Ileostomy in Typhoid Perforation

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This is a prospective observational study carried out during last five years (Jan, 1998 to Nov, 2002). The purpose was to study guidelines of case selection for different available procedures to treat typhoid perforations. Ninety cases of typhoid perforation were treated by different procedures. The complete records were maintained and a designed protocol of management was observed. Male to Female ratio was 4 to 1. Average age 26 years (7 cases below 10 years and 6 cases above 40 years). Only 17 cases (18.88%) presented within 24 hours, the largest group of 31 cases (34.44%) presented after 72 hours. Although complication rate was very high in the late reporting, no significant mortality difference was noted. Primary ileostomy (group 1) 18 cases had no mortality, 53 cases of simple perforation closure had 5 mortalities (9.43%), resection anastomosis group that is 19 cases had 2 mortalities (10.5%), closure of the ileostomies (19 cases) had no mortality and a very low complication rate. In our study ileostomy is a good life saving procedure to be used judiciously, accepting its inconvenience to the patient.

Key words: Typhoid Perforation, Ileostomy.

Typhoid Ulceration of small bowel has been a challenge for us for a long time. Starting from a very high mortality of 30 to 50 percent in prechemotherapy era, we have now reached 4 to 5 percent mortality rate in spite of our very aggressive approach and improving medical care. Strategies keep on changing as the experience accumulates and the best option is still awaited. The treatment methods have to be tailored according to the requirement of each case and in management of typhoid perforation we have several choices like simple closure, ileal resection, ileostomy and right hemicolectomy. The complication rate is quite high and the toxemia of sepsis is the main mortality factor. In the present study, which started five years ago, we have been treating our cases according to latest recommendations and keeping proper record on the protocol. We are actually auditing our experience of five year of management of typhoid perforation stressing the role of ileostomy as a very safe procedure.

Patients and methods

All patients presented to our unit with small bowel perforation due to typhoid were included. Resuscitation with fluids (usu. Ringer Lactate) was initiated. Antibiotics (Ciprofloxacin, Metronidazole & Gentamycine) started. All patients had Hb, TLC, DLC, Blood Urea, X-ray Chest & Abdominal X-rays done. No special test to diagnose Salmonella infection was done. Blood transfusion was given if required. Intake-output chart maintained aiming at least 50 cc per hour urine output. After correction of serum electrolytes, Hb, hemodynamics and achieving 50 to 60cc urine output per hour patient was taken to theatre and laparotomy performed through midline incision. Bowel eviscerated and studied for perforation. Single perforation with satisfactory state of rest of the ileum was closed with interrupted silk sutures. Two or more perforations or thinned out very fragile ileum needed either local resection or right hemicolectomy. High-risk cases like the one presenting very late, with established peritonitis, abscesses, general condition not allowing more operation time or where we anticipated high incidence of anastomotic failure, end ileostomy was the treatment of choice. These cases we call group I ileostomy (the primary procedure). Whenever we had to re-explore our cases due to closure failure, second perforations (appearing late) or anastomotic breakdown we mostly resorted to ileostomy and this batch of cases are named group II. All post operative progress notes were well documented on protocol proforma.

Results

During the nearly 5 years (Jan, 1998 to Nov, 2002) we had 90 patients presenting with small bowel perforation due to typhoid enteritis. 7 cases were below 10 years of age and 6 cases were above 40 years of age. Mean age was 26 years. Male to Female ratio was 4 to 1.

Table 1. Risk factors in our cases (n=90)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>n</th>
<th>Complications</th>
<th>Mortality n=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>i. Below 10 years</td>
<td>7</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>ii. Above 40 years</td>
<td>6</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>4</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Early presentation</td>
<td>17</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Late presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) After 24 hrs</td>
<td>10</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>ii) After 48 hrs</td>
<td>17</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>iii) After 72 hrs</td>
<td>31</td>
<td>55</td>
<td>2</td>
</tr>
<tr>
<td>iv) After one week</td>
<td>15</td>
<td>28</td>
<td>2</td>
</tr>
<tr>
<td>Number of perforation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>62</td>
<td>88</td>
<td>4</td>
</tr>
<tr>
<td>Two</td>
<td>17</td>
<td>27</td>
<td>2</td>
</tr>
<tr>
<td>Three</td>
<td>7</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>More</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

To ascertain the outcome, different risk factors along with their morbidity and mortality figures are given in table 1. Surprisingly the number of perforation does not seem to influence the outcome perhaps because the procedure is...
Ileostomy in Typhoid Perforation

changed according to the requirement. The various treatment options along with their complication rate and mortality is given in table 2. Ileostomy group I has the least morbidity and no mortality. Table 3 shows the complication rate in the two groups of ileostomy. Luckily there is no mortality of closure of ileostomy, which is strictly after 3 months. A low rate of minor complications is experienced. (no record)

Table 2. Procedures

<table>
<thead>
<tr>
<th>Procedures</th>
<th>n</th>
<th>Complications</th>
<th>Mortality</th>
<th>Ave. hospital stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure of perforation</td>
<td>53</td>
<td>98</td>
<td>5</td>
<td>13 days</td>
</tr>
<tr>
<td>Rt. Hemicolecction</td>
<td>3</td>
<td>7</td>
<td>0</td>
<td>11 days</td>
</tr>
<tr>
<td>Ileal resection &amp; Anastomosis</td>
<td>16</td>
<td>21</td>
<td>2</td>
<td>13 days</td>
</tr>
<tr>
<td>Ileostomy (primary) 2nd procedure</td>
<td>18</td>
<td>11</td>
<td>0</td>
<td>12 days</td>
</tr>
<tr>
<td>Re-exploaration with the procedure</td>
<td>16</td>
<td>22</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>i. Ileostomy</td>
<td>11</td>
<td>16</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ii. Reclosure of perf. abscess</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>iii. Drainage of abscess</td>
<td>7</td>
<td>13</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Closure of ileostomy</td>
<td>29</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Incisional hemia repair</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Note: 2nd procedure listed does not include minor procedures.

