

A clinical profile of non-traumatic generalized peritonitis

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Abstract

Background: Peritonitis is the inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Peritonitis is often secondary to an infection into the otherwise sterile peritoneal environment through perforation of gastrointestinal tract or a chemically irritating material, such as gastric acid from a perforated ulcer.¹ Frequent causes of secondary bacterial peritonitis include perforation due to peptic ulcer disease , acute appendicitis , ileal perforation due to typhoid & tuberculosis , jejunal perforation most often due to blunt trauma ,colonic perforations secondary to closed loop obstruction or malignancy.² The goal of our study was to describe the clinical profile of hollow viscus perforation peritonitis that we encountered at our tertiary care teaching hospital in a metropolitan city in terms of clinical manifestations, site of perforation, surgical

treatment, postoperative complications, and mortality.

Aim: To describe the nontraumatic generalized peritonitis by Age, Sex, Clinical presentation, Site of Perforation, its management and post operative complication

Methods: After appropriate statistical analysis sample size was estimated to be 50. Data was collected prospectively through a prescribed proforma from 50 cases of Peritonitis, who met the inclusion criteria, admitted in Department of General Surgery at our tertiary care teaching hospital in a metropolitan city.

Result: In this study maximum cases of perforation was found in the age group 50 years and above with men to women ratio of 8:1. The commonest site of perforation is duodenum (62.67%). Pain abdomen was present in all cases. Vomiting was present in 37 patients. Fever was present in 28 patients. Guarding and rigidity was present in 31 patients. Bowel sounds were absent in 42 patients.

Free gas under diaphragm was present in 23 cases. Omental patch repair was done in all cases of duodenal and gastric perforation. Simple closure was done in 4 cases of ileal perforation and 1 case of rectal perforation. Resection and anastomoses were done in 2 cases of jejunal perforation. Ascending colon and sigmoid perforation were treated with resection. Wound infection 26 % was the most common post operative complication followed by lower respiratory tract infection 15% and upper respiratory infection in 10 %. Overall mortality accounts for 8%.

Conclusion: Duodenum was the most common site of perforation. Most common age group involved was 50 and above with men to women ratio of 8:1. Most of the patients presented within 24 hours after the onset of clinical symptoms. X ray alone is diagnostic in 62. 67% of patients with performative peritonitis. Laparotomy with omental patch closure is the commonest method of surgical management in performative peritonitis. Wound infection is the most common complication observed. Overall mortality accounts for 8%.

Keywords: X- Ray, Etiology Spectrum, Respiratory Infection

Introduction

Peritonitis is the inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Peritonitis is often secondary to an infection into the otherwise sterile peritoneal environment through perforation of gastrointestinal tract or a chemically irritating material, such as gastric acid from a perforated ulcer.¹ Frequent causes of secondary bacterial peritonitis include perforation due to peptic ulcer disease , acute appendicitis , ileal perforation due to typhoid & tuberculosis , jejunal perforation most often due to blunt

trauma , colonic perforations secondary to closed loop obstruction or malignancy.

Operational protocol aims to correct pathology while avoiding any major mishaps and using a minimally invasive surgical approach. After the first resuscitation with a high amount of cry's talloids and the administration of broad-spectrum antibiotics against gram negative bacteria and anaerobes, laparotomy and perforation closure are usually carried out.

Despite improvements in pathophysiology knowledge, diagnosis, surgery, antimicrobial therapy, and intensive care support, peritonitis still has a high mortality rate.

In this country, peritonitis due to hollow viscus perforation is frequent, and an etiology spectrum in tropical regions continues to be different from that of western countries. With modern treatment, diffuse peritonitis carries a mortality rate of 10%, reflecting degree and duration of peritoneal contamination, age and fitness of the patient and nature of underlying cause.³ Generalized peritonitis is a common dreadful surgical emergency. One of the most frequent types of abdominal emergencies, peritonitis from nontraumatic causes is life-threatening and is often treated by general surgeons. Hence present study was undertaken to describe the cases, clinical features, management post operative complication inpatient with non-traumatic generalized peritonitis.

