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Research Article

Clinical profile of non-traumatic perforation peritonitis

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Abstract

Background: Non-traumatic perforation peritonitis remains a significant surgical emergency in developing countries, with high morbidity and mortality despite advances in diagnosis and management. The condition is primarily associated with peptic ulcer disease, typhoid, tuberculosis, and malignancy.

Aim: To evaluate the clinical presentation, etiology, operative findings, postoperative complications, and outcomes of patients presenting with non-traumatic perforation peritonitis.

Methods: A prospective observational study was conducted at GSL Medical College, Rajahmundry, from March 2015 to November 2015, including 61 patients with clinically and radiologically diagnosed non-traumatic perforation peritonitis. All patients underwent emergency laparotomy, and relevant parameters were recorded and analyzed using SPSS version 20.0.

Results: Most patients were males (75.4%), aged 31–50 years (39.3%). The commonest symptom was abdominal pain (100%), followed by vomiting (82%) and abdominal distension (74%). The duodenum was the most frequent site of perforation (44.3%), followed by the ileum (32.8%) and stomach (14.8%). Wound infection (18%) was the most common postoperative complication. The mortality rate was 6.5%.

Conclusion: Duodenal perforation due to peptic ulcer disease remains the predominant cause of non-traumatic perforation peritonitis. Early diagnosis, aggressive resuscitation, and timely surgical intervention significantly improve patient outcomes.

Keywords: Non-traumatic perforation peritonitis, Duodenal ulcer, Typhoid ileal perforation, Peptic ulcer disease, Postoperative complications.

Introduction

Perforation peritonitis remains a major surgical emergency in developing countries, contributing significantly to morbidity and mortality. Unlike traumatic perforations, non-traumatic causes arise spontaneously due to underlying gastrointestinal pathology such as peptic ulcer disease, typhoid, tuberculosis, or malignancy [1]. The clinical profile varies according to the etiology, patient age, and geographic region. Early diagnosis and timely surgical intervention are crucial for reducing complications and mortality [2]. Despite advances in imaging and intensive care, late presentation and sepsis remain major challenges in resource-limited settings. Understanding the demographic, etiological, and clinical spectrum of non-traumatic perforation peritonitis aids in better management planning and outcome prediction [1-3].

The aim of this study is to analyze the clinical presentation, etiological factors, site of perforation, operative findings, postoperative complications, and outcomes among patients with non-traumatic perforation peritonitis. By identifying the prevailing patterns and risk factors, the study seeks to contribute to improving early diagnosis and prompt surgical intervention. Previous studies have shown peptic ulcer perforation and typhoid as leading causes in tropical countries, whereas

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malignancy and diverticulitis dominate Western data [4,5].

Methods

This prospective observational study was conducted in the department of General Surgery at GSL Medical College, Rajahmundry, from March 2015 to November 2015. All patients who presented to the emergency department with features suggestive of non-traumatic perforation peritonitis were included in the study. The diagnosis was made based on clinical evaluation, radiological findings, and intraoperative confirmation. Patients with traumatic perforations or those with postoperative peritonitis were excluded. Detailed history, including duration of symptoms, dietary habits, smoking, alcohol intake, and comorbidities such as diabetes or peptic ulcer disease, was recorded. A thorough general and systemic examination was performed to assess dehydration, shock, and abdominal tenderness or rigidity.

Routine hematological and biochemical investigations, including hemoglobin, total leukocyte count, serum electrolytes, blood urea, creatinine, and random blood sugar, were obtained. Radiological evaluation included an erect X-ray abdomen and chest to detect free gas under the diaphragm and ultrasonography of the abdomen when indicated. After adequate resuscitation with intravenous fluids, nasogastric aspiration, and broad-spectrum antibiotics, all patients underwent emergency exploratory laparotomy. The operative findings, including the site and size of perforation, the type of contaminant, and the underlying pathology, were noted. The surgical procedure was tailored to the intraoperative findings most commonly, primary closure with an omental patch for peptic ulcer perforation, segmental resection for ileal perforation, or simple closure for small perforations. Peritoneal lavage with warm normal saline was done in all cases before closure.

