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Original Research Article

A retrospective study of perforation peritonitis in a tertiary care hospital in Uttar Pradesh, India

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ABSTRACT

Background: Perforation peritonitis is a common surgical emergency encountered by surgeon's world over. The spectrum of this disease including its etiology differs in various countries. The present study was carried out to study the various modes of presentation, clinical features morbidity and mortality of perforation peritonitis in a tertiary care hospital in Uttar Pradesh, India.
Methods: This study was conducted on 221 consecutive patients of perforation peritonitis who presented in a period of 2 years (March 2014 to February 2016) in department of surgery, Rohilkhand medical college and hospital, Bareilly, Uttar Pradseh, India. These patients were assessed with respect to clinical presentations, causes, site of perforation, surgical management, postoperative complications and mortality if any. Following resuscitative measures, all patients underwent emergency exploratory laparotomy, where the cause of perforation was explored and controlled.
Results: A total of 221 cases of perforation peritonitis were included in the study with mean age of 39.8 years (range = 10 - 70 years). Majority of patients were male with female ratio of 4.02:1. 62% came with complaints of distension and 42% gave positive history of chronic NSAID use. Most common complications were wound infection, septicemia and dyselectrolylemia (49, 40 and 46% respectively). The overall mortality was 12.2%.
Conclusions: In the present study, most common site of perforation was the duodenum, the cause being acid peptic disease as a consequence of NSAIDs use. Early recognition, prompt intervention might lead to better outcomes and curtail mortality and morbidity associated with this disease. Highest percentage of perforation was noted in upper part of gastrointestinal tract.

Keywords: NSAIDs, Perforation peritonitis

INTRODUCTION

Perforation peritonitis is the peritoneal inflammation due to reaction of peritoneal cavity to the contents of perforated viscus, namely, gastro intestinal tract, the biliary system, pancreas or genitourinary tract. Gastrointestinal perforations constitute one of the commonest surgical emergency encountered by surgeons.[1,2] Since the perforations could be because of injury or lesions of viscus, these are amenable to surgical therapy. Management of these patients continues to be highly demanding despite advances made in diagnosis, surgical management, antibiotics therapy, correction of electrolyte balance and intensive care support.

Thus the management remains challenging through improvements in outcomes of such cases in respect to morbidity and mortality has been achieved. The causes of perforation are wide apart between Asian populace and their western counter parts.[3-5] Majority of patients reported to hospital fairly late often with complications such as purulent peritonitis and septicemia.[2]

METHODS

This retrospective study was conducted from March 2014 to February 2016 for a period of 2 years in patients of perforation peritonitis in the department of surgery, Rohilkhand medical college and hospital, Bareilly, Uttar Pradesh, India. All 221 consecutive cases of peritonitis due to perforation of a viscus were included in the present study. The exclusion criteria included all cases of primary peritonitis, trauma, corrosive and post-operative peritonitis due to anastomosis leakage.

All enrolled cases were studied with respect to clinical features at the time of presentations and based on history, physical examination, a provisional diagnosis of intestinal perforation was made which was confirmed by X-ray abdomen and chest, Routine investigations including haemoglobin, renal functions tests, liver functions tests and electrolytes were also assessed. On performing exploratory laparotomy, the source of peritonitis was found and managed accordingly followed by peritoneal lavage and drain instillation. Parenteral broad spectrum antibiotics and fluids were administered and electrolyte balance was maintained. Patients were allowed orally after return of bowel sounds and passage of flatus and stools. Early ambulation was ensured. If required blood transfusion was given.

RESULTS

In this retrospective study spanning a period of 2 years a total of 221 patients were included. Mean age was 39.8±13.31 years.

Table 1 shows number of patients and their age groups. The highest number (96) patients belonged to the age group of 31-40 years.

Table 1: The age and number of patients in cases of perforation peritonitis.

Age	Numbers
<10	5
11-20	4
21-30	12
31-40	96
41-50	42
51-60	39
61-70	15
>70	8
Total	**221**

Table 2: Shows presenting symptoms and comorbid conditions in cases of perforation peritonitis.

A single case may exhibit several symptoms simultaneously. It may be noted that distention and pain in abdomen were the most frequent symptoms observed. Amongst comobrid conditions NSAIDs intake and COPD were more commonly encountered.

Table 2: Symptomatology and comorbid conditions in cases of perforation peritonitis.

