

ORIGINAL RESEARCH

Assessment of cases of bacterial peritonitis due to gastro intestinal perforations

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ABSTRACT

Background: Peritonitis denotes inflammation of the peritoneal cavity and this may be caused by bacteria or by irritation of extravasated secretions. The present study was conducted to assess cases of bacterial peritonitis due to gastro intestinal perforations. **Materials & Methods:** 30 patients of acute bacterial peritonitis secondary to gastro intestinal tract perforations of both genders were included. At surgery, the pathology was identified and treated accordingly. Mortality rate was recorded according to Manheim's Peritonitis Index. **Results:** Out of 30 patients, males were 17 and females were 13. Cases were of gastric perforation in 5, duodenal in 8, jejunal in 4, gall bladder in 3, ileal in 2, appendicular in 6 and colonic in 2. The difference was significant ($P < 0.05$). There was 1 appendicular and 1 ileal death in patients with score 15-25 and 1 appendicular death in patient with score >26 . The difference was significant ($P < 0.05$). **Conclusion:** Maximum deaths were seen in appendicular perforation according to manheim's score.

Key words: appendicular perforation, Manheim's Peritonitis Index, Peritonitis

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INTRODUCTION

Gastrointestinal perforation is a common abdominal emergency and is still a dreaded condition with high mortality.¹ Perforation of any part of the intestine is life threatening, which is most commonly managed by general surgeons. The vast majority of perforations are duodenal and gastric in origin, precipitated by alcohol and drugs. Malignancy and traumatic perforations are on the rise.²

Peritonitis denotes inflammation of the peritoneal cavity and this may be caused by bacteria or by irritation of extravasated secretions. It is synonymous with systemic inflammatory response that occurs after trigger of any inflammation. Intra-abdominal infection refers to peritonitis caused by bacteria. It is regarded as a localized equivalent of systemic sepsis.³

Numerous organisms are well known for their innate ability to produce intra-abdominal infections in humans.⁴ Common faecal pathogens include aerobic coliform bacteria, anaerobic Bacteroides species, aerobic and anaerobic Streptococci, Enterococci and Clostridia species. In contrast, other organisms like Propionibacteria rarely produce disease. Despite the massive contamination that occurs with faecal

peritonitis, within 24 to 48 hours, only a few isolates are identifiable in peritoneal.⁵

A number of substances found in conjunction with peritoneal infection may be detrimental to host defences and jeopardize the success of eradicating infection.^{6,7} Adjuvants enhance the virulence of bacteria by interference with host defence mechanisms, whether mechanical or cellular. Blood components, haemoglobin, and ferrous iron are the most studied, till date.⁸ The present study was conducted to assess cases of bacterial peritonitis due to gastro intestinal perforations.

MATERIALS & METHODS

The present study comprised of 30 patients of acute bacterial peritonitis secondary to gastro intestinal tract perforations of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. After adequate resuscitation and assessment, patients underwent exploratory laparotomy. At surgery, the pathology was identified and treated accordingly. The patient was resuscitated with fluids and electrolytes brought and maintained within the normal range.

Urethral catheter was inserted to monitor hourly urine output and nasogastric tube inserted to decompress the stomach. Mortality rate was recorded according to

Manheim’s Peritonitis Index. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Distribution of patients

Total- 30		
Gender	Male	Female
Number	17	13

Table I shows that out of 30 patients, males were 17 and females were 13.

Table II: Diagnosis of cases

Diagnosis	Number	P value
Gastric	5	0.05
Duodenal	8	
Jejunal	4	
Gall bladder	3	
Ileal	2	
Appendicular	6	
Colonic	2	

Table II, graph I shows that cases were of gastric perforation in 5, duodenal in 8, jejunal in 4, gall bladder in 3, ileal in 2, appendicular in 6 and colonic in 2. The difference was significant (P< 0.05).

