International Surgery Journal
Balamaddiah G et al. Int Surg J. 2018 Mar;5(3):908-912
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20180801

Original Research Article

Etiology and complications of perforated peritonitis: a retrospective study

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Received: 08 February 2018
Accepted: 13 February 2018

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ABSTRACT

Background: Peritonitis caused by perforation of the gastrointestinal tract is one of the most common emergencies in surgery and therefore required immediate recognition and management. The spectrum of this disease if different in India compared to the other parts of the world. Thus, this study was undertaken to assess the risk factors and outcome of this condition in the area.
Methods: Forty-three patients, between 10-70 years, who had undergone treatment for perforated peritonitis either as an emergency or as an elective procedure were included into this retrospective study. Records of the inpatients were obtained from the medical records department of the hospital. Abdominal X-ray and abdominal and pelvic ultra sound was done for all the patients. Metronidazole and cefotaxime were given intravenously for all the patients. Records of the inpatients were obtained from the medical records department of the hospital.
Results: Out of the 43 patients under study, 79% were males and 21% were females. The most predominant age group to be affected was 41-50 years followed by 51-60 years. 72.1% of the patients were alcohol users, 58.1% were smokers and 18.6% were on NSAIDs use. All the patients presented with abdominal pain and tenderness, followed by nausea and vomiting, presence of free fluid ad constipation. The most common cause for perforated peritonitis was peptic ulcers (58.1%), followed by enteric fever (16.3%), Tubercular peritonitis and ischemic bowel syndrome (7% each). Wound infections and electrolyte imbalance were the most common complications observed.
Conclusions: Surgical peritonitis is one of the most common surgical emergency procedures performed. Since there is no way to prevent the peritonitis, the most effective treatment would be with the help of efficient and prompt surgery, with modern anesthesia and proper post-operative care. This would help to reduce the morbidity and mortality among the patients.

Keywords: Etiology, Perforation, Peritonitis, Peptic ulcer

INTRODUCTION

Peritonitis caused by perforation of the gastrointestinal tract is one of the most common emergencies in surgery. Its prevalence has been documented very early by many historians.[1,2] But due to the absence of surgical procedures and lack of post-operative care, it was most of the times fatal. However, over time, this procedure has undergone a number of changes in development and management. This has resulted in the dramatic increase in the survival rate of the patients.[3-5]

Perforation is defined as a hole and break in the containing wall or membrane of an organ or structure of body. It normally occurs due to erosion, infection or other factors, when they create a weak spot in the body. This results in weakening and rupture of the peritoneum due to internal pressure. The most common cause of the

peritonitis is peptic ulcer, which is a medical emergency and therefore required immediate recognition and management.[6]

It is said to affect men between the 30-50 years more than women. Many of these cases come to the hospital after taking over the counter medications, massage and treatment from local practitioner.[7-11] Perforated peritonitis causes the entry of gastric juices and duodenal contents into the peritoneal cavity, resulting in bacterial contamination and suppurative peritonitis. This may further lead to septicemia. This is associated with morbidity and mortality in 30-50% of the patients.[12]

The spectrum of this disease if different in India compared to the other parts of the world. Thus, this study was undertaken to assess the risk factors and outcome of this condition in the area.

METHODS

This retrospective study was conducted by the Department of Surgery in Viswabarathi Medical College over a period of two years between December 2015 to January 2017. Records of the inpatients were obtained from the medical records department of the hospital. Forty-three patients, between 10-70 years, who had undergone treatment for perforated peritonitis either as an emergency or as an elective procedure, were included into the study. Patients of below 10 years and those with other perforations were excluded from the study.

Data of the patients, including age, sex, duration of presenting signs and symptoms were noted. Details such as previous history of perforated peritonitis, smoking, use of alcohols and NSAIDS were included. The presenting signs and symptoms of the patients were noted in detail along with the causes as observed by the attending clinician.

The observations of the physical examination, the medications in use at the time of admission were also noted. Investigations performed were complete blood picture, hemoglobin, blood sugar, urea, creatinine, serum electrolytes, viral screens such as HIV, HBV and HCV. Rectal examination was also done for all the patients for any tenderness or bulging. Any other complications systemic or pulmonary were also checked.

Abdominal X-ray and abdominal and pelvic ultra sound was done for all the patients. Metronidazole and cefotaxime were given intravenously for all the patients. The patients were also on catheterization for monitoring of the urinary output. On the basis of these finding, the line of treatment which was used for management was a simple closure, open or laparoscopic appendectomy, or omental patch closure. Post operatively, the medications used, duration of use, etc were noted. The postoperative complication including morbidity and mortality were also noted.

RESULTS

Out of the 43 patients under study, 34 (79%) were males and 9 (21%) were females (Figure 1).