Materials & Methods

Prospective (Descriptive/ Exploratory) study was conducted between March 2021 – August 2022 (1.5yrs) from the patients admitted in Department of General Surgery at our tertiary care teaching hospital in a metropolitan city. Sample size was calculated based on a previous study conducted by Syed 'O' Ilias et al 5in which it was found that duodenum was the majority

among the region of perforation (47%), in the present study considering estimated proportion of 0.47 and margin of error of 15%, confidence level of 95%. Minimum sample size was estimated to be 50. Those patients who give consent for the study. Patients who presented with generalized peritonitis symptoms and were admitted to surgery wards were included in the study; those who refused to participate, those who had traumatic peritonitis, those who had previously undergone abdominal surgery, and those who had perforations of the genitourinary tract, such as ruptured bladders and ruptured ectopic pregnancies, were excluded. A thorough history and physical exam were performed and recorded. Standard investigations were conducted on everyone. History, clinical characteristics, and an Xray of the abdomen taken in an upright position or a CT scan of the abdomen were used to make the diagnosis and guide the examination. Based on the past and other allegations, specific investigations were conducted. Observing presenting symptoms, pulse, blood pressure, respiration rate, and hydration status at the time of admission allows for monitoring of general state. Operational results were noted. The necessary surgical intervention was recorded, and patients were monitored for problems after surgery. Under the following categories, each case was examined and its results were measured. Age and sex distribution of cases, clinical presentation, investigations, perforation site, and treatment of performative peritonitis. And the conclusions reached were as follows.

Statistical Analysis

The data collected was tabulated on Microsoft Excel. The categorical variables were summarized as proportions and percentages and continuous data was presented as Mean \pm SD

Results

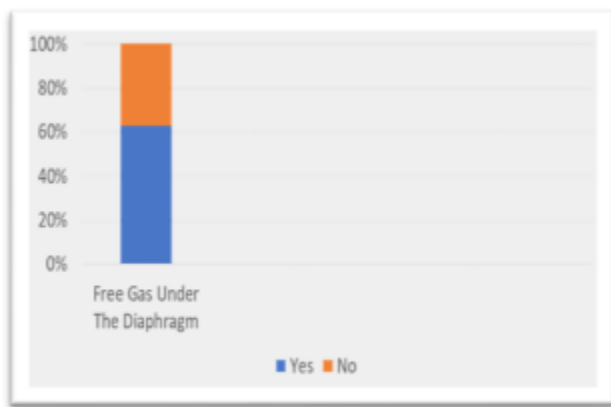
Perforation was found more commonly in males 40 cases as comparative to the females presenting in 10 patients within our sample of study of 50 patients. In this study most of the patients with hollow viscous perforation were above the age of 50 years. The youngest patient in this study was 14 years who was having duodenal perforation and the oldest patients was 80 years, with duodenal ulcer perforation. Perforation was found in very less frequency below 20 yrs. of age. (Table 1)

AGE	NO. OF PATIENTS	PERCENTAGE
<20	6	12
20-29	7	14
30-39	12	24
40-49	10	20
>50	15	30

Most common symptom in patients presenting with perforation was pain, present in all the patients. The number of days with which the patients presented were quite varied depending on the time of onset of pain to the time patient came to hospital. Most commonly the patients came to the hospital within 24hrs of onset of pain abdomen. These patients accounted for 48 patients, making it 64% of the total cases. 30% of patients came to hospital on Day 2nd -3rd and 6% after 3rd day. Patients presenting with perforation had varied sites of pain abdomen. Most common being diffuse all over abdomen showing in 36 patients out of our sample of 50 cases, standing for 72% of the cases, secondly followed by pain in the epigastric region in 17 cases, standing about 34% of the cases, followed by pain over RIF in 15 patients (33%)

,over LIF (1 patient),over hypogastrium (1patient) each. The other symptoms commonly present after pain abdomen were vomiting, fever and some patients also had significant earlier history which could be associated with perforation such as earlier history of acid peptic disease, fever etc. Out of these most common after pain Abdomen was vomiting, which was present in 36 patients, followed by fever which was present in 14 patients which makes 72% and 28% respectively. Most common sign present in almost all cases was absence of bowel sounds which was evident in 42 cases accounting for about 84%, followed by guarding & rigidity which was evident in 31cases (62%). This was followed by obliteration of liver dullness evident in 29 cases (58%).

