



ORIGINAL RESEARCH PAPER

General Surgery

A STUDY TO HIGHLIGHT THE SPECTRUM OF PERFORATIVE PERITONITIS AND ITS OUTCOME IN A TERTIARY RURAL MEDICAL COLLEGE

KEY WORDS: prospective observational study, intestinal perforation, peritonitis, gastro-duodenal perforation

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ABSTRACT

BACKGROUND: Perforation peritonitis is a common surgical emergency encountered by the surgeons all over the world as well in rural Bengal. This study, a prospective observational study was conducted at B.S.M.C.H., Bankura, West Bengal, designed to highlight the spectrum and etiology of perforation peritonitis in rural Bengal and methods to improve its outcome.

METHODS: The study includes hundred patients of perforation peritonitis studied in terms of clinical presentations, causes, site of perforation, surgical treatment, post operative complications and mortality, at BSMCH, Bankura within the period March 2016-June 2017. All patients were resuscitated and underwent emergency exploratory laparotomy. On laparotomy cause of perforation peritonitis was found and controlled.

RESULTS: The most common cause of perforation peritonitis noticed in our series was acid peptic disease 64%, perforated duodenal ulcer (63%) and gastric ulcer (2%) followed by perforation due to acute appendicitis (24%), small bowel tuberculosis (6%) and typhoid (4%). Only one case of large bowel perforation was due to colonic carcinoma (1%). Highest number of perforations has seen in the duodenum 63%, appendix 24%, ileum 10%, and stomach 2% and colon 1%. Overall mortality was (4%).

CONCLUSION: The spectrum of perforation peritonitis in rural population continuously differs from urban population and western countries. Highest number of perforations noticed in the upper part of the gastrointestinal tract as compared to the western countries where the perforations seen mostly in the distal part.

Introduction

Peritonitis is inflammation of the peritoneum which can be primary or secondary. (1) The Diagnosis is mainly by clinical signs but it is aided by plain X ray abdomen or ultrasound or CT scan. Plain x ray in upright or lateral decubitus position can detect as little as 5-10 ml of air in the peritoneal cavity in upto 75% of patients. (2) Treatment is mainly surgical aiming at closing the perforation so as to stop ongoing contamination and to clean the peritoneal cavity to remove contamination as much as possible; this method goes hand in hand with systemic chemotherapy. (3)

Materials and methods

The present study is a hospital based prospective non randomised study which aims at collecting data from 100 patients in the age group 12-80 years presenting with features of perforative peritonitis and who on surgical exploration found to have perforation anywhere in the gastro-intestinal tract. Patients with primary peritonitis, patients who are unfit for general anaesthesia or patients having peritonitis secondary to anastomotic leak or iatrogenic trauma were excluded from the study. Data was collected by a pre-designed and pre-tested proforma. The study aims at exploring different aspects of the disease. It also looks into different surgical procedures and their outcome in a rural based tertiary care hospital in west Bengal.

Statistical analysis

Performed with the help of Epi Info(TM) 3.5.3. Chi square tests (x²) and t-test were used.

Results

In the present study 82% of patients were male and 18% were female. Mean age of patients were 39.57 years. The youngest patient was 14 years old and the oldest patient was 76 years old. In the study it was found that there is no significant difference in the mean age of males and females and the prevalence of the disease was more or less equally distributed over the ages of males and females. All patients presented with pain abdomen. Regarding duration of pain; 65% patients presented with pain < 1 day duration. Only 5% patients presented with pain more than 3 days duration. 62% of patients presented with diffuse pain abdomen and 17% of patients presented with right iliac fossa pain. Apart from pain abdomen; vomiting was present in nearly every patient (99%) and fever in 69% patients. Regarding the different

signs-dehydration was found in 95% of patients which was significantly higher, abdominal distension in 73%, obliteration of liver dullness in 68% of patients, tachycardia in 70%, involuntary abdominal guarding and rigidity in 59% and absence of peristaltic sounds in 27% of patients. 73% of patients had free gas under diaphragm on X-ray. On ultrasound free fluid was present in 63% of patients. 1st part of duodenum was found to be the commonest site of hollow viscous perforation, found in 63% of patients followed by appendicular perforation in 24% and ileal perforation in 10%. Frequency of different surgical procedures performed were:- omental patch repair in 65%, emergency appendectomy in 24%, resection and anastomosis in 4%, repair of perforation in 2%, repair of perforation with proximal stoma in 5%. Mortality rate was 4% in this study. It was found that the mean age of expired patients were more than discharged patients. Also mean duration of pain was more in expired patients than discharged patients and the difference was statistically significant. Among the expired maximum expiry rate (50%) was in patients who had operative diagnosis as ileal perforation. The most common post operative complication was lower respiratory tract infection (LRTI) found in 31% of patients followed by surgical site infection (SSI) in 16% of patients.