Postoperative management included intravenous antibiotics, fluid and electrolyte balance, and nasogastric decompression until bowel function returned. Patients were monitored for postoperative complications such as wound infection, respiratory infection, septicemia, or fecal fistula. The duration of hospital stay and mortality were recorded. Data were entered in Microsoft Excel and analyzed using SPSS version 16.0. Continuous variables such as age were expressed as mean ± standard deviation, while categorical variables such as sex, site of perforation, and etiology were presented as percentages. The Chi-square test was used to compare categorical data, and Student's t-test was applied for continuous data wherever appropriate. A P value less than 0.05 was considered statistically significant. The study was approved by the Institutional Ethics Committee of GSL Medical College, and informed consent was obtained from all participants prior to inclusion.

Results:

A total of 61 patients with non-traumatic perforation peritonitis were included in the study. The age of the patients ranged from 16 to 78 years, with the majority (39.3%) belonging to the 31–50 years age group. Males were predominantly affected (75.4%) compared to females (24.6%), giving a male-to-female ratio of 3:1. The most common presenting symptom was severe abdominal pain (100%), followed by vomiting (82%), abdominal distension (74%), and constipation (36%). On examination, guarding and rigidity were present in all cases. The most frequent site of perforation was the duodenum (44.3%), followed by ileum (32.8%), gastric (14.8%), and appendix (8.1%). Duodenal perforation was commonly associated with a history of acid peptic disease, while ileal perforations were often due to typhoid or tuberculosis. Postoperative complications were observed in 31.1% of patients, the most common being wound infection (18%), respiratory infection (6.6%), and septicemia (4.9%). The mean hospital stay was 10.4 days, and the mortality rate was 6.5%. The findings indicate that duodenal perforation due to peptic ulcer disease remains the leading cause of non-traumatic perforation peritonitis, predominantly affecting middle-aged men, with infection being the most frequent postoperative complication.

Discussion

In the present study, non-traumatic perforation peritonitis was most common among individuals aged 31–50 years, accounting for 39.3% of cases, with a distinct male predominance (male-to-female ratio 3:1). This distribution aligns with patterns observed in several Indian and international studies, where the disease predominantly affects young and middle-aged males who are more likely to engage in risk behaviors such as smoking, alcohol consumption, and irregular dietary habits. The male predominance may also reflect higher exposure to stress-related acid secretion, nonsteroidal anti-inflammatory drug (NSAID) usage, and delayed healthcare-seeking behavior among men compared to women [5].

The predominance of perforations in the productive age group has significant socioeconomic implications, as this age group represents the working population most responsible for income generation. Similar demographic trends were reported by Jhobta et al., who observed that 83% of patients were males with the highest incidence in the third and fourth decades of life [1]. Afridi et al. also reported a male preponderance (77%) and a peak incidence in the 21–40-year age group, suggesting comparable environmental and lifestyle influences across South Asian populations [3]. Another study by Dorairajan et al. emphasized that males from rural areas were more frequently affected due to factors like chronic dyspepsia, delayed medical attention, and exposure to unprescribed medications for acid-related disorders [2].

The relatively lower incidence among females in the current study could be attributed to hormonal protection offered by estrogen against acid-peptic disease, as well as better health-seeking patterns in women when gastrointestinal symptoms arise. However, increasing urbanization and stress-related lifestyles in both sexes are gradually diminishing this gap. Thus, the age and sex profile in this study highlights the need for preventive public health strategies focusing on modifiable lifestyle factors, early detection of acid-peptic disease, and rational use of NSAIDs to reduce the burden of perforation peritonitis.

In the present study, all 61 patients (100%) presented with acute abdominal pain, followed by vomiting in 82%, abdominal distension in 74%, fever in 46%, and constipation in 36%. This symptom profile reflects the classic presentation of generalized peritonitis secondary to gastrointestinal perforation. Abdominal pain remains the most universal symptom, as it signifies visceral perforation and subsequent peritoneal irritation. The high incidence of vomiting and distension suggests paralytic ileus and accumulation of peritoneal fluid and gas. Fever, though not always present, indicates systemic inflammatory response and evolving sepsis in delayed presentations.

