Typhoid ileal perforation: a surgical audit

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ABSTRACT

Objective
To review presentation, evaluation and surgical management of typhoid ileal perforation.

Patients and Methods
This retrospective descriptive study was carried out at surgical unit-II, Chandka Medical College Hospital, Larkana from July 1, 2006 to June 30, 2007. Records of 60 patients diagnosed clinically and/or histologically as typhoid ileal perforation were reviewed whereas incomplete records were excluded from the study. After the initial phase of resuscitation, laparotomy was performed in all patients. The degree of contamination, number and site of perforation were noted which affected the decision of dealing with perforation. Patient having single perforation with minimal contamination were chosen for primary repair of perforation, while those having moderate to severe degree of contamination were operated either through exteriorization of perforation or repair with covering ileostomy.

Results
Out of 60 patients, 44 were males and 16 were female. Median age was 23.12 years (13-55), mean length of pre-presentation illness was 8.8 days, whereas mean length of stay was 9.8 days. Abdominal pain was seen in 60 (100 %) patients, fever in 58 (96.6 %) and signs of peritonitis in 58 (96.6 %) at presentation. Mean TLC was 8450 (range1600-19800). X-ray abdomen revealed pneumoperitonium in 58 (96.6%). Free fluid in abdominal cavity with variable degree of contamination was found in all cases. Most had single perforation (n=50, 83.3%) on anti-mesentric border of ileum followed by two perforations (N=4, 6.66%) and multiple perforations (n=6, 10%) at mean distance of 27.41 cm from ileocaecal valve. Primary closure with or without covering ileostomy (n=28, 46.66%), exteriorization of perforation as ileostomy (n=22, 36.66%), and resection and anastomosis (n=8, 13.3 %) were common surgical procedures performed. Skin was closed in 36 patients (60%), and not closed in 24 (40%). Post operatively wound infection (n=30, 50%), wound dehiscence (n=4, 13.3%) anastomotic leakage (n=4, 6.6%), fecal fistula (n=4, 6.6%), and intra abdomen abscess (n=2, 3.3%) were the common complications seen. Mortality was 13.33% (n=8). Major contributory factors were presence of co-morbidities, multiple perforations, long pre-presentation illness, severe sepsis and pre-operative hypovolemia.

**Conclusion**

Although the incidence of post typhoid ileal perforation with all its dreadful complications has decreased after the introduction of quinolones, it still posses’ major threat for a surgical setup. Early diagnosis and prompt surgical intervention, positively relate with the outcome: more delayed the intervention, more are the complications and
worse is the outcome. We found that thorough peritoneal lavage, provision of covering stoma and generous use of broad spectrum antibiotics directly affected the postoperative recovery. (Rawal Med J 2011;36:22-25).

**Key Words**

Typhoid ileal perforation, peritonitis, pneumoperitoneum.

**INTRODUCTION**

Typhoid fever is a systemic infection with Salmonella typhi. Typhoid perforation is a serious complication and remains a significant surgical problem in developing countries, where it is associated with high mortality and morbidity, due to lack of clean drinking water, poor sanitation and lack of medical facilities in remote areas and delay in hospitalization. Foods prepared outside home, drinking contaminated waters, close contact with recent typhoid fever patient, poor housing with inadequate facilities for personal hygiene, recent use of broad spectrum antibiotics, proton pump inhibitors and vagotomy are important risk factors. Clinical Features include high grade fever, abdominal pain, ileus and intestinal perforation. Perforation usually occurs in the late 2nd or 3rd wk of febrile illness but may occur during 1st wk and accounts for 1-3 % of hospitalized patients of typhoid fever. Up to 32% mortality has been reported in some series. Site is usually the terminal ileum typically 45 cm from ileocaecal valve, in the centre of ulcer. It is usually single (75%), but more than one also occue.