Table No. 1:- frequency of site of perforation with their distribution in different sexes (n=100)

Site of perforation	In Male	In Female	Total	% of total study population involved
Gastric	2	0	2	2%
1st part of duodenum	54	9	63	63%
Ileum	7	3	10	10%
Appendix	18	6	24	24%
Caecum	1	0	1	1%
Total	82	18	100	100%

Table No. 2:- frequency of different complications in post operative period with respect to site of perforation (n=100)

	Duodenal	Gastric	Ileal	Appendicular	Caeca I	Total	%
SSI	10	1	2	3	0	16	16
Burst abdomen	2	0	2	0	1	5	5

LRTI	21	0	4	0	6	31	31
Electrolyte imbalance	6	0	3	0	1	10	10
Enterocutaneous fistula	0	0	1	1	0	2	2
Sepsis	4	1	2	0	1	8	8
Nil	28	0	2	21	0	51	51

Table 3:- distribution according to causes of perforation(n-100)

Cause of perforation	No. of cases involved	Percentage
Peptic ulcer disease	64	64%
Acute appendicitis	24	24%
Typhoid	4	4%
Tuberculosis	6	6%
Gastric carcinoma	1	1%
Colonic carcinoma	1	1%

Table-4:-table of surgical procedures(n=100)

Name of the procedure	No. of patients	Percentage
Omental plug repair(OPR)	65	65%
Em. Appendectomy	24	24%
Resection- Anastomosis(RA)	4	4%
Repair of perforation(RP)	2	2%
Repair with proximal stoma(RP & PS)	5	5%
Total	100	100%

Discussion

In our study we found that males are more commonly affected by perforative peritonitis.similar results were found in the study conducted by Rajender Singh Jhobta et al(4)(84% male,16% female).Mean age of patients was 39.57 years which was also comparable with the study by Rajender Singh Jhobta et al(4)(mean age 36.8 years) and Nitin Agarwal B et al(5)(mean age 34.2 years).Pneumoperitoneum on X-ray was found in 73% of cases which was comparable with studies by Rajender Singh Jhobta et al(4)(67% cases) and Ankit Shukla et al(6)(78% of cases).1st part of duodenum was the most common site of perforation found in 65% of cases.Similar results were found in study by Rajender Singh Jhobta et al(4)(57% of patients were due to duodenal perforation)and Vinod Kumar B et al(7)(duodenal perforation in 29.3% of patients).In our study we found sex ratio i.e male:female ratio 6:1 for duodenal perforation.In the retrospective study by Cecilie Svanes et al(8) the male:female ratio for perforated gastroduodenal ulcer was 4.7:1.Most common surgical procedure in our series was omental plug repair for stomach and duodenal perforation. In the study called 'spectrum of perforative peritonitis' by Sujit M Chakma et al (9) in J Clin Diagn Res 2013 nov 7(11):2518-2520 Grahams OPR was done in 56.72% of patients. In a study called 'perforative peritonitis and developing world ' by Rajandeep Singh Bali et al.(10) published in ISRN surgery in 2014 at Maulana Azad Medical College and Lok Nayak Hospital New Delhi, India, the most common procedure performed was omental patch repair, done for 175 of total 400 patients.The most common cause of perforation in our study was peptic ulcer disease found in 64% of cases followed by acute appendicitis in 24% of patients.In the study of Sujit M. Chakma et al(9) duodenal ulcer accounted for 54.29% of cases and appendicular perforation accounted for 11.22% of cases.In the study by Vinod Kumar B et al(7) in 2014 also found acid peptic disorder to be the most common etiology found in 42% of cases followed by appendicitis. Among all cases of perforative peritonitis managed surgically 51 patients recovered well without any complications but among rest 49 patients one or more complications appeared. Most common post operative complication was lower respiratory tract infection found in 31% of cases followed by surgical site infection found in 16% of patients. Sepsis was found in 8 patients post operatively.2 patients(1 of ileal perforation,1 of appendicular perforation) had enterocutaneous fistula. 5 patients suffered burst abdomen. In the study by Rajender Singh Jhobta et al(4) they also had pneumonia and LRTI as most common post operative complication found in 28% patients.

Mortality rate in our study was 4%.Mortality rate in other similar studies are:- Rajandeep Singh Bali et al(10)-7%,Rajender Singh Jhobta et al(4)-10% and Sujit M Chakma et al(9)-10%. There was also significant positive correlation between delay in presentation with mortality. In the present series 3 out of 4 patients who expired presented after 3 days of onset of symptoms. So early diagnosis and referral with prompt decision making and intervention is an important aspect in management of perforative peritonitis. In a study published in journal of clinical diagnosis and research, in May, 2013 by Sushama Surapeneeni et al(11) concluded that the perforation – operation time interval appeared to be the single most important mortality and morbidity indicator for peptic ulcer perforation. In another study at R.N Cooper Municipal Hospital in Mumbai, India(12) showed morbidity and mortality was directly related to the time interval between occurrence and surgical intervention and amount of contamination of peritoneal cavity.

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