In patients with suspected performative peritonitis mainly two types of x-rays were done i.e., X-ray erect abdomen and chest x-ray pa view. In majority of the cases free gas under diaphragm was seen i.e., in 31 cases. Out of the sample of 50 cases accounting for 62.67% of the cases. (Graph 1)



CT was done in 19 of 50 patients in whom X-ray was inconclusive and the following finding are as follows. Thus, positive findings were present in computed tomography in all cases with clinical suspicion of perforation with inconclusive results in plain radiograph. (Table 2)

SIGN	FREQUENCY	PERCENTAGE
FREE FLUID	10	53
FREE AIR	6	32
FAT STRANDING	4	21
AIR POCKETS	2	10

In the present study the commonest site involved in this study was duodenal ulcer perforation (62.67%) followed by appendicular perforation (14%) and gastric perforation (6%). All the duodenal perforations observed in this study were anterior and none was posterior. (Table 3)

SITE	SEX		TOTAL
	MALE	FEMALE	
DUODENAL	22	3	25
APPENDICULAR	8	3	11
GASTRIC	5	NIL	5
ILEAL	3	1	4
JEJUNAL	1	1	2
ASCENDING COLON	1	NIL	1
RECTAL	1	NIL	1
SIGMOID	1	NIL	1
TOTAL	42	8	50(100%)

For both Duodenal perforations and Gastric perforations, omental patch repair was performed, whereas simple perforation repair was performed for Intestinal and Rectal perforations, depending on the operating surgeon's preference. In a case of jejunal diverticulosis and an ileal chronic ulcer that seemed to be cancerous,

resection and anastomosis were performed. In cases of sigmoid and ascending colon perforation, respectively, sigmoidoscopy and right hemicolectomy were performed. (Table 4)

OPERATIVE PROCEDURE	FREQUENCY	PERCENTAGE
OMENTAL PATCH REPAIR	34	72
APPENDICECTOMY	12	16
SIMPLE CLOSURE	5	6.67
RESECTION & ANASTOMOSIS	2	2.67
SIGMOIDECTOMY	1	1.33
RIGHT HEMICOLECTOMY	1	1.33

Wound infection was found as the most important complications in the patients presenting with perforation accounting to be in 13 patients out of 50, followed by LRTI which was present in 7 patients. (Table 5)

COMPLICATIONS	FREQUENCY	PERCENTAGE
NO COMPLICATIONS	21	42
WOUND INFECTION	13	26
URI	5	10
LRI	7	15
MORTALITY	4	8

Out of the 50 patients studied 46 patients were discharged and 4 patients of duodenal perforation were shifted to Post Operative ICU care due to ongoing sepsis and later expired.

Discussion

Our tertiary care teaching hospital served as the site of this investigation. 50 patients in all who were admitted under specific criteria during the trial period were chosen at random. In this series, patients over the age of 50 made up 30% of the total patient population, while

patients between the ages of 40 and 49 made up 20% (r=14-80).

The mean age was 43.52. The average age of patients with peritonitis caused by gastrointestinal perforation, according to research by Afridi et al., was 40.5 years⁶. The majority of patients visited the hospital within 24 hours of the commencement of abdominal pain. 30% of patients arrived in the hospital between Days 2 and 3 and 6% after Day 3. In the current study, the ratio of males to women with all types of perforation, regardless of place and clinical condition, was 8:1. In the current study, there were 40(80%) male patients who had perforations and 10(20%) female patients who had perforations. Comparable to Anjaneya et al's study, which had an 82% male preponderance, and Meena et al's study, which had a 91.2% male preponderance^{7,8}. In this present study, duodenal ulcer perforation was more common in the age group of above 50 years. Rajender Singh Jobta et al (2006) conducted a study at govt medical college and hospital Chandigarh concluded duodenum was commonest site of perforation. The number of male patients with appendicular perforation were 4 and female patients were. Ileal perforation was present in 3 male and 1 female cases. The commonest site involved in this study was duodenal ulcer perforation (62.67%) followed by appendicular perforation (14%) and gastric perforation (6%). It was analogous to the findings of the Attri et al study, which found that duodenal perforation was the most frequent cause of peritonitis, followed by appendicular perforation, and the Velappan et al study^{9,10}. In cases of perforated peptic ulcers, abdominal pain, nausea, and fever were the main symptoms. This was similar to what Attri et al and Sreenidhi et al found in their studies^{9,11}. Tenderness, guarding rigidity, obliteration of the liver

