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Original Article

Frequency of Perforation Peritonitis Due to Typhoid: An Experience at a Tertiary Care Hospital in Balochistan

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ABSTRACT

Objective: To determine frequency of perforation peritonitis due to typhoid among the cases admitted in a tertiary care hospital in province Balochistan.

Study Design: Cross-sectional study.

Place and Duration of Study: Surgical Department, Sandeman Provincial Hospital, Quetta Pakistan, from Jan to Jun 2023.

Methodology: This study was conducted on 140 cases of perforation peritonitis admitted in the surgical department of the hospital. Data was recorded regarding clinical presentation of the patients, cause of perforation, site of perforation, treatment given, postoperative complications and mortality rate. Patients of both genders and any age were included in this study. First of all patients were resuscitated in emergency department then exploratory laparotomy done to rule out the cause.

Results: Most common cause of perforation was acid peptic disease in 58(41.4%) cases followed by typhoid in 40(28.5%) cases. The most common site of perforation was gastroduodenal in 58(41.4%), ileal in 51(36.4%), appendicular 16(11.4%), colonic 10(7.1%), and jejunal in 5(3.6%) cases. Age range of the cases was 15 to 75 years, with a mean age of 42.12±12.38 years. Study sample included 95(67.9%) male and 45(32.10%) female cases.

Conclusion: Typhoid was the second most common cause of perforation peritonitis while acid peptic disease was on top among the causes in this study, while most common site of perforation was upper part of gastrointestinal tract.

Keywords: Acid Peptic Disease, Gastrointestinal perforation, Peritonitis, Typhoid.

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INTRODUCTION

Gastrointestinal tract perforation is the most common cause of peritonitis leading to emergency exploratory laparotomy worldwide.[1] In our region, the spectrum of perforation is different from western countries, as mostly patients present late with complications like septicemia and purulent peritonitis.[2] Perforation peritonitis is a surgical emergency requiring antibiotic coverage and intensive care therapy to reduce morbidity and mortality of patients and improve their outcomes.[3]

Peritonitis is of three types depending on the contamination source. In primary peritonitis, infection comes from extraperitoneal sources via blood stream and there is no visceral perforation, while secondary peritonitis occurs due to visceral perforation of urogenital or gastrointestinal tract. Hence, flora of GIT causes infections.[4] An impaired host immune response or occurrence of super infections can lead to tertiary peritonitis.[5] If peritonitis is not treated well in time it may lead to multiorgan failure culminating in death.[6-8] Surgical options for perforation peritonitis include primary closure with double layer, resection of the segment and anastomosis or making ileostomy.[9-10]

This study was conducted to determine causes of perforation peritonitis, especially frequency of typhoid perforation leading to peritonitis so that disease burden may be found in our society and proper effective treatment may be given to the patients keeping in mind the common causes of perforation peritonitis.

METHODOLOGY

This cross-sectional study was conducted on 140 cases of perforation peritonitis admitted to the Surgical Department of Sandeman Provincial Hospital, Quetta Pakistan, from January to June 2023, after permission was taken from the hospital Ethical Review Board (Ref.4080/IRB/SPHQ).

Inclusion Criteria: All the cases of peritonitis due to gastrointestinal tract perforation of either gender and all age groups were included.

Exclusion Criteria: Cases of primary peritonitis, postoperative peritonitis due to leakage of anastomosis, or a history of corrosive ingestion causing visceral perforation were excluded.

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Sample size was calculated using WHO calculator taking prevalence of peritonitis in Pakistan as 10.6%.[11] Non probability consecutive sampling was used for sample selection, and informed consent was obtained from each patient or their guardians.

