

Original Research

Incidence And Prevalence Of Perforation Peritonitis In A Tertiary Care Centre: An Original Research

¹Dr. Barinder Kumar, ²Dr. Gopal Sharma, ³Dr. Veenu Bharti

¹Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

²Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

³Diploma Gynaecology and OBS, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

Corresponding author

Dr. Barinder Kumar

Assistant Professor, Department of General Surgery, Government Medical College and Associated Hospital, Rajouri, Jammu and Kashmir, India

Email: veeru7281@gmail.com

ABSTRACT

Aim: The purpose of the present study was to evaluate the incidence as well as prevalence of perforation peritonitis in a tertiary care centre.

Methodology: This descriptive cross-sectional study was conducted from 2021 to 2022 with a sample size of 30 patients. All details of the patients including clinical history, examination findings, laboratory and radiological investigations, intra-operative findings, and post-operative complications were studied.

Results: Perforation peritonitis had a male: female ratio of 3.29:1; and was more commonly seen between the age group of 21-30 years, whereas peptic ulcer perforation had a bimodal distribution (21-30 years and 51-60 years). Commonest aetiology was peptic ulcer perforation, followed by appendicitis and enteric fever. Majority of patients presented after 48 hours, in the stage of established generalised peritonitis. The diagnosis was possible by pneumoperitoneum on X-ray abdomen standing in 70% and only a few needed CT for diagnosis. Laparotomy followed by primary closure of perforation with or without live omental patch was the commonest procedure.

Conclusion: E. coli was the most common peritoneal contaminating organism followed by Klebsiella and Proteus mirabilis. The post-operative complication rate was 53.3% (wound infection 30%) and the mortality rate was 3.3%. Appendicectomy was done in appendicular perforation whereas occasionally, resection anastomosis of involved small bowel segment was required.

Keywords: Perforation; peritonitis; peptic ulcer; culture.

INTRODUCTION

Peritonitis is defined as inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Secondary peritonitis is caused by the loss of integrity of the gastrointestinal tract or other visceral organ. It is a common clinical problem that affects a wide range of patients. Severe secondary peritonitis, or abdominal sepsis, even in modern days is still characterized by high mortality and morbidity rates due to multiple organ failure (MOF) from septic shock. Reported mortality rates have only decreased slightly over the last few

decades, and range from 20 to 60 %. Morbidity rates are as high as 50 % with subsequent long hospital and intensive care unit (ICU) stays.¹ Even though the true incidence of abdominal sepsis is not known; it is regarded as one of the most common causes of sepsis.² Pain is the most common symptom and may be localized or diffuse; it is usually constant and of a sharp, pricking character. A visceral perforation causes a sudden, severe pain that is usually first appreciated in the area of the perforation, but may become more generalized as peritoneal contamination spreads. The pain will be referred to the ipsilateral shoulder tip if the diaphragmatic peritoneum is involved. Anorexia, malaise, nausea and vomiting are common associated features. Constipation is usually present, unless a pelvic abscess develops (which can cause diarrhoea). After obtaining the detailed clinical history, there should be focus on clinical signs identifying generalized peritonitis like abdominal rigidity, rebound tenderness, or guarding in all four abdominal quadrants. Of note, abdominal auscultation has no role in the evaluation of acute abdominal pain. Although some physicians question the reliability of the physical examination after patients have received narcotics, three small RCTs have shown that early pain relief does not alter the diagnostic accuracy of the physical examination or operative decision making. Particular care is needed when examining older or obese patients, as the physical examination may be unreliable.³⁻⁵ Various etiological conditions include peptic perforation, appendicular perforations, typhoid, intestinal tuberculosis, Meckel's diverticulum, diverticulitis, trauma, gastrointestinal carcinomas, foreign body ingestion, gall bladder perforation secondary to gall stones, perforation due to obstruction, iatrogenic perforation. The role of early detection of severe sepsis and prompt aggressive treatment of the underlying organ dysfunction to prevent global tissue hypoxia and multiorgan failure has been emphasized. Mortality was more in patients with delayed presentation and older age group, this can be prevented by health awareness, better primary health facility, better recruitment of health staff who skilled in emergency management and timely referral, better transport facility, increased per person income.⁶ Incidence, perforation site, and age are all varied in the developing world, and new trends are emerging. In the developing world, the etiological spectrum differs from that in the developed world.⁷ Recent studies in South Asia have described about the clinical profile and management of perforation peritonitis. Despite advances in surgical technique, antibiotic medication, and perioperative care, perforated peritonitis still has a significant morbidity and fatality rate.⁸

AIM OF THE PRESENT STUDY

The purpose of the present study was to evaluate the incidence as well as prevalence of perforation peritonitis in a tertiary care centre.

METHODOLOGY

Thirty patients of perforative peritonitis were included in this descriptive cross-sectional study from October 2021 to October 2022. Inclusion criteria: All patients presenting with perforative peritonitis. Exclusion criteria: Primary peritonitis, iatrogenic peritonitis, Post-operative peritonitis. Approval of the Ethics Committee was obtained before the commencement of the study. Informed written consent was obtained from all patients prior to their enrolment in this study. All these patients were studied with respect to their various clinical presentations at the time of diagnosis, the various causes, radiological correlation, intra-operative findings, management, peritoneal exudate cultures, postoperative prognosis and complications. Post-operatively, the patients were followed up at one month, three months and six months.

