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Original Research Article

A Prospective Assessment of Enteric Perforation with Peritonintis In Relation To Epidemiology, Surgical Treatment And Outcome

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Abstract

Aim: To study enteric perforation with peritonintis in relation to epidemiology, surgical treatment and outcome

Methodology: The present prospective study was performed on 50 patients of enteric perforation with peritonitis admitted to Shree Narayan Medical institute and Hospital, Saharsa, Bihar, India for 12 months. All patients of enteric perforation peritonitis were included in this study. All patients of perforation peritonitis were evaluated by detailed history, Clinical examination and all vital parameters recorded. Apart from routine blood investigations, Widal test was done. Radiological examination includes flat plate abdomen in erect posture and X-ray chest. Biopsy from perforation margin was taken for histopathological examination. After initial resuscitation patient were treated by operative procedures. Postoperatively progress report, morbidity and mortality were observed. After confirmation of diagnosis of perforation, decision was taken regarding the operative intervention after considering the following points: time elapsed after acute onset of abdominal pain, general condition of patient.

Results: In this study, mean age of patients was 29.64 ± 3.64 years (range; 18-60 years). The maximum number of patients with typhoid perforation (76%) was presented in 2nd & 3rd decade of life. Out of 50 patients, 38 were males and 12 were females with a ratio of 3:1. Incidence of typhoid perforation was maximum (50%) during the month of June to September. Rainy season favors the feco-oral route of transmission of typhoid bacilli. According to socioeconomic status, 44% cases were of middle class and 56% of lower class and none from higher socio-economic status. Of the 50 patients, exteriorization of the perforation as loop ileostomy was done in 30 patients (60%), primary repair was done in 6 patients (12%) and primary repair with proximal loop ileostomy was done in 11 patients (22%). Resection of perforated ileum with ileo ileal anastomosis was done in 2 cases (4%), resection of terminal ileum with end ileostomy was done in 1 case (2%). Mortality was highest in patients who underwent primary repair and proximal loop ileostomy (27.3%).

Conclusion: The time interval between occurrence of perforation and starting of specific therapy is the most important factor in deciding the ultimate outcome of the typhoid perforation patient and operative procedure is another important factor in deciding the outcome.

Keywords: peritonitis, intestinal perforation, enteric fever.

Introduction

Typhoid fever is a public health challenge, mostly occurring in impoverished, overcrowded areas of the developing world, with lack of safe drinking and sanitation [1]. Although there is some evidence that typhoid fever incidence rates have declined over the past several decades, still the global estimation of typhoid fever episodes in 2010 was of 13.5 million [2]. The majority of disease burden has been observed in South and South-East Asia [3] and in sub-Saharan Africa, primarily in the low income neighborhoods of the capital cities but also in rural areas [3, 4]. Data collection is substantially underestimating the morbidity and mortality of typhoid [5, 6]

Intestinal perforation is a common surgical problem, which need proper attention. It stands fifth among the acute abdominal emergencies. It is essential to have a correct pre-operative etiological diagnosis because prognosis ultimate depends on the cause of the perforation. Typhoid is the most common cause of bowel perforation, which mainly affects the small intestine [7]. The commonest site of enteric perforation is terminal part of ileum.

Globally, typhoid fever has a case-fatality rate of 10%-30% without effective treatment, reduced to 1%-4% with appropriate management [7]. The true incidence of complications is unknown [8], but alarming problems may arise in 10% to 15 % of patients, especially when the disease is lasting for two or more weeks [9]. The commonest GI complication is intestinal bleeding, usually not severe and managed conservatively [10], while typhoid intestinal perforation (TIP) is the most serious one [10]. It has been reported in 0.8% to 39%of patients [11, 12], with a striking difference between high-income and poor resources countries [13].

With the concept of a correct diagnosis of perforation in reference to its etiology and further study of etiological factor (typhoid) in relation to epidemiology, surgical treatment and outcome, the present study has been undertaken.

Materials and Methods

The present prospective study was performed on 50 patients of enteric perforation peritonitis admitted to Shree Narayan Medical institute and Hospital, Saharsa, Bihar, India for 12 months.

