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A study of Clinical Presentation and Management of Ileal Perforation Peritonitis

Dr. Omkar Thakur[1](Assistant Professor), Dr. Dushyant Kumar Rohit[2] (Associate Professor), Dr. Deepak Shrivastav[3](Associate Professor), Dr. Akhilesh Ratnakar[4] (Assistant Professor)

[1,2 3&4]Dept. of General Surgery, Bundelkhand Medical College and Associate Hospital, Sagar, M.P.

First Author: Dr. Omkar Thakur
Corresponding Author: Dr. Dushyant Kumar Rohit

Abstract:

Background & Method:

Typhoid fever is one of major causes of intestinal perforation in India and is one of the common surgical emergencies for which intervention is required.Ileal perforation is associated with significant morbidity and mortality. The main objective of our study is to know the demographics, clinical presentation, causes of perforation, site, surgical treatment, postoperative complications and mortality at, our institute. This retrospective study includes 48 patients who were operated for ileal perforation peritonitis in Unit II &III department of surgery, at our institute from March 2018 to April 2021 over a period of about three years. Paediatric patients of age less than 14 years presenting as ileal perforation peritonitis, postoperative peritonitis due to anatomisesleakage and perforation due to malignancy were excluded. A detailed history, clinical presentation and routine investigations were done in all patients.

Result: In the present study, most of the patients were male. Most of these patients presents with clinical signs of peritonitis between 24-48 hours after onset of the pain.The diagnosis is made clinically and confirmed by presence of gas under diaphragm on radiograph. Exploratory laparotomy with loop ileostomy done in 37 patients(77.08%) and primary closure of perforation was done in 11 patients (22.9%). The most common post operative complication was wound infection (83.33%). The overall mortality was 10.41%.

Conclusion: late presentation of ileal perforation is common with high morbidity and mortality. Surgical intervention with loop ileostomy with broad spectrum antibiotics is still commonly practiced.

Keywords: Ileal perforation, Loop ileostomy, Primary repair,Laparotomy

1. INTRODUCTION

Perforation peritonitis is one of the commonest surgical emergencies in our country. Despite advancements in surgical techniques, anti–microbial therapy and intensive care, management of peritonitis continues to be highly demanding, difficult and complex [1, 2]. Peritonitis usually presents as an acute abdomen. Local findings include abdominal tenderness, guarding or rigidity, distension, diminished bowel sounds. Systemic findings include fever, chills or rigor, tachycardia, sweating, tachypnea, restlessness, dehydration, oliguria, disorientation and ultimately shock [3]. Perforation of the small bowel is relatively common in endemic areas of typhoid, tuberculosis and parasitic infestations. Perforated small bowel viscus challenges the

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surgeon's skill and his knowledge of pre-operative, intra-operative and post- operative care of severely ill surgical patient. In patients with sudden onset of abdominal pain without high index of suspicion and timely surgical intervention results in significant mortality and morbidity[4-7].Typhoid fever is regarded as the most common cause of ileal perforation. The incidence of ileal perforation has been reported 0.8% to 18%. Tuberculosis occurs 5% to 9% of all small intestinal perforation in India and it is the second commonest cause after typhoid fever In typhoidperforation there are longitudinal ulcers on ant mesenteric border, situated within 45 cms of ileocaecal valve in majority of patients[8].Patients of ileocaecal tuberculosis, mostly present with the history of pain in abdomen, abdominal distention, altered bowel habit and nausea vomiting. Patients with small bowel typhoid perforation also present with the history of pain in the abdomen along with prolonged history of fever.

Perforation results in super infection of the peritoneal cavity with gut flora leading to a full-blown peritonitis, with severe peritoneal contamination being associated with a poor prognosis and high mortality[9]. The reasons for the high mortality are multifactorial[10]. In recent years lots of antibiotics and other supportive drugs are available, better patient care including intensive care unit (ICU) facilities are changing the outcome of the disease, still it is a challenge to treat a patient with a good outcome.[2,11].

