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General Surgery

A Prospective study on clinical evaluation of Perforative peritonitis

KEY WORDS: peritonitis, perforation , management

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ABSTRACT

Perforative peritonitis is the most common surgical emergency in India. The aim of the study is to highlight the presentation of perforative peritonitis. In this study, a total of 174 cases of perforative peritonitis were included. Duodenal perforation (63.8%) was the most common cause of perforative peritonitis. Appendicular perforation was the second most common condition. Our aim of study is also to know the demographic pattern of patients presenting with perforative peritonitis , to find out the relative frequency of anatomical site of perforation , relative frequency of causes resulting in hollow viscus perforation and its management.

INTRODUCTION

Peritonitis is inflammation of the peritoneum. It can be 'primary' , in which pure infection with streptococcal or pneumococcal or heamophilus bacteria occur or 'secondary' resulting from contamination of the peritoneum with the contents of hollow viscus it surrounds.[1]The diagnosis is made by clinical signs and symptoms and aided by some radiological methods like Plain Radiograph (X-ray), Ultrasound or Computed tomography scan. Among all causes of peritonitis , perforated peptic ulcer is the commonest cause in our country .Treatment is mainly surgery , aiming at closing the perforation so that to stop further contamination and to clean the peritoneal cavity by peritoneal lavage. [2]

AIMS AND OBJECTIVES

- 1) To know the demographic pattern and clinical features of patients presenting with perforative peritonitis.
- 2) To know the usefulness of radiograph in diagnosing perforative peritonitis.
- 3) To find out the relative frequency of anatomical site of perforation.
- 4) To find out the relative frequency of causes resulting in hollow viscus perforation.

MATERIALS AND METHODS

This study comprised of 174 cases of perforations admitted in surgical ward of B.S.M. College and Hospital, which is a primary referral government Hospital of west bangal, india in a period of January 2014 to December 2014 . Patients selected for this study were those who gets admitted at emergency ward with features of perforative peritonitis and after exploratory laparotomy found to have perforation at anywhere in gastro-intestinal tract between the age group of 12 to 80 yrs. Initial resuscitation was done in all patients and all of them were given a broad spectrum antibiotic like 3rd generation cephalosporine and i.v infusion of metronidazole for anaerobic coverage pre-operatively. All patients were subjected to a straight x-ray abdomen in erect posture showing both domes of diaphragm, or chest x-ray PA view. Each patient were subjected to emergency laparotomy via standard midline incision and after detection of pathology were dealt with accordingly. Each patients were followed up upto 3 months post-operatively to know about any delayed complications. A total of 174 patients were included in the study.

RESULTS

Among total 174 no. of patients 143 were male and 31 were female .

Table no.-1(n-174) - Distribution by sex

Sex	No.	%
Male	143	82.2
Female	31	17.8

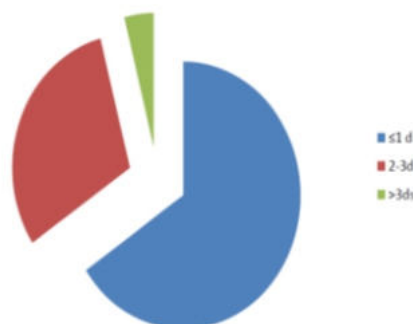
Mean age was 40.1yrs. Most common age group was more than 50 yrs of age, second most common being 20-29 yrs of age.

Table no. 2(n-174) - Distribution by age

Age group	No. of patients	Percentag
12-19 yrs	18	10.3
20-29 yrs	35	20.1
30-39 yrs	33	19
40-49 yrs	29	16.7
50 yrs or more	59	33.9
Total	174	100

Most common symptom was pain abdomen. Onset was acute. Most of the patients presented with in 24 hrs of onset of pain and that includes 65.5% of the patients. Only 4% of patients admitted after 3 days of onset of pain.

Figure - 1 - Distribution of samples according to duration of pain



68.4% of patients presented with diffuse abdominal pain followed by pain in the right iliac fossa. Only 9 patients presented

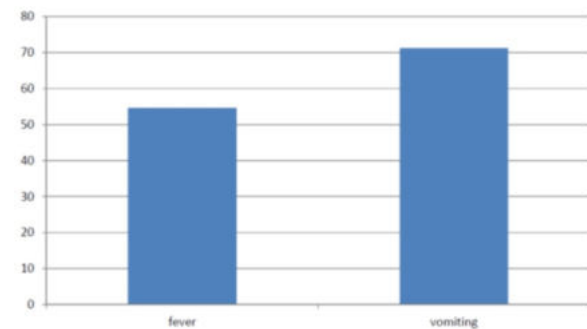
with right hypochondrial pain.

