Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2016; 4(3E):975-980 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2016.v04i03.068

Original Research Article

Study of Spectrum of Perforation Peritonitis in Rural Area

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Abstract: Perforation peritonitis is one of the common surgical emergencies in our country, the disease which we have understood well about pathology and how to manage it. But still there were deaths due to perforation peritonitis, this warrants the need of further study on perforation peritonitis. This was a prospective study including 100 patients of perforation peritonitis, who were admitted in M.N.R Medical College and Hospital for a period of two years. All the patients were properly resuscitated, underwent surgical procedure and taken good post-operative care. In results the mean age of patients was 42.08. Most of the patients with perforation peritonitis presented to the hospital are of age >45 years. Out of the 16 cases presented after 72hrs to hospital, 10 patients (62.5%) were dead and 4 (5.56%) patients were dead out of 72 patients, who were presented in between 24 to 72hrs.Pain in the abdomen was the most common clinical feature, present in all patients. In this study, 70% cases had air under diaphragm in abdominal radiograph and 88% cases had free fluid in abdomen in ultrasound abdomen. In our study, the most common site of perforation was duodenal perforation (52%), followed by appendicular perforations (18%), gastric perforations (16%), ileal perforations (12%), and jejunal perforations (2%). Electrolyte (20%) imbalance was the most common complication, followed by pulmonary complication (18%), wound infection (16%), septicaemia (16%), wound dehiscence (12%) and intestinal obstruction (2%). The overall mortality rate was 14% in our study. The concusion in our study, the mortality rate was high in the patients, who were admitted late in the hospital. Most number of perforations was at proximal part of gastrointestinal tract than distal part of gastrointestinal tract, in contrast to developed countries.
Keywords: Perforation, Peritonitis, appendicular perforations, gastric perforations, ileal perforations, jejunal perforations, electrolyte imbalance

INTRODUCTION

Gastrointestinal tract perforation leading to peritonitis is one of the most common surgical emergencies in the world [1]. In spite of many developments in the field of surgery, better antibiotics, understanding the mechanism of pathology and increase in patient care, the management of peritonitis still continued to be a difficult task to be handled [2]. The main reason for high mortality rates in perforation is due to late presentation, with septicaemia or septic shock, which is very difficult to manage [3].

The most common cause of perforation peritonitis is secondary peritonitis, mainly due to hollow viscous perforation. In perforation of gastrointestinal tract, lot of fluid enters into the peritoneal cavity which contains bacteria, toxins and chemically irritating material like gastric acid from perforated gastric ulcer causing irritation of peritoneum leading to peritonitis. The causes for perforation peritonitis in tropical countries are different from western countries[2].

The commonest cause of secondary peritonitis is peptic ulcer perforation [4]. Perforations of peptic ulcer disease are commonly seen in first part of duodenum and pylorus region of stomach. In the past, perforated peptic ulcer was a disease of young men, but nowadays it is a disease of elder people [5, 6]. In this study, we were presenting a 100 cases of secondary peritonitis due to hollow viscous perforation regarding the clinical features, site of gastrointestinal tract, treatment and complications that were admitted in our hospital, which is in rural area.

AIM

1. To study the correlation of clinical, radiological, bio-chemical & operative findings in patients with perforation peritonitis.
2. To study the different sites of perforation & their clinical presentation.

3. To study the outcome in patients with perforation peritonitis in relation to time interval (perforation to operation).

MATERIAL AND METHODS

A prospective observational study of 100 cases of perforation peritonitis in the Dept. of Surgery in M.N.R Medical College and Hospital, Sangareddy during the period of Oct 2013 to sept 2015 were included in the study.

Inclusion criteria:

Patients with peritonitis due to perforation (hollow viscus perforation eg. Gastric perforation, duodenal perforation Small& Large bowel perforation and Appendicular perforation.), who have given consent to participate in this study

Exclusion criteria:

Patients with peritonitis other than perforation (primary peritonitis eg. Spontaneous, tuberculous & post-operative eg. Leak of anastomosis or suture line, stump insufficiency) & patients who are not operated. A complete history is taken & all the complaints are noted. Thorough examination is done clinically & all important signs & symptoms are noted. All routine investigations like CBP, CUE, RBS, urea, creatinine, Sr. Electrolytes, X-Ray erect abdomen, X-Ray chest are done & recorded. If any special investigations like USG & CT are required they are done & recorded.

After thorough resuscitation & pre-operative preparation patient is posted for surgery. All the intra-operative findings are noted. Site & size of perforation are noted. Colour, quantity & smell of peritoneal fluid are noted. Fluid is sent for culture & sensitivity.