2. MATERIAL & METHOD

This retrospective study includes 48 patients who were operated for ileal perforation peritonitis in Unit II & III department of surgery, at our institute from March2018 to April2021 over a period of about three year. The study was approved by institutional ethical committee. The details of the patients were retrieved retrospectively from patient's case record kept in the medical record department, surgical ward and operation theatre register. The study was conducted on the basis of all the patients admitted through emergency or as an elective case from outpatient department. 48 patients with age greater than fourteen years admitted with ilealperforatation peritonitis and underwent laparotomy as primary repair or with temporary loop ileostomy were included in this study. Paediatric patients of age less than 14 years presenting as ilealperforation peritonitis, postoperative peritonitis due to anastomosis leakage perforation, and perforation due to malignancy wereexcluded. The data of each patient was collected in a pro forma form designed for study and it includes the details of age, sex, duration of symptoms prior to admission, clinical presentation and investigations. A detailed history and physical examination were carried out and routine investigations were done in all cases. Most of the patients had received no proper treatment for their illness and almost all patients had sought initial medical attention from untrained medical practitioner and only presented to us following a dramatic worsening of their symptoms of peritonitis. All patients were resuscitated with intravenous fluids, nasogastric decompression and urethral catheterisation for urinary output monitoring. Intravenous antibiotics consisting of third generation cephalosporin and metronidazole started immediately. Investigations includes complete blood picture, blood sugar, blood urea, serum electrolyte, HBsAg, HIV, chest and abdominal X-ray and abdominal pelvic ultrasound. Patients unfit for surgery were initially treated with abdominal drain under local anaesthesia as a temporary measure prior to definitive laparotomy. Upon adequate resuscitation as shown by blood pressure greater 90 mmhg systolic and urinary output more than 40ml per hour underwent exploratory laparotomy under spinal anaesthesia/general anaesthesia. A midline incision was employed. During surgery thenumber and site of perforation, were noted. Perforation closed either by primary repair or with loop ileostomy. After the primary repaireof the perforation or with loop ileostomy, peritoneal lavage with copious volume of

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normal saline is done. All patients had mass closure of abdominal wall with proline number 1 suture with intra abdominal drain left in situ. Postoperatively all patients were put on broad spectrum antibiotics and oxygen through nasal prongs. Those patients requiring intensive care were shifted to surgical ICU. Patients were followed up every day with continued bedside monitoring of vitals in the immediate postoperative period. Post-operative complications were also recorded and were managed accordingly.After satisfactory improvement, patients were discharged from the hospital with advice regarding diet, anti tuberculosis drugs, stoma care.Post operatively patients input are gathered and follow up once a month for first 3 months. The result were analysed and compared with available published literature in the form of table.

3. RESULTS

A total of 48 patients who presented with peritonitis due to ileal perforation underwent emergency laparotomy as primary repair or loop ileostomy were studied**.**

Table No.1- Distribution of patients as per sex

Sex	No. of cases	Percentage
Male	35	72.9%
Female	13	27.08%

The patient consisted of 35 male (72.9%) and 13 female (27.08%). A male to female (3:1) predominance was observed.

Table No. 2- Age distributions of patients

Age (years)	No. of cases	Percentage
10-19	01	2.08%
20-29	17	35.41%
30-39	13	27.08%
40-49	08	16.66%
50-59	05	10.41%
≥60	04	8.33%

The ages of the patients ranged from 16 to 75 years. The youngest patient in this study was 16 years old and oldest was 75 years old with ileal perforation. The peak incidence was in the 2nd and 3rd decade of life. seventy percent of the patients were from rural area and belongs to the lower socio economic status.

Table No. 3- Time interval between onset of symptoms andpresentation (hours)

Time Interval (hours)	No. of cases	Percentage
00-12	03	6.25%
12-24	05	10.41%
24-36	18	37.50%
36-48	13	27.08%
48-60	05	10.41%
60-72	04	8.33%

The duration of symptoms of perforation before presentation were few hours to 72 hours. 03 patients (6.25%) presented within 12 hours of onset of symptoms, 05 patients (10.41%) presented between 12-24 hours, 18 patients (37.5%) presented between 24-36 hours, 13 patients (27.08%) presented between 36-48 hours, 05 patients (10.41%) presented between

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48-60 hours and 04 patients (8.33%) presented between 60-72 hours. The patients presented to the hospital within 24 hours were stable. Postoperative morbidity and mortality was less in these cases. The data reflects that early presentation to the hospital and early treatment causes less mortality and morbidity. Patients who presented after 24 hours have associated with high morbidity and mortality.

