RETROSPECTIVE ANALYSIS OF TYPHOID ILEAL PERFORATION IN CHILDREN

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ABSTRACT

BACKGROUND: Objective of the study is to find out the most suitable procedure for surgical treatment of typhoid ileal perforation in children. It is a Descriptive retrospective study, conducted at Department of Pediatric surgery Lady Reading Hospital Peshawar from January 2012 to June 2014.

MATERIALS AND METHODS: This study included all patients who had operative findings of typhoid ileal perforation. All the patients were admitted at Pediatric Surgery Unit Lady Reading Hospital Peshawar, as emergency. A total of 78 patients were managed during the study period. Patients were admitted, nasogastric tube was inserted, intravenous fluids and antibiotics in the form of quinolones, metronidazole and gentamycin were administered. Informed consent from the parents was taken in all cases. Surgical Procedure was tailored according to the peroperative findings. Data was analyzed using SPSS version 16.

RESULTS: Out of 78 patients, 49(62.8%) were male and 29(37.1%) were female. The mean age of presentation was 10.4 years. Duration of symptoms ranged from 7 to 20 days. The commonest symptoms observed were fever in 78(100%), pain abdomen 78(100%), abdominal distension 28(35.89%) and vomiting in 51(65.38%). The choice of surgical procedure was done peroperatively depending on the extent of contamination of peritoneal cavity and the general condition of the patient. Mean hospital stay was 8 days.

CONCLUSION: Early presentation and referral to tertiary care hospital can improve the mortality and morbidity in children with typhoid ileal perforation. All patients who underwent ileostomy recovered well and is the procedure of choice in patients who present late.

KEY WORDS: Typhoid ileal perforation, surgical options, ileostomy.

INTRODUCTION

Typhoid fever is a systemic human infection caused by salmonella enterica subspecies enterica serovar typhi, in most cases and salmonella paratyphi is involved in some cases. An estimated 22 million people are infected worldwide annually with 2 lakhs deaths. In developed countries control has been achieved by effective public health measures, but under developed countries continue to bear the burden of disease due to poor hygiene, sanitation and drinking water. Intestinal perforation is the most serious complication of typhoid fever. By the time this complication occurs, the patient is too sick. Thus high mortality is expected in these patients. The surgical approach to these patients is still controversial. Surgery although associated with a high mortality and morbidity, offers the greatest hope of survival. There are different surgical options for dealing the perforation, like tube laparostomy, stoma formation, exteriorization of perforation, repair of perforation, resection and anastomosis, by pass procedure and T tube placement. In this study we report our surgical experience with temporary ileostomy, regarding treatment of typhoid ileal perforation in children in our setup.

Materials and Methods:-This descriptive retrospective study was conducted at department of pediatric surgery, Lady Reading Hospital Peshawar from January 2012 to June 2014. This study included all patients who were suspected of having typhoid ileal perforation, based on clinical presentation of high grade fever for more
than one week duration and signs of peritonitis. The above findings were confirmed per operatively. Blood culture was not done in these cases as all the patients had received antibiotics before admission. Other causes of ileal perforation due to trauma, Meckel’s diverticulum, tuberculosis etc were excluded from the study. All the patients were received and admitted as emergency. The protocol of management varied depending upon the condition of the patient at presentation. All patients received intravenous antibiotics in the form of ceftriaxone, metronidazole and amikacin. Nasogastric tube was passed and patient put on intravenous fluids for rehydration. All the patients were resuscitated and prepared for surgery. Routine investigations like complete blood count, blood urea, serum creatinine and serum electrolytes were done. Informed consent was taken from the parents before surgical intervention. Once optimized, children underwent surgical procedure which was tailored according to the operative findings, which included primary closure, resection and anastomosis and ileostomy. All the data was analyzed using SPSS version 16 for age, duration of symptoms, operative treatment, mortality and morbidity etc.

**INCLUSION CRITERIA:** All the patients suspected and confirmed cases of typhoid ileal perforation were included in this study.

**EXCLUSION CRITERIA:** Patients having ileal perforation due to any other cause such as trauma, fire arm injury or road traffic accidents were excluded from the study.

**RESULTS**
78 patients underwent surgery for typhoid ileal perforation during the study period. Among them 49(62.8%) were male and 29(37.1%) were females. Male to female ratio was 2 to 1.5. Age of the patients ranged from 3 to 15 years (mean 10.4 years). Duration of symptoms ranged from 7 to 20 days.

Preoperatively, 51(65.3%) had generalized fecal peritonitis, while 27(34.6%) had comparatively clean peritoneal cavity. 46(58.9%) had single perforation and 32 (41.02%) had multiple ileal perforations.

Preoperative management varied depending upon the general health status of the patient, number of perforations in the ileum, degree of fecal contamination and condition of the ileum itself. In 27(34.6%) patients the defect was closed primarily after freshening of the borders using silk 3/0 (R.B). In 44 (56.4%) cases, ileostomy was done. While in 7 (8.97%) cases, resection and end to end anastomosis was done.

Among the patients who underwent primary closure 4 developed fecal fistulas, while 2 patients had anastomotic disruption leading to fecal fistula, which were then managed by making temporary ileostomy. One patient had sub acute intestinal obstruction which was treated conservatively.