dullness were the predominant signs. In the present study, pain abdomen was present in all cases (100%). Vomiting was present in 72% patients. Fever was present in 28% patients. In research conducted on 100 patients by Abhinav et al., 100% of the patients reported abdominal discomfort as their primary complaint, which was followed by vomiting in 78% of cases and fever in 17% of cases¹². Guarding and rigidity was present in 62% patients. Bowel sounds were absent in 84 % of patients at the time of presentation. Absence of liver dullness was present in all cases of Gastric, ileal and jejunal perforation. In 31 patients of duodenal ulcer perforation, liver dullness was obliterated in 20 patients of duodenal ulcer perforation. Liver dullness was not obliterated in 11 patients of duodenal ulcer perforation. This might be because of the sealing of the perforation or lack of gas at the site of perforation or adhesions around the site of perforations. Liver dullness obliteration was absent in all cases of appendicular perforation.

Diagnosis is made clinically and confirmed by the presence of pneumoperitoneum in radiograph (63%) almost comparable to study conducted by Afridi et al (70%)⁵. Free gas under diaphragm was present in 23 cases of duodenal ulcer perforation, all cases of ileal perforation, jejunal perforation. One case of ascending colon and rectal perforation showed minimal free air in radiograph. Computed tomography was done in 19 of 50 patients with clinical suspicion of peritonitis, with no free air in X Ray chest & abdomen erect. Free air was present in 6 cases of duodenal perforation which showed no free gas in X rays. Sealed air pockets were present in 2 cases of duodenal perforation. Free fluid helped in diagnosis in 10 out of 19 patients. Adjacent fat stranding noted in 4 out of 19 cases which were

diagnosed as appendicular, sigmoid perforation intraoperatively. Omental patch repair was done in all cases of duodenal and gastric perforation (72%) as comparable to other studies Patil et al¹³. In Leeman et a study's Graham's omental patch was used to treat 91% of gastric ulcers, while major perforations larger than 2 cm were treated with either simple closure (4.5%) or distal gastrectomy (4.5%)¹⁴. In their investigation, Chaudary et al. Came to the conclusion that jejunal loops can be used as serosal patches to treat gastrointestinal ulcers larger than 2 cm¹⁵. However, in this current study large perforations were not encountered. Simple closure was done in 4 cases of ileal perforation and 1 case of rectal perforation. Resection and anastomoses were done in 2 cases of jejunal perforation due to diverticulosis. Ascending colon and sigmoid perforation were treated with resection, on postoperative follow up malignancy turned out to be the cause. Wound infection 26 % was the most common post operative complication followed by lower respiratory tract infection 15% and upper respiratory infection in 10 % in contrast to study conducted by Jhobta et al² which corresponds to 28% with respiratory complications and 25% with SSI. Post Operative ICU care and death occurred as a result of sepsis occurred in 4 duodenal ulcer patients accounting to 8% mortality in present study. Sharma et al who had conducted similar study in Delhi found similar mortality rate (8%)¹⁶.

The fact that this study is one of the few prospective studies that examined the risk variables for performative peritonitis in this region of the world is one of its strongest points. Limitations of the study was sample size. There were only 50 patients in the trial.

Conclusion

The most prevalent age group affected is 50 years and above. Perforations of duodenal ulcers were more frequent in people 50 years of age and older. After 24 hours of pain, the majority of these patients show clinical indications of peritonitis. There were 20% female patients and 80% male patients. The most frequent location of perforation is the duodenum (62.67%), which is followed by the appendix (14%), the stomach (6%) and the enteric (8%). In 62% of patients, stiffness and guarding were evident. Clinical diagnosis is made, and in 62.67% of patients, the presence of free air under the diaphragm serves as confirmation. In every single case (100%) where there was no free air in the xrays, computed tomography helped with the diagnosis. The most frequent surgical treatment for a perforated peptic ulcer (68%) is laparotomy with closure of the perforation using an omental patch. The most common postoperative complication observed was wound infection and lower respiratory tract infection.

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