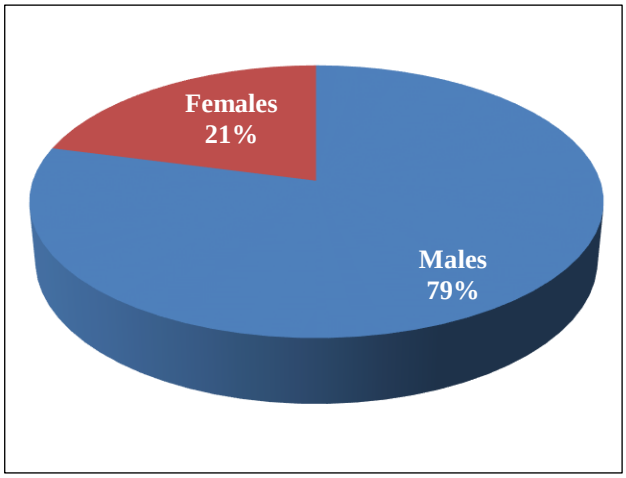

Figure 1: Gender wise distribution of the patients.

The most predominant age group to be affected was 41-50 years (39.53%) followed by 51-60 years (32.56%) (Table 1).

Table 1: Age wise distribution of the patients.

Age (years)	Number	Percentage
<20	1	2.32%
20-30	3	6.97%
31-40	7	16.7%
41-50	17	39.53%
51-60	14	32.56%
>60	1	2.32%

One of the most predominant risk factors of the patients was alcohol intake, seen in 31 (72.1%) of the patients. 25 (58.1%) of the patients were smokers, while 8(18.6%) of the patients were on NSAIDs use (Figure 2).

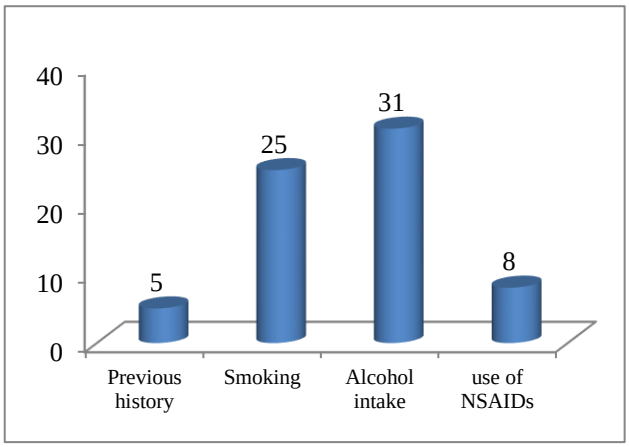

Figure 2: Risk factors for perforated peritonitis.

All the patients presented with abdominal pain and tenderness. Other common signs and symptoms were guarding and rigidity in 39 (90.7%), vomiting or nausea in 38 (88.4%), presence of free fluid in 33 (76.7%), and constipation in 31 (72.1%) of the patients. Fever was observed in 62.8% of the cases, while abdominal distension was observed in 67.4%. 4 patients presented with diarrhea (Table 2).

Table 2: Sign and symptoms.

Sign and symptoms	Number	Percentage
Pain in abdomen	43	100%
Vomiting/ nausea	38	88.4%
Fever	27	62.8%
Abdominal distention	29	67.4%
Diarrhoea	4	9.3%
Constipation	31	72.1%
Tenderness	43	100%
Guarding and rigidity	39	90.7%
Presence of free fluid	33	76.7%
Absence of bowels sound	29	67.4%
Free gas under diaphragm	32	74.4%
Pulse rate ≥120/mins	35	81.4%

The most common cause for perforated peritonitis was peptic ulcers seen in 25 (58.1%) of the cases, followed by enteric fever in 7 (16.3%). Tubercular peritonitis and ischemic bowel syndrome were observed in 3 patients each (7%). Only 1 patient each (2.3%) had malignancy or idiopathic disease (Figure 3).

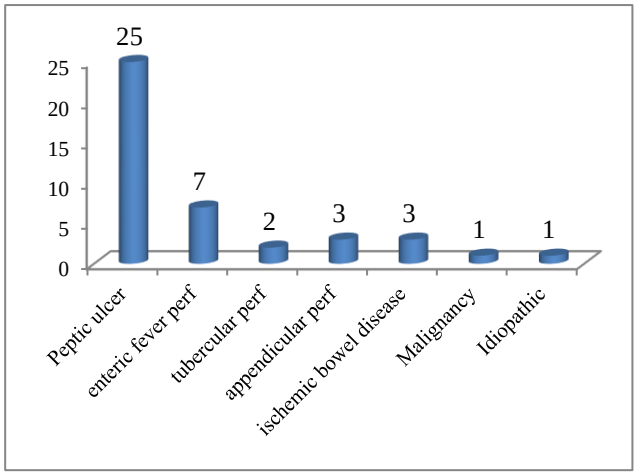

Figure 3: Causes of perforation peritonitis.