Symptoms	No. (%)	Comorbid conditions	No. (%)
Distension	137 (61.99)	COPD	106 (48)
Tenderness/ pain	86 (38.91)	NSAIDs intake	93 (42)
Vomiting	66 (29.86)	Hypertension	22 (9.9)
Constipation	62 (28.05)	TB	22 (9.9)
Fever	22 (9.9)	Diabetes	7 (3.16)
Shock	19 (8.6)	Malignancy	4 (1.81)

Table 3: Time taken to reach hospital and admission to operation time.

Variable	Time	Patients no.
Time taken to reach hospital	<24 hours	44
	>24 hours	177
Admission to operation time	<12 hours	46
	>12 hours	175

Table 3 shows time taken to reach hospital and time taken from admission to operation. It has been noted that a great majority of patients (177) took more than 24 hours to reach hospital after the appearance of the symptoms. 20% of patients presented to hospital within 2 hours of onset of symptoms. Only 44 patients reached hospital within 24 hours and majority of these patients were city dwellers. Further, in great majority of cases (175), the admission to operation time took more than 12 hours. This much time was taken for resuscitation, diagnosis and preparing the patient for surgery. In only 46 cases the exploratory laparotomy was performed within 12 hours owing to prompt resuscitation and early clinching of diagnosis.

Table 4 depicts positive findings on investigations, Radiological pictures and dyselectrolytemia were the two foremost positive investigative findings.

Table 4: Positive findings on investigations.

Investigations	No.
X-Ray chest	174
X-Ray abdomen	62
Dyselectrolytemia	91
Raised renal function	46

Table 5: Shows different sites of perforation, the most common being duodenum (54%) followed by ileal perforation (23%). Gall bladder was involved in only 2 out of 221 cases.

Table 6: Shows the surgical procedures undertaken in cases of perforation peritonitis. It could be noted that

omentopexy and ileostomy were the commonest procedures undertaken.

Table 5: Sites of perforation.

Site	No. (%)
Duodenum	119 (53.6)
Gall bladder	2 (0.9)
Gastric anterior	18 (8.1)
Gastric posterior	4 (1.8)
Jejunum	5 (2.3)
Ileum	50 (22.6)
Appendix	11 (4.9)
Colon	7 (3.2)
Caecum	5 (2.3)

Table 6: Surgical procedures undertaken.

Procedure	No. (%)
Omentopexy	199 (53.6)
Ileostomy	55 (24.9)
Colostomy	7 (3.2)
Resection with anastomosis	5 (2.3)
Appendicectomy	11 (4.9)
Graham's patch	22 (9.9)
Cholecystectomy	2 (0.9)

Table 7 enumerates various complications which arose during the course of management. The most common being wound infection, septicaemia and dyselectrolytemia. Intraoperatively, there was purulent exudate in 143, faecal in 63, clear in 13 and bilious in 2 patients.

Table 7: Complications encountered in these patients.

Complications	No. (%)
Wound infection	49 (22.1)
Septicemia	40 (18)
Burst abdomen	15 (6.7)
Abdominal collection	28 (12.6)
Chest infection	30 (13.5)
Dyselectrolytemia	46 (20.8)
Anastomotic leaks	1 (0.4)
Mortality	27 (12.2)

There was a total 27 mortality out of 221 cases. Wound infections, septicaemia and dyselectolytemia were responsible for prolonged stay in the hospital and comorbidities.

DISCUSSION

Peritonitis as results of perforation of a viscus is one of the commonest emergencies seen in surgical department. Management of perforation peritonitis not only requires prompt resuscitation measures and improved surgical strategies but also intensive medicare including specific antibiotics and maintenance of proper electrolyte balance, only then an improved outcome will be achieved

Approximately 62% cases had distension of abdomen, and 39% had pain and tenderness. Almost similar type of symptomatology was also noted by other investigations and thus corroborated our observations.[6-8]

In our study large number of cases had associated comorbid conditions. Common associated comorbid conditions included chronic obstructive pulmonary disease (COPD) followed by NSAID intake, hypertension, diabetes, TB and malignancy. Bali et al in their study also observed COPD, renal disease, diabetes and hypertension as comorbidities.[6]

Majority of patients in present study exhibited positive findings on investigations such as evidence of pneumoperitoneum on X-ray chest and air fluid levels on X-ray chest and air fluid levels on X-ray abdomen and dyselectryrolemia. Memon et al contested our observations and noted that investigations have dubious reliability.[8] Supporting our observations in respect to investigations results, other investigations have also observed a positive role reporting 50% of cases had pneumoperitoneum. We observed positive findings in various investigations conducted. Consistent with our observations, Bali et al also noted that 79% patients had pneumoperitoneum on chest x-ray and multiple air fluid levels on abdominal X-rays.[6] Similar to our findings, these authors also noted altered electrolyte balance.