Data was recorded regarding clinical presentation of the patients, cause of perforation, site of perforation, postoperative complications and mortality rate. First of all, patients were resuscitated in the emergency department, and after making diagnosis of perforation peritonitis using necessary laboratory tests and imaging techniques, exploratory laparotomy was planned to rule out the cause. Midline incision given to open the abdomen, source and site of infection found, abdomen was washed with plenty of normal saline, perforation managed accordingly depending upon the surgeon's choice of surgical procedure. In the end, the abdomen was closed with non-absorbable proline suture. All patients were placed in the ward with intensive care support. Antibiotic coverage was given with proper fluid and electrolyte balance.

Data was analyzed using Statistical Package for Social Sciences (SPSS) version 24. Frequency and percentages were determined for qualitative variables like gender, site of perforation etc. Means with standard deviation were determined for quantitative variables like age, disease duration and so on.

RESULTS

One hundred and forty cases were studied. The most common presenting complaint was abdominal pain in 115(82.10%) cases, and common positive finding on investigation was pneumoperitoneum, found in 110(78.60%) cases, as seen in Table-I. Most common cause of perforation was acid peptic disease in 58(41.40%) cases, followed by typhoid in 40(28.50%), appendicular perforation in 16(11.40%), tuberculous perforation in 13(9.30%), due to trauma in 8(5.70%) and malignancy in 5(3.60%) cases (Table-II).

The most common site of perforation was gastroduodenal in 58(41.40%), ileal in 51(36.40%), appendicular 16(11.40%), colonic 10(7.10%) jejunal in 5(3.60%) cases (Table-II). The age of the cases ranged between 15 and 75 years, with a mean age of 42.12±12.38 years. Our study sample included 81(57.80%) male and 59(42.10%) female cases. Mean hospital stay was 5.60±1.20 days. Mean duration of the surgery was 107.83±9.40 minutes. Common post-operative complications include wound infection in 11(7.80%) and burst abdomen in 8(5.70%) cases. Mortality rate was 9% in the study group (Figure).

Table-I: Preoperative data of Patients (n=140)

Variables	n(%)
Clinical presentation	
Pain in abdomen	115(82.10%)
Distended abdomen	80(57.10%)
Altered bowel habit	52(37.10%)
Nausea & vomiting	33(23.60%)
Septicemia	29(20.70%)
Fever	31(22.10%)
Positive history of taking NSAIDs	20(14.30%)
Positive findings on investigations	
Pneumoperitoneum	110(78.60%)
Air-fluid levels	49(35.00%)
Hypokalemia	82(58.60%)
Hyponatremia	68(48.50%)
Elevated serum urea creatinine level	12(8.50%)
Resuscitation time	
≥12 hours	93(66.40%)
<12 hours	47(33.60%)

Table-II: Causes of Perforation Peritonitis (n=140)

Causes of perforation	n(%)
Acid peptic disease	58(41.40%)
Typhoid	40(28.50%)
Perforated appendix	16(11.40%)
Tuberculosis	13(9.30%)
Trauma	8(5.70%)
Malignancy	5(3.60%)

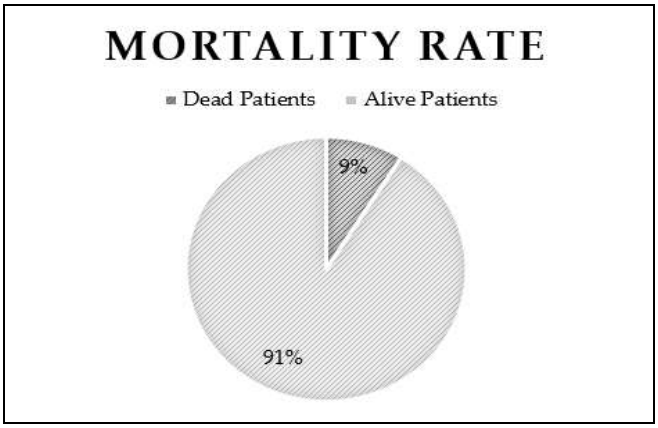

Figure: Patient Outcomes (n=140)