Graph I: Diagnosis of cases

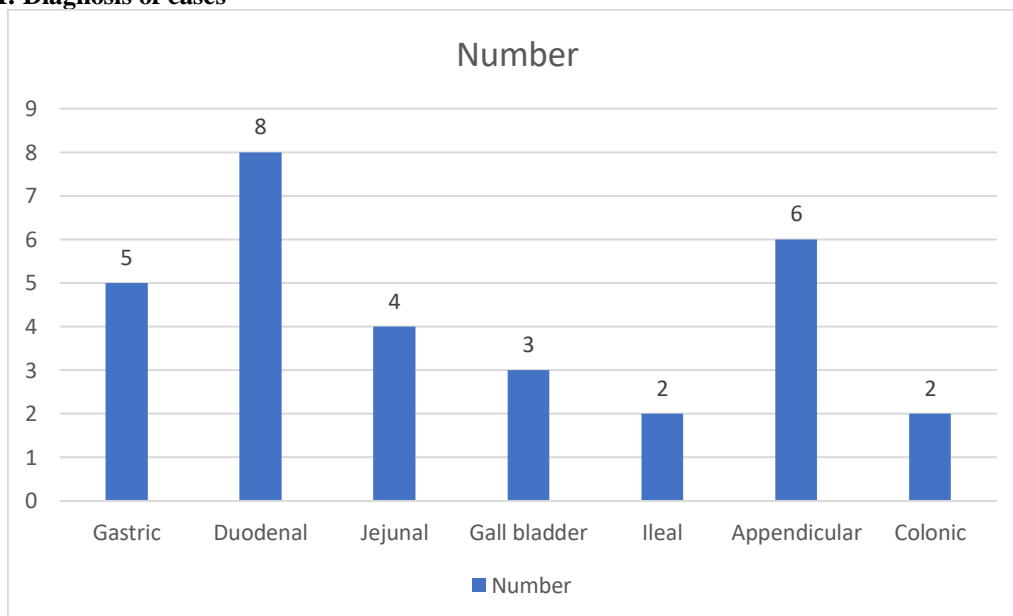


Table III: Mortality rates according to manheimm’s score groups

Cases	<15 (18)	15-25 (7)	>26 (5)	P value
Gastric	0	0	0	0.05
Duodenal	0	0	0	
Jejunal	0	0	0	
Gall bladder	0	0	0	
Ileal	0	1	0	
Appendicular	0	1	1	
Colonic	0	0	0	

Table III shows that there was 1 appendicular and 1 ileal death in patients with score 15-25 and 1 appendicular death in patient with score >26. The difference was significant (P< 0.05).

DISCUSSION

Bacteriology of secondary peritonitis encompasses two key processes, namely bacterial simplification and synergism.^{9,10} These have been confirmed with experimental rodent studies where the initial

inoculums of contaminating bacteria is spontaneously reduced to only a few microorganisms that are capable to survive and thrive in the new milieu: the acute peritonitis phase with positive blood cultures are produced mainly by the facultative anaerobes, especially *Escherichia coli*, and the late abscess formation stage is predominated by the obligate anaerobe, *Bacteroides fragilis*.^{11,12} Abdominal pain is the predominant presenting symptom. The characteristics of the pain vary tremendously depending on the cause.¹³ In lesions of stomach, duodenum and jejunum (T5 to T8) the pain is felt in the epigastrium, in affections of ileum and appendix (T9 – T10) around the umbilicus, whereas in case of colon (T11-T12, L1, L2) in the hypogastrum.¹⁴ The present study was conducted to assess cases of bacterial peritonitis due to gastro intestinal perforations.

We found that out of 30 patients, males were 17 and females were 13. Ramakrishnaiah et al¹⁵ enrolled 352 patients. The mean age of the study population was 42.4 years with a male:female ratio of 7:1. Gastroduodenal perforations formed the major site of perforation (51%), followed by small bowel (29%) and appendicular perforations (17%). Culture positivity rate was 64%. *Escherichia coli* and *Klebsiella* species were the predominant isolates from peritoneal fluid. These main isolates were predominantly sensitive to ceftazidime, amikacin and chloramphenicol. Ampicillin with gentamicin and metronidazole was the first line of treatment used preoperatively in 67% of the patients, given its low cost and easier availability. The overall morbidity and mortality rates were 52% and 16.5% respectively. 78% of patients received inadequate antibiotics preoperatively. Only 26% had appropriate change of antibiotics postoperatively.

We found that cases were of gastric perforation in 5, duodenal in 8, jejunal in 4, gall bladder in 3, ileal in 2, appendicular in 6 and colonic in 2. Meena et al¹⁶ found that out of 442 patients, 91.2% (403) were males, with male-to-female ratio being 10.33:1. The mean age was 39.13 years. About 79.2% of the patients were below 50 years. Free gas under diaphragm on chest X-ray was noted in 86.2% cases. Duodenum was the most common site of perforation in 158 patients. The most common etiology for perforation was acid peptic disease (41.4%). Simple closure was the most common surgical procedure being performed in 63.8%. Overall morbidity and mortality recorded in this study were 42.8% and 14.7%, respectively.

We found that there was 1 appendicular and 1 ileal death in patients with score 15-25 and 1 appendicular death in patient with score >26. Shahid et al¹⁷ in their study one hundred and fifty-eight patients were involved; the mean age was 43.46 years. The number of males was 87 (55.06%). The patients mostly presented with generalized abdominal pain (57.6%). All the patients had perforation-related peritonitis,

which was most prevalent in the ileum (62%). The most performed surgical intervention was loop ileostomy (36.71%). Compared to other published reports, the incidence rate of wound dehiscence in the hospital was relatively higher. Postoperatively, wound infection was low if the skin was left open (23.62%) compared to closed skin (38.7%). Patient outcomes were acceptable as the death rate was low (3.2%, 5/158).

The limitation the study is small sample size.

CONCLUSION

Authors found that maximum deaths were seen in appendicular perforation according to manheimm's score.

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