ORIGINAL RESEARCH

Surgical management of intestinal perforation of typhoid

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ABSTRACT

Background: Typhoid fever is a bacterial infection caused by Salmonella typhi bacteria. Intestinal perforation is a rare but serious complication of typhoid fever.The present study was conducted to assess surgical management of intestinal perforation of typhoid. **Materials & Methods:**75 cases of intestinal perforation of typhoid of both genderswere categorized into three management groups according to their APACHE II scores. Group I was with APACHE <10, group II with 11-120 and group III with >21. **Results:** In group I, males were 13 and females were 12. In group II, males were 11 and females were 14 and in group III males were 15 and females were 10. Fever was seen in 11, 16 and 12 patients in group I, II and III respectively. The mean hospital stay was 7.4 days, 8.7 days and 14.1 days, ICU care was needed in 0, 9 and 17 patients and mortality was seen in 0, 5 and 10 patients sin group I, II and III respectively. The difference was significant (P< 0.05). Common side effects were wound infection in 3, 20 and 25, septicemia in 0, 5 and 12, and wound dehiscence in 0, 13 and 17 cases respectively. The difference was significant (P< 0.05). **Conclusion:** Common side effects seen were wound infection, septicemia and wound dehiscence especially in patients with APACHE >21 in intestinal perforation cases.

Keywords: Intestinal perforation, Typhoid fever, Salmonella typhi

INTRODUCTION

Typhoid fever is a bacterial infection caused by Salmonella typhi bacteria. While typhoid fever primarily affects the gastrointestinal system, causing symptoms such as fever, headache, abdominal pain, and diarrhea, it can also lead to complications such as intestinal perforation.[1]

Intestinal perforation is a rare but serious complication of typhoid fever. It occurs when the infection causes significant inflammation and damage to the intestinal wall, leading to the formation of a hole or rupture.[2] This can allow the contents of the intestine, including bacteria and stool, to leak into the abdominal cavity, leading to peritonitis and other life-threatening complications.Intestinal perforation typically occurs during the second to third week of untreated or inadequately treated typhoid fever when the symptoms are most severe.[3] However, with prompt and appropriate treatment, including antibiotics to eliminate the Salmonella bacteria and supportive care to manage symptoms, the risk of intestinal perforation can be reduced.In cases where intestinal perforation does occur, emergency surgical intervention is usually necessary to repair the hole in the intestine and prevent further complications. The surgeon may also need to drain any fluid or pus that has accumulated in the abdominal cavity.[4]

Intestinal perforation refers to a condition where there is a hole or rupture in the wall of the intestine. This can occur in any part of the gastrointestinal tract, including the stomach, small intestine, or large intestine. Intestinal perforation is a serious medical emergency that requires immediate attention and treatment.[5,6]The present study was conducted to assess surgical management of intestinal perforation of typhoid.

MATERIALS & METHODS

The present study consisted of 75 cases of intestinal perforation of typhoid of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. A thorough clinical assessment was performed. Furthermore, prior to initiating antibiotics, a standard blood culture was obtained for each of these individuals.Intravenous fluids, the start of intravenous antibiotics, and the correction of electrolyte imbalance when necessary were all part of pre-operative

resuscitation. Sufficient urination, normal serum electrolyte levels, and urea levels were thought to be reliable markers of effective resuscitation. Patients were categorized into three management groups according to their APACHE II scores. Group I was with APACHE <10, group II with 11-120 and group III with >21. Following sufficient resuscitation, all patients underwent exploratory laparotomy through a midline incision. The operational results wererecorded, and the amount of pus and fecal material were estimated and drained after collecting a sample for culture. Edge of the perforation was excised and preserved in Brain Heart Infusion broth. A draining lymph node in the mesentery was also excised and preserved in Brain Heart Infusion broth for culture. Based on APACHE II triaging appropriate surgery was performed. The peritoneal cavity was lavaged thoroughly by 2-3 litres of normal saline. Drains were placed in the right paracolic gutter and the pelvic cavity.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II	Group III
M:F	13:12	11:14	15:10

Table I shows that in group I, males were 13 and females were 12. In group II, males were 11 and females were 14 and in group III males were 15 and females were 10.

Table II Assessment of parameters

Parameters	Group I	Group II	Group III	P value
Fever	11	16	12	0.97
Hospital stay	7.4	8.7	14.l	0.02
ICU care	0	9	17	0.01
Mortality	0	5	10	0.03

Table II, graph I shows that fever was seen in 11, 16 and 12 patients in group I, II and III respectively. The mean hospital stay was 7.4 days, 8.7 days and 14.1 days, ICU care was needed in 0, 9 and 17 patients and mortality was seen in 0, 5 and 10 patients sin group I, II and III respectively. The difference was significant (P< 0.05).