On the background of features of typhoid fever, the clinical features of peritonitis are present. X-ray abdomen in erect posture may reveal pneumoperitoneum in 75% cases.
Perforations during 1st wk, single perforation and less time interval between perforation and surgery carry positive prognosis while multiple perforations, late presentation, extremes of age and presence of other co-morbid are the negative prognostic factors. The non operative management of the typhoid perforation is now obsolete. Management comprises of Initial resuscitation, antibiotics and early surgical intervention. Postoperative complications like wound infection, wound dehiscence, anastomitic leak, fecal fistula and intra-abdominal collection/abscess can occur. The aim of this study was to review our experience with typhoid ileal perforation at our center.

PATIENTS AND METHODS

This is a retrospective descriptive study of the review of patients diagnosed and managed as cases of typhoid ileal perforation at surgical unit II, Chandka Medical College Hospital, Larkana, admitted from July 1, 2006 to June 30, 2007. The inclusion criterion was to review all records coded as “Typhoid ileal perforation.” The cases with incomplete records were excluded from the study. In all patients an infective etiology of peritonitis was clinically suspected. After initial resuscitation, emergency laparotomy was performed in all patients. The statistical analysis was done on SPSS version 10.

RESULTS

Total number of patients was 60, out of which 44 were males & 16 were females (M:F=2.7:1). Median age was 23.12 yrs ranging from 13-55 years. Mean length of pre-hospitalization was 8.8 days & mean time of stay was 9.8 days.
The presenting clinical features were, fever (58, 96.6%), abdominal pain (60, 100%) & signs of peritonitis (58, 96.6%). Other clinical features were: nausea/vomiting (32, 52%), constipation (32, 52%), diarrhea (10, 16.6%) (Table 1).

### Table 1. Clinical features.

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>58</td>
<td>96.6</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Peritonitis</td>
<td>58</td>
<td>96.6</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>32</td>
<td>52</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>10</td>
<td>16.6</td>
</tr>
<tr>
<td>Constipation</td>
<td>32</td>
<td>52</td>
</tr>
</tbody>
</table>

Leukocytosis was prominent in peripheral blood picture, with mean TLC of 8450.51/mm$^3$ (1600-19800). Erect x-ray chest revealed pneumoperitoneum in 58 (96.6%) & in 2 (4%) it was absent. Admitting diagnosis was post-typhoid ileal perforation in 54 (90%) & perforated appendicitis in 6 (10%).

Emergency laparotomy was performed in all case through lower midline incision. All cases revealed free peritoneal fluid with variable degree of contamination. 50 (83.3%) patients had single perforation. 4 (6.6%) had two perforations & 6 (10%) had multiple perforations. The mean distance from ileocecal valve was 27.41 cm. The perforation was dealt in varied ways depending on the time interval between abdominal pain and presentation to hospital: primary closure without covering ileostomy in 28 (46.66%) and wedge resection in 2 (3.3%) were done in those who presented earlier and peroperatively minimal contamination was evident; exteriorization of perforation was
done in 22 (36.66%), resection & anastomosis with covering ileostomy in 8 (13.3%).
These all patients presented late and gross peritoneal contamination was present during laparotomy. Skin was closed in 36 (60%) & left open in 24 (40%). Postoperatively following complications occurred during hospital stay Early Complications were wound infection 30 (50%), anastomosis leakage 4 (6.6%), fecal fistula 4 (6.6%), wound dehiscence 4 (6.6%), Intra-abdominal abscess 2 (3.3%) (Table 2). Most of the patients did not come for follow up, so we cannot assess late complications.

<table>
<thead>
<tr>
<th>Complication</th>
<th>NUMBER</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound infection</td>
<td>30</td>
<td>50%</td>
</tr>
<tr>
<td>Anastomosis leakage</td>
<td>4</td>
<td>6.6%</td>
</tr>
<tr>
<td>Fecal fistula</td>
<td>4</td>
<td>6.6%</td>
</tr>
<tr>
<td>Wound dehiscence</td>
<td>4</td>
<td>6.6%</td>
</tr>
<tr>
<td>Intra-abdominal abscess</td>
<td>2</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Eight patients died with mortality of 13.33%. Severe sepsis and hypovolemia were the cause of death, while old age, presence of co-morbid and longer pre-hospitalization duration being the important predisposing factors. Histopathological examination of edges revealed acute on chronic inflammation, consistent with typhoid perforation, in all patients.

