulitis are more common in developed nations.[3] Numerous drugs have adverse effect on the mucosa and increase the risk of perforation, particularly NSAIDS, corticosteroids, opioids and calcium channel blockers.[4] Injury to the intestine and perforation has been found in 5-16% of patients undergoing laparotomy after blunt abdominal trauma.[5]Patients frequently have free air visible on the chest radiograph and have localized peritoneal signs on examination. Patients with more widespread spillage had diffuse peritonitis. Surgery is almost always indicated for ulcer perforation, although occasionally nonsurgical treatment can be used in the stable patient without peritonitis in whom radiologic studies document a sealed perforation. Emergency surgery and aggressive supportive care is of utmost important to reduce the mortality. The age, comorbid conditions, site of perforation, degree of contamination and delay in presentation are the factors which affects the postoperative outcome.

This study was aimed at creating a database on the epidemiology, symptomatology and pattern of management of perforation peritonitis cases in a tertiary care hospital and also to determine the morbidity and mortality associated with perforation peritonitis.

METHODS

A cross sectional study was conducted on 46 cases of hollow viscus perforation admitted in the department of General Surgery, Krishna Rajendra Hospital which was attached to Mysore Medical College and research Institute, Mysore, Karnataka from 1stJanuary to 30th June 2018.No age limit was set for the study. Informed consent was obtained from all the patients. Study was approved by institutional ethics committee.

Variables including age of the patient, gender, symptoms at presentation, type of hollow viscus perforation, site of perforation, associated comorbidities, type of procedure underwent, and immediate post-operative complications were studied.

Data was analyzed using Epi info version 7. Frequency was calculated and the same was depicted as tables and graphs.

RESULTS

Perforation peritonitis showed a bimodal pattern of distribution with maximum cases in the 21-30 age group and a second peak at 51-60 age group. The increasing incidence of the pathology in the younger age group is alarming (Table 1). Gender distribution of the subjects were shown in Figure 1. 89.1% of the study population were males.

The most common site of perforation was found to be the prepyloric region (56.5%) followed by the first part of duodenum. These type 2 and type 3 gastric ulcers are associated with increased acid secretions. Among the small intestinal perforations ileal perforations accounted for 17.4% cases and jejunal perforations 6.5%. Ileal perforations were more commonly found in the terminal ileum (Table 2).

Table 1: Age distribution of the study population.

Age group (years)	Frequency	Percentage
<20	2	4.3
21-30	13	28.3
31-40	8	17.4
41-50	7	15.2
51-60	10	21.7
>60	6	13.0
Total	46	100

Table 2: Distribution of pattern of hollow viscus perforation.

Anatomical site of perforation	Frequency	Percentage
Pre-pyloric	26	56.5
Duodenum	9	19.6
Ileum	8	17.4
Jejunum	3	6.5
Total	46	100

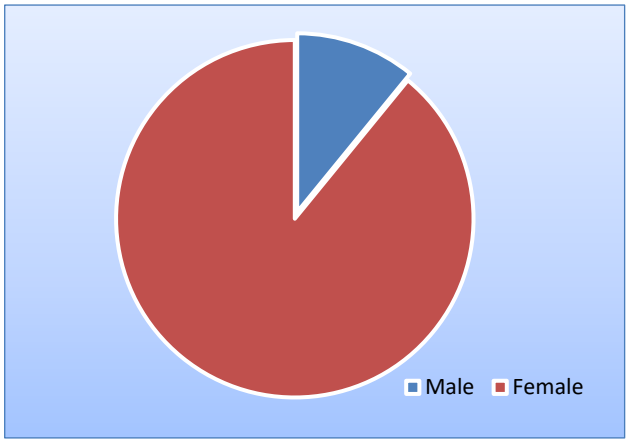

Figure 1: Gender distribution.

In all age groups prepyloric perforations were the most common. Age distribution showed that there was no statistical difference between site of perforation and various age groups (Figure 2).

The most common and consistent symptom was abdominal pain. Vomiting and abdominal distension was present in 73.9% and 52.2% respectively. History of fever was present in 5 patients and was most commonly seen in ileal perforation cases. History of trauma was significantly correlating with jejunal perforation (Table 3).

Table 3: Distribution of symptoms at presentation.

Symptoms	Frequency	Percentage
Abdominal pain	46	100
Vomiting	34	73.9
Fever	5	10.9
Abdominal distension	24	52.2
Constipation	11	23.9
Trauma	3	6.5

Table 4: Distribution of various clinical signs at presentation.

Signs	Frequency	Percentage
Tachycardia	14	30.4
Hypotension	14	30.4
Dehydration	16	34.8
Guarding	41	89.1
Absent bowel sounds	40	87

Diffuse guarding and rigidity was present in about 89.1% of cases and absent bowel sounds in 87% cases. Air under the diaphragm was seen in 93.5% cases. Early features of sepsis like tachycardia, hypotension and acute kidney injury was seen in 30.4% and 43.5% cases (Table 4).

