

PERFORATION PERITONITIS-CLINICAL STUDY IN ARIYALUR MEDICAL COLLEGE HOSPITAL

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Received : 20/06/2023
Received in revised form : 23/07/2023
Accepted : 06/08/2023

Keywords:
Perforation, Peritonitis, Pain,
Laparotomy.

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DOI: 10.47009/jamp.2023.5.4.261

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (4); 1292-1297

Abstract

Background: Peritonitis that occurs due to hollow visceral perforation, is a term frequently encountered in surgical practice. It is defined as the inflammation of the serosal membrane which lines the abdominal cavity and the organs contained within it. Introduction of an infection through a bowel perforation into the otherwise sterile peritoneal ambience & introduction of a chemical irritant like gastric acid from a perforated ulcer are the common causes of peritonitis. The aims and objectives are to estimate the frequency of peritonitis secondary to hollow viscus perforation in relation to age, etiology, Site of perforation, Symptoms and signs. To estimate the correlation between clinical sign and radiological investigation. To find out the outcome of disease. **Materials and Methods:** This study has been conducted in Department of General Surgery Ariyalur Government Medical College. Based on the analysis of 100 cases of hollow viscous perforation admitted to Government Medical College Hospital, Ariyalur, fulfilling the criteria were selected for the study. Inclusion Criteria: ♦ Clinical /Radiologically proven cases of perforation peritonitis ♦ Age > 13 yrs, irrespective of sex. Exclusion criteria: ♦ Perforation peritonitis due to penetrating trauma ♦ Primary peritonitis, ♦ Post op peritonitis. All patients were subjected to Biochemical investigations, Chest X Ray, Abdominal X Ray erect view, USG abdomen and pelvis. After confirming the diagnosis Emergency Laparotomy and drainage was done. Depending on the site of perforation, appropriate treatment protocol was adopted. **Result:** The highest number of patients encountered in this series were in the age group 50 years and above followed by the age group of 40-49 years. The commonest site involved in this study was duodenal ulcer perforation(54%) followed by appendicular perforation (24%) and ileal perforation (8%) pain abdomen was present in all cases. It was diffuse in 66% and localized to epigastrium in 20% followed by RIF in 10% and right hypochondrium in 4%. Guarding and rigidity was present in 70 patients. 65% of patients who presented within 24 hours of the onset of pain had good prognosis and early recovery. 58 cases of duodenal and gastric ulcer perforation under went closure as described by Graham (Omentalpatchclosure). In this study most of the patients with hollow viscous perforation were above the age of 50 years and most of them were male. The commonest site involved in hollow viscus perforation was duodenal ulcer perforation, The most common time of presentation was within 24 hours of the onset of pain. Most common procedure done was omental patch closure for peptic ulcer perforation. **Conclusion:** The most common age group affected is 50 years and above. Duodenal ulcer perforations were more common in the age group of 50 years and above. Most of these patients present with clinical signs of peritonitis 24 hours within the onset of pain. Early admission and prompt treatment after diagnosis had good recovery. Diagnosis is made clinically and confirmed by presence of pneumo peritoneum on radiological investigation. Laparotomy with peritoneal lavage and perforation closure with omental patch closure of the perforation with omental patch (58%) is the commonest operative management for perforated peptic ulcer and the outcome is good.



INTRODUCTION

Peritonitis that occurs due to hollow visceral perforation, is a term frequently encountered in surgical practice. It is defined as the inflammation of the serosal membrane which lines the abdominal cavity and the organs contained within it. Introduction of an infection through a bowel perforation into the otherwise sterile peritoneal ambience & introduction of a chemical irritant like gastric acid from a perforated ulcer are the common causes of peritonitis. The various modes of presentation of cases might mislead the diagnosis of its origin. The spectrum of causes of perforation in tropical countries is still different from its western counterpart. Contrary to the western countries where lower gastro-intestinal tract perforations preponderate, the majority of cases in India occur due to upper gastro intestinal tract perforations.

Peritonitis that occurs secondary to perforation of the gastro intestinal tract, a common occurrence in our country, is associated with high morbidity and mortality rates and it requires emergency surgical intervention.

The two important risk factors for perforation are

- Smoking and
- Usage of non-steroidal anti inflammatory drugs.

Diagnosis is usually made clinically and confirmation is made radiographically by the presence of pneumoperitoneum. The investigations should be done such that it gives a definitive diagnosis in a short span of time. The treatment of peritonitis has switched to an operative approach instead of the conservative approach owing to the increasing research and development done in the field of surgery and intensive care facilities.