**DISCUSSION**

Typhoid ileal perforation is still a common surgical entity in the developing world. It is associated with significant morbidity and mortality. In reported series, it is up to 32%. Mortality in our series was much lower (13.33%), than the local and international
studies (Table 3). This significant difference may be because of the more prevalence of typhoid ileal perforation in this part and frequent surgical intervention. The high index of suspicion at the time of admission and thus the early intervention culminate in desirable postoperative outcome. The generous use of pre-operative and post-operative broad spectrum antibiotics, thorough peritoneal lavage and covering stoma formation might have contributed to the much favorable outcome in our series.

Many patients have a history of ingestion of food prepared outside home. The majority of patients in our study were males, similar to that reported in other studies.

Table 3. Comparison of local and international studies.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>MEMON AB, SALEH</th>
<th>AZIZ M,QADIR A,FAIZULLA H</th>
<th>EGGLESTON FC</th>
<th>OUR STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER</td>
<td>90</td>
<td>72</td>
<td>78</td>
<td>60</td>
</tr>
<tr>
<td>M/F</td>
<td>60/30</td>
<td>56/16</td>
<td>61/17</td>
<td>44/16</td>
</tr>
<tr>
<td>DURATION OF ILLNESS</td>
<td>&gt;2WKS</td>
<td>2-3 WKS</td>
<td>&gt;2WKS</td>
<td>&gt;2WKS</td>
</tr>
<tr>
<td>PRESENTING FEATURE</td>
<td>FEVER, ABDOMINAL PAIN</td>
<td>FEVER, ABDOMINAL PAIN</td>
<td>FEVER, ABDOMINAL PAIN</td>
<td>FEVER, ABDOMINAL PAIN</td>
</tr>
<tr>
<td>NUMBER OF PERFORATIONS</td>
<td>90% SINGLE</td>
<td>-</td>
<td>90% SINGLE</td>
<td>83.3% SINGLE</td>
</tr>
<tr>
<td>COMMON COMPLICATION</td>
<td>WOUND INFECTION</td>
<td>WOUND INFECTION</td>
<td>WOUND INFECTION</td>
<td>WOUND INFECTION</td>
</tr>
<tr>
<td>MORTALITY</td>
<td>-</td>
<td>UPTO 25%</td>
<td>32%</td>
<td>13.33%</td>
</tr>
</tbody>
</table>
The presenting feature in our study as well as those reported by others was the acute onset abdominal pain with nausea/vomiting on a background of high grade fever for more than 2 weeks. The conservative management of typhoid perforation is no longer practicable and the operative intervention is the standard of care in all these cases. Most of patients have single perforation (83.3% in our study and 90% in other reviews) and simple closure of perforation is possible in most of patients. Wound infection is a common postoperative complication in these patients. The other options being the exteriorization of the perforation as ileostomy, resection and end to end anastomosis with or without covering stoma.

In a large series by Chatterjee et al the reported mortality in patients presenting early was 16.6%, same was reported in a local series for patients who presented early, but the mortality rate escalated to 25% as the patients presented late. Thus, the most of the series, as ours, have concluded the time lag between symptoms and intervention bas the most important prognostic factor.

CONCLUSION

Although the incidence of post typhoid ileal perforations with all its dreadful complications has decreased after the introduction of quinolones, it still is a major threat for a surgical setup. High index of suspicion leads to early diagnosis and surgical intervention and thus relates positively with the outcome: more delayed the intervention; more are the complications and worse the outcome. More reliance upon the covering stoma formation in cases where peritoneal contamination is significant,
relates with lower postoperative mortality and mortality. Public awareness for the hygiene and good sanitation should be promoted.

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REFERENCES