Table No.4- Etiological factors

Etiological factors	No. of cases	Percentage
Typhoid fever	32	66.66%
Tuberculosis	10	20.83%
Trauma	06	12.5%

Typhoid perforation were the most common cause of ileal perforation (66.66%). The next common cause was abdominal tuberculosis(20.83%),and least cause trauma abdomen(12.50%).

Table No.5- Presenting symptoms in patients with ileal perforation

Symptoms	No. of cases	Percentage
Pain in abdomen	48	100%
Fever	39	81.25%
Abdominal distension	21	43.75%
Constipation	13	27.08%
Vomiting	11	22.91%

Most of the patients presented with severe upper abdominal pain, abdominal distension, vomiting, fever and constipation. The commonest presenting symptoms were severe abdominal pain in 48 patients (100%), abdominal distension in 21 patients (43.75%), fever 39 patients(81.25%), constipation in 13patients (27.08) and vomiting in 11 patients (22.91%).

Table No. 6- Physical signs in patients with ileal perforation

Findings	No. of cases	Percentage
Abdominal tenderness	45	93.75%
Abdominal distension	42	87.7%
Pulse rate ≥120/min	40	83.3%
Guarding and rigidity	38	79.16%
Absent bowel sounds	36	75.0%
Shocked state	34	70.83%

On physical examination, guarding and rigidity was present in 38 patients (79.16%) followed by abdominal tenderness in 45 patients (93.75%), absent bowel sounds in 36 patients (75.0%), shocked state (systolic blood pressure ≤ 90mmhg) in 34 patients (70.83%) and pulse rate ≥120 per minute in 40 patients (83.3%).In patients with suspected perforation peritonitis, x-ray chest and erect abdominal x-ray were done free gas under diaphragm seen in 37 patients(77.08%).

Table No. 7: Number of perforations

No. of perforations	No. patients	% percentage
Multiple	26	54.16%
Single	22	45.83%

Single perforation were present in 22 patient(45.83%) and multiple perforation were present in 26 patients(54.16%).

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Table No.8: Surgical procedure

Surgical procedure	No. patients	% percentage
Loop ileostomy	37	77.08%
Primary repair	11	22.91%

Loop ileostomy was done in 77.08%(37 patients) and primary repair was done in 22.91% (11 patients)

Table No. 9- Postoperative complication

Postoperative complication	No. of patients	Percentage
Wound infection	40	83.33 %
Burst abdomen	11	22.91%
Pulmpnaryinfecton	09	18.75%
Intra abdominal abscess	06	12.5 %
Septicaemic shock	05	10.41 %

In postoperative period, various complications were noted. Wound infection was found to be the most common complication in patients presenting with ileal perforation, wound infection was found in 40 patients (83.33%) followed by burst abdomen in 11 patients (22.91%) , pulmonary infection in 09 patients (18.75%), intra abdominal abscess in 06 patients (12.5%), and septicaemic shock was recorded in 05 patients (10.41%). The mean duration of hospital stay in those that survived was 17days (range 9-25 days). The patient is discharged with oaral antibiotics, antacid and analgesic for two weeks,with advised care of stoma. The overall mortality rate in our study was in 05 patients (10.41%). The cause of death is septicaemia due to severe peritonitis.