During the study period there was no death recorded. Till date, a total of 19(43.18%) stomas have been reversed after 3-6 months of initial surgery.

Complications encountered during different surgical procedures were wound infections 21(61.76%), incisional hernia 2(2.5%), burst abdomen 1(1.28%), enterocutaneous fistula 6(7.6%), skin excoriation 33(75%) and pelvic abscess 1(1.28%), ileostomy diarrhea 28(65.4%), ileostomy prolapse 2(2.5%) and stoma retraction 1(1.28%) patients.

<table>
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<th>S. No</th>
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<td>3</td>
<td>Ileostomy prolapse</td>
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</tr>
<tr>
<td>4</td>
<td>stoma retraction</td>
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<td>2.27%</td>
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Complications of Primary Closure for Enteric Perforation

<table>
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<td>4</td>
<td>pelvic abscess</td>
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DISCUSSION

In the current study 78 surgically treated patients with typhoid ileal perforations were evaluated. Different surgical procedures were performed ranging from primary closure of the perforation, resection and end to end anastomosis and temporary ileostomy. Selection of each procedure was done, keeping in view the peroperative contamination of peritoneal cavity and the general condition of the patient. We mostly opted for temporary ileostomy as most patients had generalized fecal peritonitis due to typhoid ileal perforation at presentation.

Most fatal complications of typhoid fever are intestinal hemorrhage and enteric perforation. These complications occur secondary to the necrosis of paver’s patches. Typhoid fever leads to the hyperplasia of Reticuloendothelial system, necrosis and finally ulceration of peyer’s patches. The frequency of typhoid induced ileal perforation is reported to vary between 0.8% to 39% depending on geographic region. Butler reviewed 15000 cases of typhoid fever from world literature and found the frequency of typhoid induced ileal perforation to be 2.8%.

Typhoid fever mostly causes perforation of ileum during third week of the disease, in rare cases the jejunum and cecum may also be involved. Delay in seeking treatment is an important issue that drastically affects the morbidity in these patients. Most of the patients received during the study period were dehydrated and toxic looking. High grade fever, vomiting, absolute constipation and pain abdomen were the chief clinical features. After admission all the patients were rehydrated and put on broad spectrum antibiotics, surgical intervention was done after correcting electrolyte imbalance and anaemia. Surgery must be delayed till adequate optimization of the patient is achieved. Primary closure should be done in patients in single perforation, relatively clean peritoneal cavity and with typhoid ileal perforation having healthy edges. Primary closure of typhoid ileal perforation is not an option in all the cases. In most of the cases the involved segment is very friable and it is not feasible to perform primary repair or resection and end to end anastomosis. Freshening of the margins increases the size of perforation and resection followed by anastomosis leads to anastamotic disruption. Omental patch application has been described to have good results. Proximal diversion in the form of ileostomy should be done if the involved segment is friable due to inflammation. Operative management in our study varied according to the condition of the patient. Treatment protocol was kept flexible and surgical treatment delivered according to the condition of the patient.

During the course of our study post operative complications occurred in the form of wound infection entercutaneous fistula and pelvic abscess formation. While secondary infections and skin excoriation occurred in the patients who underwent ileostomy.

Surgical treatment of typhoid ileal perforation started since 18th century; however the method to be applied in surgical treatment is still contentious. Rehan et al found no correlation between the applied surgical procedure and reduction in mortality and morbidity. Shah et al and Athie et al advocated resection-anastomosis as the ideal surgical treatment.
While Beniwal\textsuperscript{27} and Shukla\textsuperscript{28} found primary closure as the treatment of choice in case of typhoid ileal perforation.

The operative management of typhoid ileal perforation should be tailored according to the general condition of the patient and the degree of peritoneal contamination.

In our setup, most patients seek medical attention regarding typhoid ileal perforation late. These patients usually have frank fecal peritonitis and the involved ileal segment is very friable. In such scenario we recommend performing temporary ileostomy. Ileostomy drastically reduces the toxicity of the patient and saves the patient from complications like enterocutaneous fistula or anastomotic disruption, which increases hospital stay and puts financial burden on the patient. The patient is subjected to potential complications of anesthesia on second exploration. This recommendation has been offered after facing complications following primary repair for typhoid ileal perforation in children. That study was conducted at pediatric surgery unit Peshawar in 2012. Temporary ileostomy has been the procedure of choice in many local and international studies. Ansari et al\textsuperscript{29} advocated ileostomy in all patients having generalized fecal peritonitis secondary to typhoid ileal perforation. Jamshed et al\textsuperscript{30} supports performing ileostomy in contaminated cases of enteric perforation. These observations were endorsed by Saddiqui et al\textsuperscript{10}.

The management of ileal stoma, however remains a challenge in public sector hospitals, as there are no stoma care teams available. A defunctioning ileostomy has firmly been established as a successful procedure in terms of overall mortality, in our series. Complications related to ileostomy are common due to improper fashioning of the stoma and inadequate postoperative nursing care.

**CONCLUSION**

All patients who underwent temporary ileostomy had an uneventful course and we conclude that the primary closure of typhoid ileal perforation site with proximal ileostomy is the safest procedure in our circumstances and is therefore recommended in our setup.

**REFERENCES**

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