Table 3. Complications of ileostomy

<table>
<thead>
<tr>
<th>Complication</th>
<th>Group I (n=15)</th>
<th>Group II (n=11)</th>
<th>%age</th>
<th>%age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound abscess</td>
<td>5</td>
<td>7</td>
<td>27.77%</td>
<td>63.63%</td>
</tr>
<tr>
<td>Wound dehiscence</td>
<td>2</td>
<td>4</td>
<td>11.11%</td>
<td>36.33%</td>
</tr>
<tr>
<td>Residual intra-abdominal abscess</td>
<td>3</td>
<td>2</td>
<td>16.66%</td>
<td>18.88%</td>
</tr>
<tr>
<td>Technical fault requiring refashioning</td>
<td>3</td>
<td>1</td>
<td>16.66%</td>
<td>9.09%</td>
</tr>
<tr>
<td>Mortality</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>9.09%</td>
</tr>
</tbody>
</table>

Discussion
We are actually talking about ileitis with ulcers, which presents with perforations. We in fact arbitrarily believe them typhoid ulcers without histological examinations and even without trying to prove the concomitant presence of Salmonella infection. It is merely for our convenience and an attempt to conserve our dwindling resources. As believed by several African and Indian authors it does not influence their management protocol. They also made the diagnosis of typhoid ileitis with perforation on the history and then on gross appearance of the bowel and by ruling out other causes of bowel ulceration.

Specificity and sensitivity of Widal test and multiple blood cultures are also not 100%, and there are so much expenses and fallacies that it is not worth the headache. Elisa and Typhoid dot are not available in our hospital.

The exact incidence of bowel perforation in established cases of typhoid septicaemia is not known. It is probably nearly 5%. Even the half hearted treatment by our lazy practitioners has reduced this incidence during the past 3 to 4 decades but the deteriorating socio economical conditions of the third world has helped maintaining the endemic status of this disease swarming our surgical wards with this complicated pathology. These cases present late on 2nd to 7th days after perforation further adding to our challenges. Once received these patients must be resuscitated to restore normal hemodynamics and adequate antibiotics levels. Quinolones have better coverage against salmonellosis but coverage against anaerobes (metronidazole) and gram –ve organisms (aminoglycosides) are also added. Renal function status should be known. Serum electrolytes should be corrected.

Other than concomitant systemic and metabolic disorders, disease related risk factors also influence the outcome. Severity of pathology as reflected by the number of perforations, state of ileum (severity of ileitis), length of bowel involved, extent and duration of peritonitis are also the factors to be considered in choosing the treatment option. There is not controversy in the treatment. We have several procedures available and we need to pick up the most suitable for our cases. Simple closure with interrupted silk sutures (single layer) gives adequate seal and there is no need to put the second row of sutures, which might result in ischemia of margins. This closure along with thorough mopping followed by generous peritoneal toileting with copious amount of saline (warmed up to body temperature) is good enough when the rest of the ileum is not badly inflamed and fragile. Even two or three perforation with good ileum might be effectively treated this way.

In a worse disease revealing a good length of fragile and grossly inflamed ileum with several areas of impending perforations it is worth doing resection of sick bowel and anastomosis. This might need right hemicolecction if the perforations and/or very sick segment of ileum is close or at the ileocecal junction. The choice between primary anastomosis or ileostomy depends upon the bowel wall and the amount of sepsis present in the peritoneal cavity. Ileostomy is a safe procedure and life saving. In almost all the series presented this option has been used quiet frequently primarily or at the time of re-exploration for the first procedure failures. This rules out the potential hazards of the closure or anastomotic breakdown and carries very low mortality as reflected in our present series of 18 primarily done ileostomies. Once
we operate the patient to treat the first procedure failure
the patients are very sick due to recurrence of peritoneal
insult there is nearly no place to take a chance of reclosure of
perforation or redoing the anastomosis. Then the best
option is ileostomy. In our this second group we have 11
ileostomies and this group has one mortality (9.1%).
There is a second order of closure of ileostomy these
patients are facing but this has very low morbidity and
mortality rate. Agreed that ileostomy care and job
interference carry lot of meanings to the one who owns it
but still nothing matches “the life”. It is quiet clear from
our result tables that simple closure and resec tion
anastomosis has very high complication rates including
mortality of 9.43 % and 10.5 % respectively. This is
directly related to technique failure, the disease is being
well taken care of by the effective drugs. “The peritoneum
can take lot of insult but once”, professor Rene Mengu
used to say but the continuing contamination ends in septic
syndrome. The complication rate in the group 2 of
ileostomy is also higher than the group 1. The hospital
stays is not very significantly different in the different
procedures groups.

The primary ileostomy group did not require re-
exploration or second operation for complications (except
that they require closure of ileostomy). Other group needed
second operation for complications in 16 cases (22.22 %).
So we conclude that after proper resuscitation of these
cases of typhoid perforation the decision of procedure
should be case selective and there should be no hesitancy
to judiciously use the option of ileostomy for very bad
cases while dealing with multiple perforations or very
fragile or grossly inflamed bowel or very sick patients who
will not stand the second insult of treatment failure.

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