Figure - 2 - Distribution of samples according to site of pain



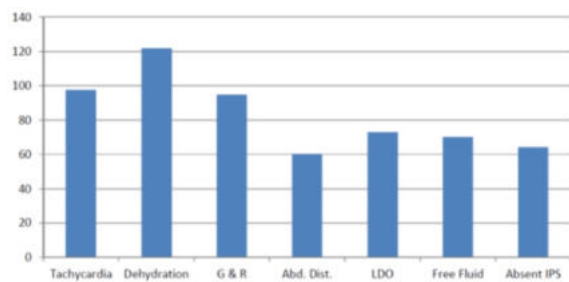
Apart from pain abdomen patients may present with various symptoms among which fever and vomiting are two most prevalent ones in our sample. Among our patients with perforative peritonitis 54.6% of patients had fever and 71.3% patients had vomiting.

Bar chart -1- Frequency of other prevalent symptoms in patients of perforation



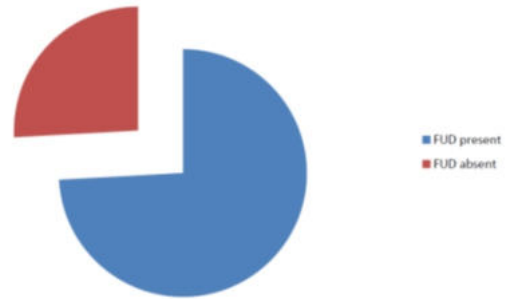
Most common sign that was found in almost all patients was tachycardia(i.e PR >100/min) ,which was present in 97.7% of patients, followed by guarding and rigidity of the abdomen ,which was found in 94.8% of patients. Dehydration was prevalent in 70.1% of patients. Obliteration of liver dullness was found in 72.9% of patients. Absence of intestinal peristaltic sound was found in 112 i.e 64.4% of patients.

Bar chart -2- Frequency of different signs in patients of perforation



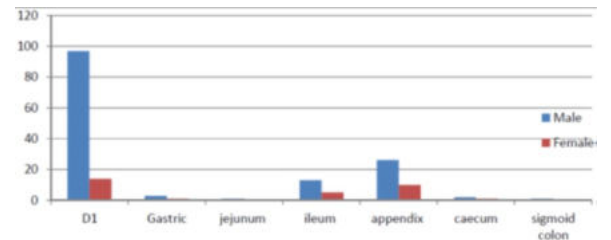
Every patient suspected to have a perforative peritonitis was subjected to a Straight X-ray abdomen in erect posture or a Chest X-ray PA view. Most of our considered patients found to have free gas under the diaphragm on X-ray. 74.1% of our patients had free gas under the diaphragm

Figure - 3 - Frequency of presence of free gas under the Diaphragm



1st part of duodenum found to be the commonest site of hollow viscous perforation, found in 63.8% of patients , followed by appendicular(20.7%) and ileal(10.3%) perforation respectively. Regarding sex distribution of different sites of perforation , duodenal and other major sites of perforation has a strong male predominance. A sex ratio i.e Male:Female of 6.9:1 found in duodenal perforation.

Bar chart -3- Frequency of site of perforation along with their distribution in different sexes



Most common cause of hollow viscous perforation was peptic ulcer disease, accounting for 113 cases (65% of cases). 2nd commonest case found was acute appendicitis. Among 18 ileal perforation patients typhoid ulcer and tubercular ulcer found in 9 patients(i.e 5.2%) each.

Figure - 4 - Distribution of patients according to different causes of perforation



All patients of duodenal and gastric perforation were subjected to omental plug repair, (with biopsy from ulcer edge in gastric perforations). All patient of appendicular perforation undergone emergency appendectomy making it 2nd commonest procedure. Ileal perforations were treated by simple repair or repair with proximal stoma and resection anastomosis.

89 of all 174 patients recovered uneventfully but among rest 85 patients with complications lower respiratory tract infection was the commonest found in 25.3% of patients followed by surgical site infection in 20.1% of cases. 3 patients developed entero cutaneous fistula and 8 patients developed sepsis in post operative period. Total 6 patients died constituting a mortality rate of 3.4%.