Inclusion and exclusion criteria

All patients of enteric perforation peritonitis were included in this study. Patient with history of traumatic perforation and immunocompromised, were excluded.

Methodology

All patients of perforation peritonitis were evaluated by detailed history. Clinical examination done and all vital parameters recorded. Apart from routine blood investigations, Widal test was done. Radiological examination includes flat plate abdomen in erect posture and X-ray chest. Biopsy from perforation margin was taken for histopathological examination.

After initial resuscitation patient were treated by operative procedures. Postoperatively progress report, morbidity and mortality were observed. After confirmation of diagnosis of perforation, decision was taken regarding the operative intervention after considering the following points: time elapsed after acute

onset of abdominal pain, general condition of patient.

When general condition was poor, the patient was treated by inserting an abdominal drainage tube, intravenous fluid, blood transfusion and broad spectrum antibiotics. If much time had elapsed after acute pain or general condition of the patient was not fit for surgery under GA then surgery was carried out under LA through laparotomy via Rutherford-Morrison incision.

Operative treatment

After appropriate resuscitation patient underwent surgery. Surgery was conducted under general anaesthesia. Exploratory laparotomy was carried out through either right paramedian incision or lower midline incision. Peritoneal cavity was almost always found contaminated with fecopurulent fluid. The infected peritoneal fluid was cleared with suction and peritoneal lavage done with normal saline. Then the site of perforation was identified and various operative procedures used in enteric perforation were: simple repair by single layer or double layer interrupted suture by 3-0 vicryl or 3-0 silk, repair of distal perforations and loop ileostomy from proximal perforation, loop ileostomy.

Biopsy from the edges of the perforation was taken and sent for histopathological examination. The tube drain was put in the pouch of Douglas and abdomen was closed in layers. Postoperatively all patients were kept NBM and continued Ryle's tube aspiration till 5th or 6th postoperative days when bowel sounds are heard or patient passed flatus.

During postoperative period patients were intensively observed for development complications like wound infection, burst abdomen, paralytic ileus, faecal fistula, repair or anastomotic leakage, pulmonary complication, toxemia, renal failure, intraperitoneal abscesses, enteric encephalopathy etc. Those patients who developed leakage of repair or anastomosis were lately converted to ileostomy. Ryle's tube was taken out usually on 5th postoperative day when there was no abdominal distension, bowel sounds were present, patient had passed flatus, 24 hours nasogastric tube aspirate was less than 100 ml and patient was able to take oral. Drains were removed on postoperative day 5th or 6th when output was less than 100 ml and it was of serous nature. After removal of Ryle's tube the patient was given liquid diet on the same day.

Semisolid diet was started on the next day and solid diet was started when patient was tolerating the semisolid diet well. Patient with ileostomy were usually readmitted after 6-8 weeks, when the patient general condition had improved. Either ileostomy closure or end-to-end anastomosis is performed in double layer.

Results:

In this study, mean age of patients was 29.64 ± 3.64 years (range; 18-60 years). The maximum number of patients with typhoid perforation (76%) was presented in 2nd & 3rd decade of life. Out of 50 patients, 38 were males and 12 were females with a ratio of 3:1.

Incidence of typhoid perforation was maximum (50%) during the month of June to September. Rainy season favors the feco-oral route of transmission of typhoid bacilli. According to socioeconomic status, 44% cases were of middle class and 56% of lower class and none from higher socio-economic status. This shows that enteric perforation is more common in patients with poor nutritional status.

Most of the patients of enteric perforation were from the rural area. In our study, 64% cases were from rural areas and rest 36% were from urban areas. Around 92 % cases used well or water tank as their water supply. This observation showed that typhoid infection is transmitted by infected water.

Maximum patients (76%) with enteric perforation reported within 72 hours of illness. Pain abdomen was the most common (100%) presenting complaint followed by abdominal distension, vomiting and constipation. Abdominal tenderness was the presenting sign in all cases (100%). Rigidity, guarding and fever, obliteration of liver, dullness were presented in more than 95% of cases of enteric perforation. Tachycardia, tachypnoea and high temperature were present in majority of the cases. Widal test was done in 50 patients, in which 34 patients (68%) showed positive result.