DISCUSSION

Perforation peritonitis is a common presenting emergency in younger age.[11] In this study, the most common cause of perforation was acid peptic disease in 58(41.40%) cases followed by typhoid in 40(28.50%), appendicular perforation in 16(11.40%), tuberculous perforation in 13(9.30%), due to trauma in 8(5.70%) and malignancy in 5(3.60%) cases. Most common site

of perforation was gastroduodenal in 58(41.40%), ileal in 51(36.40%), appendicular 16(11.40%), colonic 10(7.10%) jejunal in 5(3.60%) cases. Age of the cases ranged between 15 and 75 years, with a mean age of 43±2.60 years. Study sample included 81(57.80%) male and 59(42.10%) female cases. A previous study reported more male to female ratio of the cases 3:1.[12]

Proximal part of the gastrointestinal tract was more commonly involved than the distal part.[13] Whereas according to a study conducted in western countries, distal part of the gastrointestinal tract is more involved than the proximal part.[14] Duodenal perforation was most common according to our study results. Same findings were reported by Prada *et al*.[14] Such cases can be treated successfully by good antibiotic coverage, proper hydration and closure of the perforation increase survival rate. Peptic ulcers are treated by truncal vagotomy, Bilroth I and Bilroth II procedures.[15,16] Perforations are less commonly associated with gastric ulcers. NSAIDS use is common cause of gastric ulcers. According to a previous study, only <1% cases with gastric carcinoma developed perforation.[17]

Mortality rate in perforation peritonitis is 6-27% in various studies.[17,18] Furthermore, mortality rate depends on the cause of perforation and its location. Mortality rate due to perforated gastric ulcers is 20.10% and due to perforated duodenal ulcers is 32.20%.[19] Previous literature has shown mortality rate in colorectal perforation 17.50%, in enteric perforation 17.70% and in gastric perforation 36%.[20] In our study, the mortality rate was comparatively low, which may be because we operated cases on emergency bases and made just stoma in critically ill patients on emergency bases and in other cases we did omentopexy in gastroduodenal perforation. Postoperative mortality and morbidity rate in such cases depends on the factors like age, disease duration, late presentation in the hospital, delayed treatment, co-morbidities and septic load. Abdominal washout and re-look surgery have importance in these cases. Redo surgery is indicated in cases with anastomosis leakage, persistent septicemia, abdominal collection, burst abdomen and interloop abscess.[20] A previous study conducted in Quetta, Balochistan, reported that 18.5% cases had typhoid fever out of clinically suspected cases.[21] Another study conducted in Hyderabad, Pakistan, reported frequency of typhoid perforation 17% among the patients with typhoid fever.[22] In our study results, these values are higher that variation may be due to different geographical areas and availability of health facilities etc. Frequency of perforation peritonitis is higher in our country as compared to western countries. This study tells us the latest statistics of the disease burden so that healthcare policies should be updated to deal with this problem and to reduce morbidity and mortality associated with this health issue.

LIMITATIONS OF STUDY

This study was confined to a specific geographical area and conducted in a single center, which is why results cannot be nationally genearlized. Multicentric study with large sample size is required for better results. This study was an experience at a single tertiary care hospital to get some information related to the disease. Many study cases were treated in peripheral areas before reporting to us, which may contribute to increased morbidity in our study sample. There was lack of proper past medical record or treatment history of many patients. All investigations were done from the single hospital lab so lab error is possible. Error is possible in ruling out exact cause of the perforation due to vague presenting complaint and mixed sign symptoms in some of the patients.

CONCLUSION

In this study acid peptic disease was the first and typhoid was the second most common cause of perforation peritonitis according to the data collected from a tertiary care hospital in Quetta Baluchistan. Ileum was the most common site for typhoid perforation.

Conflict of Interest: None.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

RAJ & NAS: Data acquisition, data analysis, critical review, approval of the final version to be published.

SK & OF: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

J & HA: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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