In case of patients diagnosed to have a spontaneously sealed perforation proved by water soluble contrast gastro- duodenogram, non-operative management is successful. Operative management consists of age-old practice of omental patch closure, but this can also be done by laparoscopic method.

Ileal perforation is a common surgical emergency in the tropical countries. Reports show that it constitutes the 5th commonest cause of abdominal emergencies due to high incidence of enteric fever and tuberculosis in our countries. The mortality rate from ileal perforations continues to be high in developing countries, in spite of improvement in critical care and timely surgical intervention. In today's world of advanced anaesthesia and enormous improvement of resuscitative measures, every patient with ileal perforation should be recommended for surgery. If untreated, appendicitis will progress to local peritonitis with formation of appendicular mass, gangrene of appendix, perforation and generalised peritonitis.

Surgical exploration along with embolectomy is mandatory in acute mesenteric ischemia if there is presence of peritoneal signs. In the absence of the peritoneal signs, embolectomy is the standard of care. In non-occlusive mesenteric ischaemia, infusion of intraluminal vasodilator is done. Colonic perforations which carries high mortality risk is mainly due to diverticular perforation but perforations due to neoplasm, ischaemia are also seen.

Now-a-days, operative management of peritonitis includes simple closure of the perforation with a thorough peritoneal lavage and also resection and anastomosis if required especially in small bowel perforation.

Resection of the pathologic part with diversion procedure like Hartmann's procedure is also considered in colon cancer with gross contamination of the peritoneum.

Aims and Objectives

1. To estimate the frequency of peritonitis secondary to hollow viscus perforation in relation to age, etiology, Site of perforation, Symptoms and signs,
2. To estimate the correlation between clinical sign and radiological investigation , to find out the outcome of disease

MATERIALS AND METHODS

This study has been conducted in Department of General Surgery Ariyalur Government Medical College. Based on the analysis of 100 cases of hollow viscous perforation admitted to Government Medical College Hospital, Ariyalur, fulfilling the criteria were selected for the study.

Inclusion Criteria

- Clinical /Radiologically proven cases of perforation peritonitis
- Age > 13 yrs, irrespective of sex.

Exclusion criteria

- Perforation peritonitis due to penetrating trauma
- Primary peritonitis,
- Post op peritonitis.

All patients were subjected to Biochemical investigations, Chest X Ray, Abdominal X Ray erect view, USG abdomen and pelvis.

After confirming the diagnosis Emergency Laparotomy and drainage was done. Depending on the site of perforation, appropriate treatment protocol was adopted.

RESULTS

100 patients admitted in surgical ward in Ariyalur medical College Hospital, Ariyalur with peritonitis secondary to hollow viscous perforation were studied.

Table 1: Distribution of sample by age

Age group (years)	Frequency	Percent
<19	7	7
21-29	15	15
30-39	14	14
40-49	19	19
>50	45	45

In this study most of the patients with hollow viscous perforation were above the age of 50 years followed by the age group of 40-49 years group. The youngest patient in this study was 16 years who was having ileal perforation and the oldest patients are 65years ,2 in number ,one patient with duodenal ulcer perforation and the other patient with stomach ulcer.

Table 2: Distribution of sample by sex

Gender	Frequency	Percent
Male	84	84
Female	16	16.0
Total	100	100.0

In this study maximum number of patients were found to be males (84%) and the females constituted about 16%.

Table 3: The frequency of anatomical site of perforation is as follows. Anatomical sites of perforation

Anatomical site involved	Frequency	Percent
Stomach	4	4%
Duodenum	54	54%
Jejunum	4	4%
Ileum	8	8%
Appendix	30	30%

The commonest site involved in hollow viscus perforation in this study was duodenal ulcer perforation (54%) followed by appendicular perforation (30%) and ileal perforation (8%).

In this study, ileal perforation constituted 26% of the patients abdominal pain was present in all cases, vomiting was present in 8 cases, fever in 12 cases, bowel sounds was present in 3 cases and free fluid was present in 9 cases.

Three cases of ileal perforation with ischemic part were present in this study on examination there was diffuse tenderness with rigidity present in all cases and bowel sounds was absent in all cases the procedure patient went was resection and anastomosis among the three patients one developed septicaemia and was expired, one was recovered well and the other patient developed enterocutaneous fistula.

Appendicular perforation was present in 30% of patients most of the patients were in the age group 21-29 years of age, and most presented with classical symptoms of abdominal pain, vomiting, and fever rigidity was present in all cases and tenderness was diffuse in one patient and localized to right iliac fossa in other cases.