Biopsy from edge of enteric perforation was taken in all the cases. In 96% patients, biopsy from the edge of perforation reveled acute and chronic inflammatory cells and mononuclear cells infiltration. In intra-operative findings peritoneal fluid was feculent in 68% cases, single perforation was presented in 86% cases.

Various operative procedures were performed in enteric perforation. Of the 50 patients, exteriorization of the perforation as loop ileostomy was done in 30 patients (60%), primary repair was done in 6 patients (12%) and primary repair with proximal loop ileostomy was done in 11 patients (22%). Resection of perforated ileum with ileo-ileal anastomosis was done in 2 cases (4%), resection of terminal ileum with end ileostomy was done in 1 case (2%). Mortality was highest in patients who underwent primary repair and proximal loop ileostomy (27.3%).

Table 1: Mortality rate of various operative procedures

Operative procedure	Number of patients	Mortality (%)
Primary repair with peritoneal drainage	6	1 (16.7)
Distal perforation repair with proximal loop ileostomy	11	3 (27.3)
Loop ileostomy	30	3 (10)
Resection terminal ileum with end ileostomy	2	0 (0)
RA terminal ileum	1	1 (100)

Table 2: Mortality rate in relation to duration of illness

Duration of illness (in hours.)	Number of patients	Mortality (%)
0-12	2	0 (0)
13-24	11	0 (0)
25-48	10	1 (10)
49-72	11	1 (9.1)
73-96	7	2 (28.6)
≥ 5 days	9	4 (44.4)

Wound infection was the most common complication (34%), followed by chest complications (26%), toxemia (10%), paralytic ileus (12%), thrombophlebitis (8%) and burst abdomen (10%). In our study, mortality rate was 50% in patients presenting after 5 days of illness, while no mortality seen

in patients presented within 24 hours of illness.

Discussion:

Many textbooks stress that typhoid perforation usually occurs in the third week of fever while many reports find that it occurs in the first week [14]. Most of the patients of enteric perforation were presented in 2nd and 3rd decade of life as compared to peptic perforation, which occur in 4th and 5th decade [15-17]. In our experience the maximum incidence of typhoid perforation

was in the second week from 11-15 days in confirmation of the report of Bhansali (1967). The leucocytosis we encountered in contrast to other series [18, 19] is probably because of late presentation leading to bacterial contamination and septicaemia.

In this study, all cases were diagnosed as perforation peritonitis by clinical examination and X-ray FPA abdomen. Of the 50 patients, 44 patients were diagnosed by gas under diaphragm in X-ray FPA and rest 6 patients were diagnosed by clinical examination. Incidence of typhoid perforation was maximum in rainy season which favors the feco-oral route of transmission of typhoid bacilli. Socio-economically the enteric perforation patients belong to lower class (56%) and (44%) to middle class based on three variables- education, occupation and residential address (Kuppuswamy scale) [20].

Park mentioned that enteric fever was common where water supplies and sanitation were sub-standard [21]. The Widal test in diagnosis of enteric perforation was not of much value because it taken long time to appear, negative results are of no value and within two hours of antibiotic therapy the test rendered negative. This test was positive in approximately 72% cases in other series [22]. In present series, diagnosis of enteric perforation was done mainly by the clinical features, which was also mentioned in other studies [23].

All perforations were presented at antimesentric border. Kaul et al advised the ileostomy because the causes of majority of postoperative complications appear to be the toxic intestinal contents which are either spilled into the peritoneal cavity or absorbed from previously paralyzed intestine [24]. Ileostomy through the site of perforation, as described is simple, safe and short procedure in a critically ill patient with necrotic bowel. In contrast, Franklin [25] favours a surgical approach as closure of perforation eliminates continuous contamination and peritoneal toilet gradually lessens toxaemia enhancing the recovery of the patient. Modem antibiotics, modem anaesthesia, better blood transfusion facilities and better surgical techniques have swung the pendulum in favour of surgical intervention rather than conservative therapy. In the series of Olurin et al [14], the mortality was 79%o in conservative treatment and 31% in operated cases.[26]

Conclusion:

The time interval between occurrence of perforation and starting of specific therapy is the most important factor in deciding the ultimate outcome of the typhoid perforation patient and operative procedure is another important factor in deciding the outcome.

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