Most patients (177) took more than 24 hours to reach hospital despite onset of symptoms. Memon et al in their series also observed that majority of patients presented late from 12 hours to 6 days with average 3.5 days.[8] Kaur et al also observed a delay in seeking surgical treatment as an important cause of high morbidity.[9] We observed that the diagnosis of peritonitis could be clinched clinically. Abdominal distention, pain, tenderness, vomiting were some important symptoms. Other investigations also noted similar symptomatology in their studies.[8,10]

More commonly the perforations involved the proximal part of gastrointestinal tract.[6,11-13] This observation was in contrast to observations of Memon et al, Quereshi et al and Dorairajan et al who noted distal gastrointestinal tract was the common site of perforation.[8,14,15] Our observations are also in contrast to studies from western countries where perforations were more common in the distal part.[16,17]

It may be noted that then spectrum of perforation peritonitis in India continues to be different from western counterparts. Although there is a paucity of data from our country about perforation peritonitis with respect to etiological factors, prognostic indicators, morbidity and mortality patterns yet with passage of time one could clearly observe the changing patterns with wide

geographical variations even in our own country regarding etiology etc. If earlier studies pattern are compared with the present studies.

Khanna et al in their study of 204 consecutive cases of gastrointestinal perforation from UP reported that over half (108) cases were due to perforation of typhoid fever as also with amoebiasis and tuberculosis, thus emphasizing a major role played by infection at that era of time.[18] Bali et al also noted that 22% of cases were due to typhoid and tuberculosis.[6] In contrast Bose et al from PGIMER Chandigarh reported blunt trauma to be a major cause (21% cases) probably due to high speed road traffic accidents on national highway near Chandigarh.[4]

Noon et al also reported penetrating trauma to be major cause. These observations are contrary to our observations wherein major cause is chronic NSAIDs consumption (42%) cases.[19] Moreover, blunt abdominal trauma also poses diagnostic dilemma for the concerned surgeon.

Acid peptic disease is the commonest cause of perforation peritonitis consequent to NSAIDs consumption. In 53.6% of cases duodenum is the site of perforation, followed by ileum in 22.6% cases, and gastric ulcers-gastric anterior (8.1%) and gastric posterior (1.8%). In 4.9% cases peritonitis developed secondary to perforated appendix. Our observations are in line with those of Dandapat et al who noted an incidence of 6.4% of perforated appendix, whoever there was much variance in the findings of Memon et al reporting 15% appendicular perforations.[8,20]

Duodenal and gastric ulcers are present in the ratio of 5:1 in the present study. Our observation are in line with those of Jhobta et al in whose series the ratio was 7:1, but is in sharp contrast with an earlier study where a ratio of 15:1 was noted.[15,21]

In our study the most common cause of perforation was duodenal ulcer. This observations is in line with other investigation is in line with other investigations in the field.[7,22] Chakma et al noted an occurrence of 54.29% as far as perforation of duodenal ulcer was concerned.[23] Same results were shown by other studies.[21,22]

Moreover, studies from the west depicted that malignancy accounted for around 15-20% cases.[24,25] This is in stark contrast to our study were malignancy was ascertained to be the cause of perforation peritonitis in only 2% cases. Our observation in this respect is corroborated by Bali et al where malignancy was responsible for 3% of cases.[6] Memon et al observed 11 cases of malignancy in 311 patients series all having adenocarcinoma's on histology.[8]

The overall mortality due to perforation peritonitis in the present study was 27 cases out of 221 patients (12.2%). Various comparable studies have observed the overall mortality range between 6-27%.[6,23,26,27] The main cause of death in the present series was wound infection and septicemia a problem of infection, and electrolyte imbalance. Hence early surgical intervention curtails further contamination by removing the source of infection through final outcome depends upon general host resistance, maintaining proper electrolyte balance and control of septicemia by resorting to antibiotic sensitivity of the organism. Our observations are well supported by Nadkarni et al and Bali et al.[5,6]

CONCLUSION

Spectrum of perforation peritonitis is quite different between India and western countries. Upper gastrointestinal perforation (duodenal mainly) are fairly common in India. In present study, NSAIDs consumption is the most important cause of perforation. Wound infection and septicaemia are the major causes of mortality. Early surgical intervention, undercover of broad spectrum antibiotics, preceded by prompt resuscitation measures and correction of electrolyte imbalance are the cornerstone in achieving good outcomes and reducing morbidity and mortality rate.

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