Table 4: Distribution of the site of pain

Site of pain	Frequency	Percent
Diffuse	66	66.0
Right iliac fossa	10	10.0
Epigastric	20	20
Right hypo chondriac	4	4.0
Total	100	100

Abdominal pain was the presenting symptom in all the cases in this study and the onset was acute in patients who presented 2 days after the onset of symptoms the pain was diffuse.

Table 5: Distribution of symptoms

Symptoms	Frequency	Percentage
Vomiting	68	68
Fever	54	54
Abdominal Pain	100	100

Vomiting is present in 68 cases and it is most commonly observed in patient presenting more than 2 days after the onset of symptoms. whereas in the appendicular perforation vomiting was present in most of the patient even from the first symptomatic day. in most of the patients with the duodenal ulcer perforation the patient had previous history of abdominal pain suggestive of peptic ulcer disease.

Table 6: Duration of pain

Time of admission	Frequency	Percentage
<24 hrs	65	65
2 to 3 days	30	30
>3 days	5	5

The most common time of presentation was within 24 hours and they had good prognosis. Patients presenting after 3 days have poor prognosis.

Table 7: Distribution of signs

Signs	Frequency	Percentage
Distension	55	55
Dehydration	55	55
Guarding and rigidity	70	70
Liver dullness obliteration	65	65
Free fluid	55	55
Absent bowel sounds	50	50

In this study guarding and rigidity was present in 70% of the patients, obliteration of liver dullness was present in 65% of cases.

Table 8: Distribution of pneumoperitoneum in X-ray abdomen

Pneumoperitoneum	Frequency	Percent
Present	76	76.0
Absent	24	24.0
Total	100	100.0

Gas under diaphragm was seen in 76 cases (76%) irrespective of the site of perforation which was statistically significant.

Distribution of etiology

Among the causes, NSAIDS constituted the cause of 36% of the cases followed by smoking that caused 30% of the cases. Alcohol intake was seen in 28% and steroid abuse was seen in 2%.

Table 9: Distribution of types of operation

Type of operation	Frequency	Percent
Live omental patch closure	58	58
Appendectomy	30	30
Resection and anastomosis	12	12
Total	100	100

The most common procedure done was omental patch closure (58%). Appendectomy was done in 30% of cases. Resection and anastomosis was done in 12% of cases.

Table 10: Distribution of complication

Complication	Gastric	Duodenal	Jejunal	Ileal	Appendix	Total
Wound infection	2	16	2	4	6	30
Entero cutaneous fistula	0	0	0	1	0	1
Burst abdomen	0	0	0	0	0	0
Paralytic ileus	0	0	0	1	0	1
Pelvic abscess	0	0	0	0	0	0

The most common complication following laparotomy for perforation is wound infection in my study. It was treated with antibiotic and wound wash.

Table 11: Distribution of sample by outcome

Outcome	Frequency	Percentage
Discharged	96	96
Expired	4	4

In this study the overall mortality rate was 4% irrespective of site and pathology of perforation out of 4 cases expired, two was of ileal perforation and another two was of gastric perforation.

Table 12: Distribution of culture of peritoneal fluid

Culture	Gastric	Duodenal	Jejunal	Ileal	Appendicular	Total
Sterile	4	40	2	2	10	58
E.coli	-	12	2	4	15	33
Pseudomonas	-	-	-	1	1	2
Klebsiella	-	1	-	-	2	3
B.Fragilis	-	1	-	1	1	3
Staphylococci	-	2	-	-	1	3

The most common organism was found to be E. Coli followed by klebsiella, B. Fragilis and Staphylococci.

Table 13: Distribution of lab investigations

	Gastric	Duodenal	Jejunal	Ileal	Appendicular	Total
Anaemia	4	18	2	2	4	30
Leucocytosis	0	10	1	2	20	33
Elevated renal parameter	1	4	1	6	0	12
Electrolyte imbalance	2	4	1	4	0	11

Most of the patients with appendicular perforation has leukocytosis. Anemia was seen common in duodenal perforation followed by gastric and appendicular perforation. Elevated renal parameters and electrolyte imbalance was seen in cases which presented after 48 hours.

DISCUSSION

This study was conducted in Ariyalur medical College Hospital. A total of 100 patients admitted with perforation peritonitis were studied. The highest number of patients encountered in this series were in the age group 50 years and above followed by the age group of 40-49 years. The mean age group in this study was 38.56 years. This is comparable with the study by Rajender Singh Jhobta in 2010 who studied 504 cases of perforation peritonitis in which the mean age was 36.8 years.^[1] In this present study, duodenal ulcer perforation was more common in the age group of above 50 years.