RESULTS

The age of patients in this study ranged from 16 to 78 years; the commonest age group was 21-30 years (43.3%). The oldest patient had a sigmoid perforation, whereas the youngest patient

had an appendicular perforation. Mean age was 36.6 years. Twenty three patients (76.7%) were male and 7 patients (23.3%) were female with a male to female ratio of 3.29:1. The commonest site of perforation was peptic perforation accounting for 36.7% of cases, followed by appendicular perforation (23.3%). Other sites included: 10% jejunal, 20% ileal, 6.7% sigmoid and 3.3% gall bladder. Commonest aetiology was peptic ulcer perforation (36.7%), especially duodenal, followed by appendicular perforation (23.3%). Traumatic (6.7%) jejunal perforation occurred in 2 patients (1 blunt abdominal trauma and 1 penetrating abdominal trauma. There was only 1 case (3.3%), tuberculosis, obstruction due to malignancy (sigmoid adenocarcinoma), obstruction due to stricture, colonic diverticulosis and jejunal diverticulosis. (Table 1)

Table 1: Aetiology of perforation

Aetiology	Number	Percentage
Gastric ulcer	5	16.7 %
Duodenal ulcer	6	20%
Appendicitis	7	23.3%
Tuberculosis	2	6.3%
Trauma	2	6.3 %
Obstruction due to malignancy	2	6.3%
Obstruction due to stricture	1	3.3%
Diverticulosis of colon	1	3.3%
Diverticulosis of jejunum	1	3.3%

Thirty percent of patients presented with symptom duration of 2 days. Only 33.3% of patients presented within 24 to 48 hours of onset of symptoms. All patients had abdominal pain as presenting complaint regardless of aetiology, whereas vomiting was present in 70%, fever in 66.7% and abdominal distension in 43.3%. The majority (56.7%) had localised pain (right iliac fossa pain in 100% of appendicular perforations, right hypochondrial pain in 100% of gall bladder perforation and epigastric pain in 63.6% peptic perforations) vs. generalised pain (43.3%). Vomiting was common (72.7%) in peptic perforation. Smoking, medication and alcohol are the major risk factors in peptic ulcer perforation. Medications (NSAIDs and oral steroids) alone were present in 27.3% of cases of peptic perforation and contributory in another 36.4%. Smoking and medications were present in 9.1%, alcohol and smoking in 9.1%; alcohol, smoking and medications in 27.3%. (Table 2)

Table 2: Various risk factors in peptic ulcer perforations

Risk factor	Number	Percentage
Smoking	2	18.2%
Medications	3	27.3%
Alcohol and smoking	1	9.1%
Smoking and medications	1	9.1%
Alcohol, smoking and medications	3	27.3%
No risk factors	1	9.1%

Although tenderness was present in 100% of cases, only 83.3% had guarding or rigidity. Distension was noted in 70% of patients versus 43.3% patients complaining of distension, more commonly observed with more distal sites of perforation. Chest X-ray and erect abdominal X-ray showed pneumoperitoneum in 70% of the cases. Ultrasound was done in all patients and was positive for features of perforative peritonitis in only 63.3% of patients. Majority of cultures from the peritoneal fluid collected intraoperatively yielded no growth of micro-organisms (56.7%). Of the micro-organisms isolated, Escherichia coli was the most common

(23.3%). 53.3% of patients had at least one post-operative complication; commonest complication was wound infection (30%) followed by paralytic ileus (more than 2 days).

DISCUSSION

Generalised peritonitis is a frequently encountered emergency and remains a significant cause of morbidity and mortality, which usually requires emergency surgery.⁹ Majority of the patients present late with purulent peritonitis and septicaemia.¹⁰ Worldwide, there is a predominance of males presenting with this life-threatening disease.^{11,12} Male preponderance is seen, with a male to female ratio of 3.29:1. In our study of 30 cases, the incidence of peptic ulcer perforation was highest constituting 36.7%. This was followed by appendicular perforation (23.3%) and enteric fever (13.3%) perforation. Trauma was a cause of perforation in 6.7%. Tubercular perforation, obstruction secondary to malignancy leading to perforation, perforation due to obstruction caused by stricture and perforation of empyema gall bladder constituted 3.3% each. Diverticulosis was a cause of colonic perforation in 1 (3.3%) case and jejunal perforation in 1 (3.3%) case. Trauma was a cause of perforation in 6.7%. Even though the presence of pneumoperitoneum is a hallmark of perforation of hollow viscera, the absence of this does not exclude the possibility of perforation. This sign is visualised only in about 75% of perforation cases. In our study, we found it in 21 (70%) cases. Our study correlates well with TKempraj et al (75%) and MC Dandpat et al 72.35%).¹³ Gastroduodenal perforation is the commonest perforation (36.7%). This is consistent with other studies by Khan et al (38.8%), Doraraijan et al (32%) and Shreshta et al (32.5%).¹⁴ The small bowel is the second most common site of perforation (30%). This is consistent with studies by Qureshi et al (29.4%) and Nishida et al (31%). Laparotomy was performed in all 30 cases; the incision was planned according to the site of perforation. Contamination of the peritoneal cavity was noted, and peritoneal fluid sent for culture and viscera inspected and bowel screened for the site of perforation. The overall mortality rate in perforation peritonitis is very high ranging from 5.6-15.5%. Poor general condition, anaemia and hypoproteinemia added to the post-operative mortality and morbidity.

CONCLUSION

Appendicular perforation was seen in a younger age group. Perforation peritonitis had a male: female ratio 3.29:1; and was more commonly seen between the age group of 21-30 years, whereas peptic ulcer perforation had a bimodal distribution (21-30 years and 51-60 years). The diagnosis was possible by pneumoperitoneum on X-ray abdomen standing in 70% and only a few needed CT for diagnosis. The postoperative complication rate was 53.3% (wound infection 30%) and the mortality rate was 3.3%.

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