All the cases are followed during the post-operative period daily till discharge. After discharge followed at intervals of 1week & 1 month. All the above data is collected in a proforma prepared for the study.

RESULTS

A total of 100 patients were analysed. The mean age of patients was 42.08. Most of the patients with perforation peritonitis presented to the hospital are of age >45 years, the next most common age group was 19-45 years and the least common in the age group 1-18years (Table no 1). The male to female ratio was 5.25:1.

Table 1: Distribution of sample by age, (N = 100)

Age group	No .of cases(n)	Percentage (%)
1 to 18 yrs	10	10.00
19 to 45 yrs	34	34.00
> 45 yrs	56	56.00
Total	100	100.00

Majority of patients 72, were presented between 24 to 72hrs, 16 patients were presented after 72 hrs and only 12 patients were presented within 24 hours (Table no 2). Out of the 16 cases presented after 72hrs to hospital, 10 patients (62.5%) were dead and 4 (5.56%) patients were dead out of 72 patients, who were presented in between 24 to 72hrs.

Table 2: Distribution of cases according to time interval (Perforation to operation), (N = 100)

Time interval (perforation to operation)	NO. Of cases(n)	Percentage (%)
<1 day	12	12.00
1 to 3 days	72	72.00
>3 days	16	16.00
Total	100	100.00

Pain in the abdomen was the most common clinical feature, present in all patients. The diffuse abdominal pain was seen in 82 patients, whereas 18 patients have localised pain. The next most common clinical feature was guarding and rigidity, which was seen in 91 patients followed by fever (84%), abdominal distension (79%), obliteration of liver dullness (78%), vomiting (77%) and diminished or absent bowel sounds (36%) (Table no 3).

Table 3: Distribution of cases according to signs & symptoms, (N = 50)

Signs & symptoms	NO. Of cases(n)	Percentage (%)
Diffuse pain	82	82.00
Localized pain	18	18.00
Vomiting	77	77.00
Fever	84	84.00
Guarding & rigidity	91	91.00
Obliteration of liver dullness	78	78.00
Abdominal distension	79	79.00
Diminished or absent Bowel sounds	36	36.00

In this study, 70% cases have air under diaphragm in abdominal radiograph. Air under diaphragm was seen in all cases of gastric and jejunal perforations. Air under diaphragm is seen in 92.03% cases of duodenal perforations, 33.33% cases in ileal perforations and there was no air under diaphragm in appendicular perforation cases (Table no 4). One case of appendicular perforation had multiple air fluid levels.

Table 4: Distribution of cases according to pneumoperitoneum in abdominal radiograph, (N = 100)

Site of perforation	Air under diaphragm		Total
	Present (n)	Absent(n)	
Duodenal perforations	48	04	52
Appendicular perforations	00	18	18
Ileal perforations	04	08	12
Gastric perforations	16	00	16
Jejunal perforations	02	00	02
Total	70	30	100
Percentage (%)	70.00	30.00	100.00

In our study, USG abdomen has shown free fluid in 88% of cases (Table no 5). Hypokalemia was seen in 58% of cases, Hyponatremia was seen in 44% of cases and raised blood urea and serum creatinine was seen in 24% of cases.

Table 5: Distribution of case by USG findings, (N = 100)

USG findings	NO. Of cases(n)	Percentage (%)
Free fluid present	88	88.00
Free fluid absent	12	12.00
Total	100	100.00

In our study, the most common site of perforation was duodenal perforation (52%), followed by appendicular perforations (18%), gastric perforations (16%), ileal perforations (12%), and jejunal perforations (2%) (Table No 6).

Table 6: Distribution by site of perforation, (N = 100)

Site of perforation	NO. Of cases(n)	Percentage (%)
Duodenal perforations	52	52.00
Appendicular perforations	18	18.00
Ileal perforations	12	12.00
Gastric perforations	16	16.00
Jejunal perforation	2	02.00
Total	100	100.00

In our study, we had done graham's omental patch repair was done in 61% of cases, appendicectomy in 18% of cases, primary closure in 13% of cases and resection and bowel anastomosis for 8% of cases. The overall morbidity was present in 48% of cases and mortality was present in 14% of cases (Table No 7).