The ratio of men to women with all types of perforation irrespective of site and pathological condition was 5.25:1 in the present study.

Different authors have found variable results with regard to sex ratio. Ramesh C Bharati et al in 2012 reported sex ratio of 5.50:1 in the review of 50 cases.^[2]

The commonest site involved in this study was duodenal ulcer perforation (54%) followed by appendicular perforation (24%) and ileal perforation (8%).

Rajender Singh Jhobta,^[1] in 2006 in his study of 504 cases of perforation peritonitis found duodenum was the commonest site of involvement, followed by appendicitis, gastro intestinal perforation due to blunt trauma abdomen. Typhoid fever and tuberculosis.

In case of peptic ulcer perforations, pain abdomen and vomiting were the predominant symptoms. In the present study, pain abdomen was present in all cases. It was diffuse in 66% and localized to epigastrium in 20% followed by RIF in 10% and right hypochondrium in 4%. Guarding and rigidity was present in 70 patients. In 65 patients, liver dullness was obliterated. Liver dullness was not obliterated in 35 patients. Probable reasons suggested are sealing of the perforation or lack of gas at the site of perforation or adhesions around the site of perforations. Absence of liver dullness was present in all the cases of ileal perforation and 80% of appendicular perforation. Nair S K et al.^[3] in their study of 50 cases demonstrated absence of liver dullness in 63.63% of cases.

65% of patients who presented within 24 hours of the onset of pain had good prognosis and early recovery. Those who presented late after 3 days mostly had ileal perforation.

Perforated peptic ulcer is becoming common in older patients and associated with a higher incidence of recent consumption of nonsteroidal anti-inflammatory drugs (NSAIDs) and smoking. In the

present series perforated peptic ulcer constituted 58% of all hollow visceral perforation. The incidence was more common in the age group 50 years and above. All patients of perforative peritonitis were treated as a surgical emergency. Preoperatively all patients had broad spectrum antibiotic coverage, nasogastric suction and management of fluid and electrolyte imbalance and oxygen supplementation when necessary. Anemic patients required blood transfusion. Post operatively parenteral antibiotics was continued and after that oral antibiotics were given for 5 days.

58 cases of duodenal and gastric ulcer perforation underwent closure as described by Graham (Omental patch closure).

Resection of ileum with end to end anastomosis was done in 8 cases of gangrenous bowel with perforation. Of the 30 cases of perforative appendicitis open appendectomy was done in all the cases. The mortality rate in appendicular perforation was zero. Dandapat M Cetal in 2009 reported zero mortality rate in their study of 12 cases.^[2] In all cases of peritonitis thorough peritoneal lavage was given with 0.9% saline and drains were kept in the pelvis and the site of perforation which were usually removed on the third and fifth post operative day or when the drainage <30ml. Nasogastric tube was usually removed on the second and third post operative day and started orally on fourth day depending on bowel sounds. All patients were started on chest physiotherapy from the first postoperative day.

In the present study, the mortality rate was 4%. Dandapat MC et al,^[2] in 2009 recorded a mortality rate of 15.8%. Mathikere Lingaiah Ramachandra in 2008 in his study found the mortality rate as 14%.^[4]

Follow up

Follow up done for all patients. In duodenal ulcer patients strict diet advise was given. After surgery all duodenal ulcer patients were given H.Pylori regimen. 20 patients had recurrence of symptoms and endoscopy was done and they were advised to continue bland diet and H.Pylori regimen for 3 months.

CONCLUSION

- The most common age group affected is 50 years and above.
- Duodenal ulcer perforations were more common in the age group of 50 years and above.
- Most of these patients present with clinical signs of peritonitis 24 hours within the onset of pain.
- Early admission and prompt treatment after diagnosis had good recovery.
- Diagnosis is made clinically and confirmed by presence of pneumo peritoneum on radiological investigation.
- Laparotomy with peritoneal lavage and perforation closure with omental patch closure of the perforation with omental patch (58%) is the

commonest operative management for perforated peptic ulcer and the outcome is good.

- E coli is the most common pathogen grown in peritoneal cavity, followed by Klebsiella, B fragilis, Staphylococci.
- Leucocytosis is most commonly found in appendicular perforation followed by duodenal perforation. Anemia is most commonly found in duodenal perforation
- Early admission, prompt treatment and care will prevent the mortality.
- Irrational use of NSAID is the precipitating factor for perforation followed by smoking.
- So health education and life style modification is mandatory in the community to reduce the incidence of perforation peritonitis.

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