Graph I Assessment of parameters

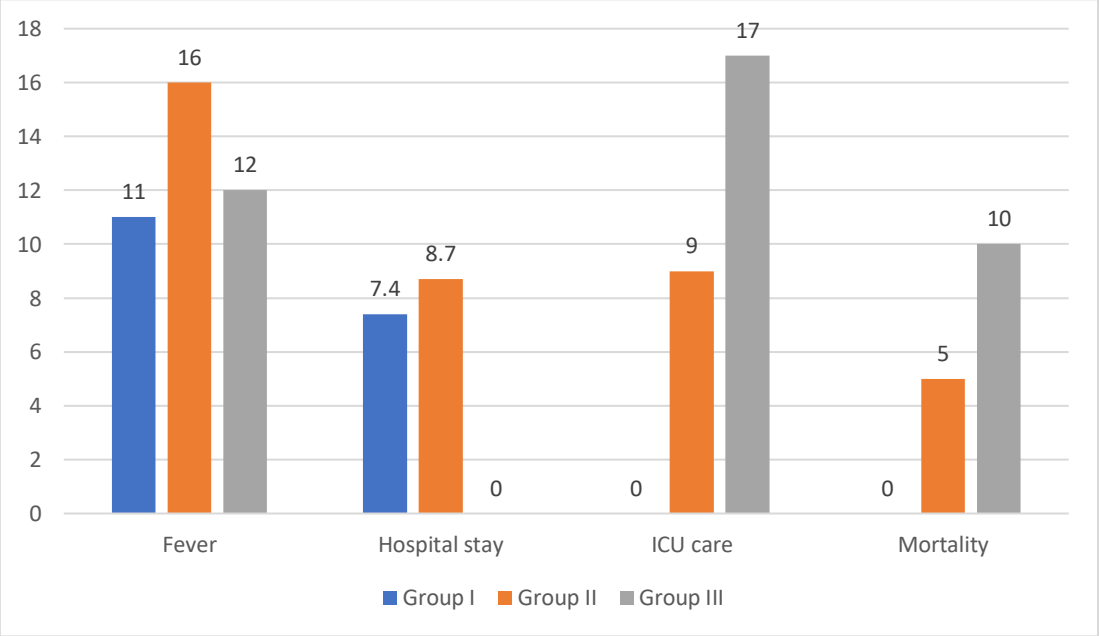

Table III Side effects

Side effects	Group I	Group II	Group III	P value
Wound infection	3	20	25	0.05
Septicemia	0	5	12	0.01
Wound dehiscence	0	13	17	0.04

Table III, graph II shows that common side effects were wound infection in 3, 20 and 25, septicemia in 0, 5 and 12, and wound dehiscence in 0, 13 and 17 cases respectively.The difference was significant (P< 0.05).

DISCUSSION

Blunt or penetrating trauma to the abdomen can cause the intestine to rupture.[7] Peptic ulcers, which are open sores that develop on the lining of the stomach, small intestine, or esophagus, can perforate the intestinal wall.[8,9] Conditions such as Crohn's disease and ulcerative colitis can lead to inflammation and weakening of the intestinal wall, increasing the risk of perforation. Inflammation or infection of small pouches that bulge outward through the colon wall (diverticula) can cause perforation.[10] Tumors in the gastrointestinal tract can erode through the intestinal wall, leading to perforation. Blockage of the intestine due to various causes can increase pressure within the intestine, potentially leading to perforation.[11,12]The present study was conducted to assess surgical management of intestinal perforation of typhoid.

We found that in group I, males were 13 and females were 12. In group II, males were 11 and females were 14 and in group III males were 15 and females were 10.Pranjal Kulshreshtha et al[13]enrolled seven patients of ileal perforations of suspected typhoid etiology. The surgical management was based on a standardized protocol using APACHE II scoring system. Blood culture, peritoneal fluid, ulcer edge and mesenteric lymph nodes biopsies were subjected to culture to determine the predominant aerobic bacterial isolate and its anti- microbiological sensitivity. In this series male to female ratio was 36: 11, with an average age of 27.3 years. The average duration of fever was 6.67 days; average hospital stay was 10.14 days with a mortality rate of 17.72%. Salmonella typhi could be isolated in only 10.53% of the patients.

We observed that fever was seen in 11, 16 and 12 patients in group I, II and III respectively. The mean hospital stay was 7.4 days, 8.7 days and 14.1 days, ICU care was needed in 0, 9 and 17 patients and mortality was seen in 0, 5 and 10 patients sin group I, II and III respectively. We observed that common side effects were wound infection in 3, 20 and 25, septicemia in 0, 5 and 12, and wound dehiscence in 0, 13 and 17 cases respectively. Montravers et al[14]included 100 consecutively studied patients with postoperative peritonitis. The adequacy of emprical treatment was determined by means of culture and susceptibility data obtained at the time of reoperation, and the effect of such treatment on outcome was evaluated. One hundred resistant pathogens were isolated from 70 patients, of whom 45% died; by comparison, mortality among those from whom susceptible organisms were isolated was 16% ($P < .05$). Inadequate empirical treatment was administered to 54 patients and was associated with poorer outcome ($P <$ or $= .05$). The outcome of postoperative peritonitis is affected by the choice and adequacy of the initial empirical antibiotic therapy. Late changes in antibiotic therapy based on culture results did not affect outcome when the initial regimen was inadequate.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that common side effects seen were wound infection, septicemia and wound dehiscence especially in patients with APACHE >21 in intestinal perforation cases.

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