4. DISCUSSION

Perforation peritonitis is the most common surgical emergency noticed in the younger age group [12].As noticed in our study mean age was 45.5 years. Majority of thepatients in our study were in 2nd and 3rd decade of life and most of the patients were male (72.9%) and female (27.08%) male to female ratio 3:1. Another study also showed more male patients of ileal perforation peritonitis with male female ratio 3:1. Onset of symptoms and time of presentation in hospital are important prognostic factors. An early presentation holds a good prognosis even with primary repair of ileal perforation. Unfortunately in developing countries like ours, the presentation to the hospital is usually late with fully blown peritonitis. Some patients may present with septicaemia. In our study most of the patients 37.50% were presented late more than 24hours from the onset of symptoms. Late presentation to the hospital patients, poor general condition are factors responsible for higher mortality and morbidity [13,14]. Pain in abdomen, vomiting, abdominal distension fever and constipation were the predominant symptoms in our study. Pain in the abdomen was seen in 100% which is near similar to the finding noted by Jhobta RS et al[11]. In our study 18.75% of patients there was no history of fever. Pujar et al in there study reported no history of fever in 10% of the patients . In the present study majority of patients had abdominal tenderness93.75% at presentation followed by abdominal distension 87.7% , guarding and rigidity 79.16% and bowel sounds in 75.0% . In most of the studies concluded worldwide tenderness was present in all cases JB Baid and TC Jain found guarding rigidity in 85% cases abdominal distension in 56% cases [15]. The diagnosis of peritonitis is made clinically and confirmed by presence of free gas under diaphragm which is diagnostic of perforation peritonitis but absence does not exclude the presence of perforation. This sign is visualized in the 77.08% patients in our

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study. Dandaput MC and colleagues noticed gas under diaphragm in 72.35% (16) .William N and Even sen N W have reported 60.70% cases showing gas under diaphragm [17], this study correlated well with the above mentioned studies. Typhoid fever 66.66% was found to bethe most common cause of ileal perforation followed by abdominal tuberculosis 20.83%.In the present studymajority of the perforation was located within 60cm of the ileocaecal valve. A study by Badejo and Arigbabu(1980) reported location of perforation within 20cm and 40cm from ileocaecal valve [18].All patients treated as an emergency laparotomy . At laparotomy (45.83 %) patients have single perforation and (54.16%)have multiple perforation. In majority of the patients 77.08% (37) we performed surgicial procedure loop ileostomy after peritoneal toilet. Primary closure of perforation in two layers done in 22.9% (11 patients). When there is a single perforation Primary closure may be preferred when associated with good condition of bowel and less peritoneal contamination. But it has the looming danger of gaping of repair and formation of faecal fistula. On the other hand, ileostomy patients may have ileostomy related complications i.e., ulceration around ileostomy, malnutrition and requirement of a second surgery. Hence, the choice of surgery is at the discretion of the treating surgeon. Due to our experience with the procedure we preferred a loop ileostomy in majority of patients in our study. Surgical intervention should be done as soon as possible. Up to 70% of perforation patients have massive peritoneal contamination, which increases with time interval. Early operation prevents drastic surgery also. More the time interval more will be the contamination in peritoneal cavity. It leads to more hypovolemia, more peritonitis, increased intensity of septicaemia shock and low outcome [19].All patients were given chest physiotherapy and nebulisation in post of period. Wound infection was the most common postoperative complication in our study; the reason for this was due to heavy contamination of the wound due to severe bacterial peritonitis. Other complications include pulmonary infection, intra abdominal abscess, septicaemia and burst abdomen. The reason for these complications was delay between onset of symptoms and presentation. Critically ill patients at presentation, necessitating prolonged resuscitation and therefore further delay before surgical intervention, shocked state and septicaemia in many patients and gross peritoneal soilage due to delayed presentation. The mortality in our study was 10.41% (05 patients). Jobta R et al reported mortality of 10%[16] that is comparable with our study. Worldwide literature showed that decrease in mortality of perforation peritonitis which ranges from 25% in 1940 as reported by Bakey D[20]. The cause of death was septicaemia, all of which occurred few hours-days postoperatively.

5. CONCLUSION

Typhoid perforations are the most common cause of ileal perforation followed by abdominal tuberculosis with male preponderance. : Peritonitis due to ileal perforation is more common in developing countries like India. Late presentation of ileal perforation is common with high morbidity and mortality. Surgical intervention with loop ileostomy with broad spectrum antibiotics is still commonly practiced. Outcome is significantly affected by delayed presentation, presence of peritoneal contamination and presence of shock. Early presentation of patients may reduce morbidity and mortality in patients with ileal perforation.

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