DISCUSSION

Regarding sex distribution, in this present study 82.2% of patients were male and 17.8% were female. Similar results by Nitin

Agarwal et al 4 published in 2007 in journal of tropical gastroenterology found Male: Female ratio of 2:1.

Mean age of patients in this study was 40.1 years which was more or less comparable with the study by Nitin Agarwal B et al⁴ the mean age of patients was 34.2 years. Regarding age at presentation, most prevalent age group to be affected by perforative peritonitis was more than 50 yrs (33.9% of all cases). That means the disease has a high propensity for higher age group.³

Regarding symptoms pain abdomen was present in all patients of perforative peritonitis, where most of the patients i.e 65.5% of the cases presented with in 24 hrs of onset of pain, where as in the study by Vinod Kumar B et al⁶ in 2014 only 42% of cases presented with in 24 hrs. of onset of pain. Diffuse abdominal was present in 68.4% of patients followed by pain in right iliac fossa which was found in 14.4% of cases (mainly in cases of appendicular perforation). Other significant symptoms were vomiting and fever present in 71.3% and 54.6% of patients respectively. Where as in the study by Rajender Singh Jhobta et al⁵, we can find 59% of cases in their study had vomiting and fever was present only in 25% of patients. Regarding significant signs almost all of the patients had tachycardia (97.7%) and guarding and rigidity (localized / generalized) (94.8%). Abdominal distension found in 60.3% of cases and obliteration of liver dullness was found in 72.9% of cases. Absence of peristaltic sound in a case of perforative peritonitis is due to paralytic ileus which was found in 64.4% of cases in this present series. If we look into the case series by Rajender Singh Jhobta et al we can see abdominal distension was found in 44% of cases where as only 23% of cases had tachycardia.

All of the patients were subjected to a chest X-ray or straight X-ray abdomen in erect posture showing both domes of diaphragm and free gas under diaphragm was present in 74.1% of patients. It was not so useful in detection of appendicular perforation, but for rest it was a valuable tool for evaluation. In the study conducted by Rajender Singh Jhobta et al pneumoperitoneum on chest X-ray was found in 67% of cases⁵.

In the present series most common site of perforation was 1st part of duodenum which accounted for 63.8% of cases, followed by appendicular perforation that was found in 20.7% of cases. Ileal perforation was found in 18 (ie 10.3%) of cases. In other similar studies most of them found gastroduodenal perforation to be the commonest site. Rajender Singh jhobta et al¹⁰¹ found 57% of cases to be due to duodenal perforation, next most common site being ileum constituting 15% of total cases. Appendicular perforation was 3rd most common cause occurring in 12% of all 504 patients. In the study by Vinod Kumar B¹⁰⁷ et al duodenum found to be the commonest site involved (involved in 29.3% of cases).

Most common surgical procedure performed in our series was omental plug repair for stomach and duodenal perforation. For gastric perforation biopsy was taken from ulcer margin (perforated) and sent for histopathology. Next most common procedure was emergency appendectomy done for appendicular perforation. Different procedures were done only for ileal perforation. Among 18 ileal perforations 5 were treated by simple repair, 5 by repair with proximal stoma and rest 8 were treated by resection and anastomosis. In a study called ' perforative peritonitis and developing world ' by Rajandeep Singh Bali et al. published in ISRN surgery in 2014 at Maulana Azad Medical College and Lok Nayak Hospital New Delhi, India, 6th the most common procedure performed was omental patch repair, done for 175 of total 400 patients followed by repair with proximal stoma for 90 patients and 3rd most common procedure was appendectomy done for 68 patients.

The most common cause of perforation in our study was peptic ulcer disease found in 65% of patients, followed by acute appendicitis found in 21.3% of cases. Among all cases of ileal perforation 50% found to be due to typhoid ulcer perforation.² of our patients had gastric carcinoma and 2 had perforation due to colonic carcinoma.

In the study by Rajender Singh Jhobta et al⁵ most common cause was acid peptic disorder found in almost 59% of cases followed by acute appendicitis. In their study almost 41% of all ileal perforations found to be due to typhoid fever.

CONCLUSION

Perforative peritonitis is most common in elderly population (above 50 years) and it commonly affects male population. Abdominal pain with guarding and rigidity is almost always a universal finding. The diagnosis is mainly clinical but aided by presence of pneumoperitoneum in chest or abdominal radiograph. Duodenal ulcer perforation is the most common cause and 1st part of duodenum is the most common site. Laparotomy with closure of perforation with omental plug is the commonest procedure.

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