The most common complications observed postoperatively were wound infections which were seen in 19 (44%) of the cases, followed by electrolyte imbalance in 14 (32.6%) of the patients. Septicemia and respiratory tract infections were observed in 5 (11.6%) of the patients each, while 9 (20.9%) of the patients had burst abdomen. 8 (18.6%) patients died due to complications (Figure 4).

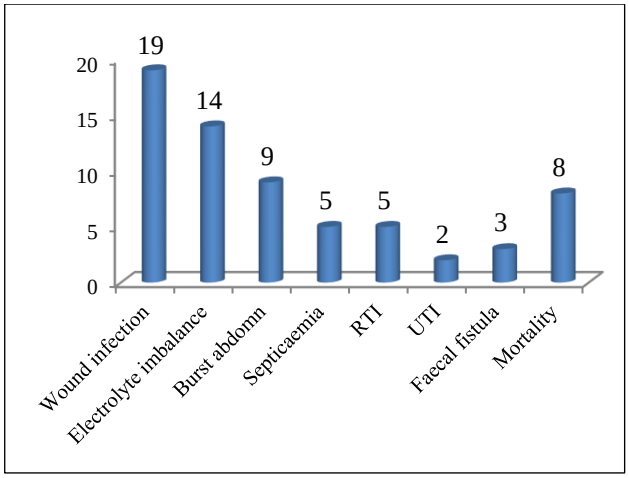

Figure 4: Complications observed postoperatively in patients.

DISCUSSION

In spite of development in the field of medicine and surgery, as well as a better understanding of the different causes for diseases, gastrointestinal perforations are still one of the major causes for morbidity and mortality and continue to be a problem. This is probably due to the late identification of the disease, local treatment and thus, late admission to hospitals. Hence, early diagnosis of this condition, immediate treatment and proper postoperative care are very essential for a successful outcome.[12]

In the present study, the most common gender to be affected were the males compared to the females. Similar results were observed in other studies such as those of Jain et al, Nanini et al, Edino et al, Lee et al and Tonnessen et al.[7-9,13,14]

The most common age group to be affected was 40-60 years. This was in accordance to the studies by Croft TJ et al[11] and Tonnessen T et al.[13] In a study by Bali et al, the mean age was 37.9 years.[15] However Mock CN et al, found 20-30 years to be the most common age group.[16]

Alcohol intake and smoking was found to be one of the major risk factors for this condition. Present study was corroborated by a study by Kuldeep et al, who also reported alcohol and smoking to be some of the causes of ulcer formation.[17] Svanes C, reported that smoking increases the risk of ulcer formation by 10 folds.[18]

Although author had not taken the occupation and the social background into consideration, in a study by Kuldeep et al, it was observed that people with manual labour and rural background were more affected with peptic ulcers. The incidence was lesser in the urban areas due to more prompt and effective medical services.[17]

The most common presentation was abdominal pain and tenderness, followed by guarding and rigidity, vomiting

or nausea, fever. Similar results were observed in a study by Kuldeep et al.[17] Similar observations were made by Ghooi et al and Desa et al in their studies.[19,20]

In the present study, the most common cause for perforated peritonitis was peptic ulcers seen in 58.1% of the cases, followed by enteric fever in 16.3%. Tubercular peritonitis and ischemic bowel syndrome were observed in 7% patients each. Only 2.3% patient each had malignancy or idiopathic disease. In a study by Bali et al, 22% of the causes were due to typhoid fever which was in accordance to present study.[15] A very high incidence of typhoid to be the cause was seen among 50% of the patients in a study by Khanna et al. In contrast, Noon et al, reported a low incidence of 2.7% caused by typhoid.[21] Though malignancy was observed in only one patient in present study, in the west, the incidence was said to be 15-20%.[22,23] Afridi et al reported duodenal ulcers to be the cause for perforated peritonitis in 43% of the cases.[24]

Wound infections were the most common complication to be observed among the patients in present study with 44% of the cases. 32.6% of the patients had electrolyte imbalance. Similar results were observed by Budhraja et al and Batra et al in their respective studies.[25,26]

The mortality due to perforated peritonitis has been reported to be between 6 - 27%.[27] Mortality, in present study, was seen in 18.6% of the cases. A lower rate of 7% was found in a study by Bali et al.[15]

CONCLUSION

Surgical peritonitis is one of the most common surgical emergency procedures performed. The etiology and the causative agents for this condition are varied. The clinical presentation and local treatment cause a delay in the diagnosis. Most of the perforations were due to peptic ulcers, tuberculosis and typhoid with malignancy being the least cause. Wound infection was the most common complication observed. Since there is no way to prevent the peritonitis, the most effective treatment would be with the help of efficient and prompt surgery, with modern anesthesia and proper post-operative care. This would help to reduce the morbidity and mortality among the patients.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Balamaddiah G, Ravindranath GG. Etiology and complications of perforated peritonitis: a retrospective study. Int Surg J 2018;5:908-12.