Table 7: Distribution of cases by Post-operative complications, (N =50)

Complications & Post-op	NO. Of cases(n)	Percentage (%)
Wound infection	16	16.00
Wound dehiscence	12	12.00
Intestinal obstruction	02	02.00
Pulmonary complications	18	18.00
Electrolyte imbalance	20	20.00
Septicemia	16	16.00
Death	14	14.00

DISCUSSION

In India, the perforations in proximal gastrointestinal tract were six times more common than perforations in the distal gastrointestinal tract [7]. But in developed countries, like America, Greece and Japan, the distal gastrointestinal perforations were more common than proximal gastrointestinal tract [8, 9, 10]. In our study, the mean age was 42.08, this was comparable to the studies conducted by Jhobta RS et al, the mean age was 36.8 years (ranges from 3yrs to 90yrs)[2]. In a study done by Nuhu Ali *et al.;* the mean age was 21.88 years, which was conducted in Nigeria [11].

In our study, the ratio of men to women with all types of perforation irrespective of site and pathological condition was 5.25:1. Males are most commonly affected, may be due to habits like tobacco smoking, alcohol consumption etc. In a study conducted by Nuhu Ali et al, the male to female ratio was 2.73:1 [11]. In an another study conducted by Thammegowda Kemparaj et al, the male to female ratio was 4.5:1, which was comparable to our study. We have compared the clinical features with other studies in table no 8.

Table 8: Comparison of clinical features with other studies

Author	Pain (%)	Vomiting (%)	Guarding & rigidity (%)	Fever (%)	Obliteration of liver dullness (%)	Distension of abdomen (%)
Mathikerelingaiah, *et al.;* [13] (N=50)	100	64	90	78	72	90
Shyam K Gupta, *et al.;* [14] (N=400)	98	80	88	20	-	76
Nuhuali, *et al.;* [11] (N=153)	98.9	58	89	70.6	60	70.6
Thammegowda, *et al.;* [12] (N=369)	100	81	86	51	72	73
Present study (N=100)	100	76	92	84	76	76

The air under diaphragm was seen in 70% in our study. In the studies conducted by Thammegowdakemparaj *et al.*[12]*;* Shahida P Afridi, *et al*[15].*;* the air under the diaphragm was seen in 75% and 70% respectively. In our study, hypokalemia, hyponatremia and raised renal function tests were seen in 58%, 44% and 24% respectively, where as in a study conducted by Shahida P Afridi *et al.*[15]*;* the hypokalemia, hyponatremia and elevated renal function tests were seen in 60%, 45% and 9% respectively.

In the present study majority of the cases had duodenal perforation about 52%, followed by appendicular perforation about 18%, next is gastric perforation (16%). Small bowel constitutes of 14 %(ileal 12%, jejunal 2 %.).We had compared our study, regarding the site of perforation with other studies in table no 9.

Table 9: Comparison of site of perforation with other studies

Author	Duodenal (%)	Gastric (%)	Appendicular (%)	Small bowel (%)	Colon (%)
Shahida P Afridi, *et al.;* [15] (N=300)	43	13	5	31	8
Prajakt V Patil, *et al.;* [16] (N=150)	43	13	4	40	0
Shyamkumargupta, *et al.;* [14] (N=400)	44	3	24	14	3
Mathikerelingaiah, *et al.;* [13] (N=50)	64	0	12	24	0
Nuhuali, *et al.;* [11] (N=153)	16.3	6	14.3	64	0
Present study (N=100)	52	16	18	14	0

In our study, the most common post-op complications are wound infection; wound dehiscence, pulmonary complications, electrolyte imbalance& septicemia. Pulmonary complications include ARDS, pneumonia, pleural effusion, etc. Out of all the post-op complications the most common one was pulmonary complications followed by wound infection. We have compared post-op complications and death of our results with other studies in Table no 10.

Table 10: Comparison of post-op complications and death with other studies

Author	Wound infection (%)	Wound dehiscence (%)	Pulmonary complications (%)	Electrolyte imbalance (%)	Septicemia (%)	Death (%)
Thammegowda kemparaj [12] (N=369)	30	12	21	19	16	13.8
Prajakt V Patil, *et al.;* [16] (N=150)	20	20	20	-	-	13
Shyamkumargupta, *et al.;* [14] (N=400)	16	3.5	6	4	3	6
Shahida P Afridi [15] (N=300)	42	26	20	-	20	10.6
Rajender S Jhobta [2] (N=504)	25	9	28	17	18	10
Present study (N=100)	16	12	18	20	10	14

CONCLUSION

In our study, we had proved that late presentation of perforation peritonitis was one of the major cause leading to poor outcome in the form of morbidity and mortality. So we can decrease the rate morbidity and mortality of the patient by improving the transport facilities and proper training of medical doctors in primary health care centres. Once again it is proved that proximal gastrointestinal perforations were more common in our country.

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