These findings are consistent with other regional studies. Jhobta et al. reported abdominal pain in 100% of cases and vomiting in 78%, closely matching the current data [1]. Similarly, Afridi et al. documented pain and vomiting in 100% and 80% of patients respectively, with abdominal distension noted in 70% [3]. Adesunkanmi et al. also described abdominal pain and tenderness as universal symptoms, emphasizing that delayed presentation often correlated with generalized peritonitis and higher morbidity [4]. The similarity across these studies highlights that the clinical picture of perforation peritonitis remains fairly uniform across populations, and early recognition of this symptom triad—acute pain, vomiting, and distension—should prompt urgent surgical evaluation to prevent septic complications.

In the present study, the duodenum was the most common site of perforation (44.3%), followed by the ileum (32.8%), stomach (14.8%), and appendix (8.1%). Duodenal perforation predominated among middle-aged males with a history of acid-peptic disease and NSAID use, consistent with the global epidemiological pattern. Peptic ulcer disease continues to be a leading cause of perforation peritonitis in developing countries, particularly where Helicobacter pylori infection, smoking, and erratic dietary habits are prevalent [5]. Ileal

perforations were mainly due to typhoid fever and tuberculosis, both of which remain endemic in India, reflecting the persistent burden of enteric infections despite improved sanitation [4]. Gastric perforations were observed in elderly patients with a history of chronic NSAID consumption, while appendicular perforations were relatively infrequent but associated with delayed diagnosis.

Comparable findings were noted by Jhobta et al., who reported duodenal perforations in 43% and ileal perforations in 32% of cases [1]. Afridi et al. also observed peptic ulcer perforation as the leading cause (41%), followed by typhoid-related ileal perforation (39%) [3]. These findings reinforce that peptic ulcer disease and infectious etiologies remain predominant causes of non-traumatic perforation peritonitis in tropical regions, underscoring the importance of preventive gastroenterological and public health measures.

In our cohort of 61 patients, postoperative complications occurred in 31.1 %, with wound infection being the most common (18 %), followed by respiratory infection (6.6 %), septicemia (4.9 %), and fecal fistula (1.6 %). The overall mortality was 6.5 %. The predominance of surgical site infection mirrors findings from other studies where wound infection is consistently the leading morbidity in perforation peritonitis series, often reported in 15–30 % of patients depending on setting and contamination level. For example, in a series of diffuse peritonitis, the complication rate was 31.5 % with wound dehiscence, sepsis, and multi-organ failure being prominent features, and a mortality of 15.1 % was noted [6]. Similarly, in an Indian tertiary-care series, wound infection and respiratory complications were common, and mortality ranged from 5 to 16 % [7, 8].

The relatively lower mortality in our study may reflect earlier presentation, effective perioperative resuscitation, and surgical expertise. Yet, the presence of septicemia and respiratory infections in our patients underscores the systemic impact of peritoneal contamination and sepsis even after source control. A recent prospective Indian study on perforative peritonitis reported wound infection as the most frequent morbidity (19 %) and a mortality of 5.2 %, with all deaths occurring in patients requiring intensive care support [9]. Moreover, modern studies emphasize that higher peritonitis scores (e.g. Mannheim Peritonitis Index) correlate strongly with both morbidity and mortality: surgical site infections, organ failure, and septic complications increase as the scores rise [10]. These observations underscore that postoperative outcomes are not only about the technical closure of perforations but hinge crucially on prompt diagnosis, adequate resuscitation, antimicrobial therapy, perioperative care, and mitigation of systemic inflammatory response.

Conclusion: Non-traumatic perforation peritonitis continues to be a common and critical surgical emergency, predominantly affecting middle-aged males in developing regions. The duodenum remains the most frequent site of perforation, largely due to peptic ulcer disease, followed by ileal perforations related to typhoid and tuberculosis. Despite advances in surgical and postoperative care, morbidity due to wound infection and respiratory complications remains substantial. Early diagnosis, aggressive resuscitation, prompt surgical intervention, and meticulous postoperative management are crucial for improving outcomes. Strengthening public health measures to control infectious diseases and promoting awareness on ulcer prevention can further reduce disease burden and mortality.

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