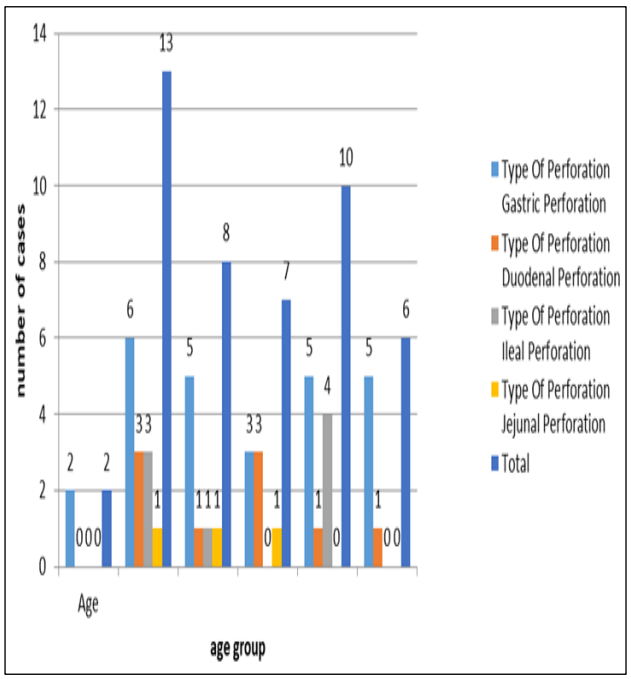

Figure 2: Distribution by age and type of perforation

Table 5: Pattern of surgical procedures among the study population.

		Type of Perforation				
		Pre-pyloric	Duodenal	Ileal	Jejunal	Total
Surgery	Graham's patch repair	26	9	0	0	35
	Primary closure	0	0	1	1	2
	Primary closure with omental patch	0	0	1	1	2
	Ileostomy	0	0	6	1	6
	Resection anastomosis	0	0	0	1	1
Total		26	9	8	3	46

Table 6: Distribution of post-operative complications.

Complications	Frequency	Percentage
Wound infection	30	65.2
Wound dehiscence	8	17.4
Bile leak	2	4.3
Intra-abdominal abscess	6	13
Cardiopulmonary complications	9	19.6
Sepsis	7	15.2
Mortality	6	13

All cases of gastric and duodenal perforations underwent Graham's patch repair. Out of the 8 cases of ileal perforation one was treated with primary closure, one patient underwent primary closure with omental patch repair and 6 cases underwent ileostomy.

Among the jejunal perforation cases one was repaired by primary suturing one patient underwent omental patch grafting and one with multiple perforations underwent resection anastomosis (Table 5).

Wound infection was the most common postoperative complication observed and was seen in 65.2% cases and 17.4 % cases later developed wound dehiscence. These cases were managed with regular dressing appropriate antibiotic coverage and secondary suturing. 2 cases developed biliary leak, and both improved on conservative management. 19.6% cases developed cardio pulmonary complications and needed intensive care and

respiratory support. The mortality rate was found to be 13% and was most commonly due to sepsis and cardio pulmonary complications (Table 6).

DISCUSSION

In this study most of the patients were of 21-30 age group followed by 51-60 group. 89% of the study group were found to be males. These results were consistent with the previous studies in which the mean age was 36.8 years and 84% were male patients.[2]

Pre-pyloric perforation was the most common type of perforation encountered and constituted 56.5% in contrast to previous studies which showed more prevalence of duodenal perforations.[6] The second most common site was duodenal followed by ileal. Jejunal perforations were the rarest (6.5%). This is in contrast to the data available from the developed countries, where distal gastro-intestinal tract perforations are common.[7,8]

Abdominal pain was the most common presenting complaint and was present in 100% of the patients. The second most common symptom was vomiting followed by abdominal distension. 23.9% patients complained of constipation. Fever was present in 10.9% patients and history of trauma was there in 6.5% patients. Other studies by Jhobta et al and Bose at al also showed an increased incidence of gastrointestinal perforations due to blunt trauma (9% and 21% respectively).[2,11] The small intestine was the most commonly injured in blunt injury in the other studies also.[9,10] Guarding and rigidity was the most consistent physical finding and was present in 89% cases. Air under the diaphragm was present in 93.5% cases. Features of early sepsis like tachycardia, hypotension and acute kidney injury were also present in majority of patients. Similar clinical presentation was seen in other studies also.[12,13] Graham's patch repair was done in all cases of gastric and duodenal perforations. 6 out of 8 cases of ileal perforations underwent ileostomy; one case was primarily repaired, and omental patch closure was done in the other one.

Primary closure was done in one case of jejunal perforation while omental patch closure was performed in another. Resection anastomosis was the surgical procedure adapted in the case which had multiple jejunal perforations. Wound infections was found to be the most common post-operative complication, followed by cardio pulmonary complications and sepsis as observed in other similar studies.[11,12,14] Mortality was found to be 13% and was most commonly due to cardio pulmonary complications and sepsis and this was comparable with other published series.[2]

CONCLUSION

This study showed an increased incidence of perforation in younger age group which is alarming. The rise in the frequency of pre-pyloric perforations points towards an unhealthy lifestyle and dietary habits.

The presenting symptoms and signs varied with the type of perforation, the age, duration and severity of peritonitis. Surgical intervention is necessary in almost all cases and the type of surgery has to be individualized. Post-operative complications are to be expected and managed accordingly to reduce the mortality.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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