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Research Article

## FREQUENCY, PRESENTATION AND OUTCOMES OF TYPHOID ILEAL PERFORATION

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**Abstract:**

*Objective:* To find out frequency, presentation and outcome of typhoid ileal perforation peritonitis.

*Place and duration of study:* Conducted in ward 3-JPMC from October 2016 to October 2018.

*Study design:* Observational description study.

*Methodology:* All patients above 12 years of the age both male and female who were diagnosed as peritonitis were included in study, peritonitis due to typhoid perforation of ileum were studied in detail in terms of age, sex, presentation, gas under diaphragm, operative findings, lab investigations like Typhi dot test and blood culture. Post-operative complication and mortality were recorded. Results were analyzed with SPSS version 24.

*Results:* Typhoid ileal perforation was leading cause of acute peritonitis (32.38%), then duodenal ulcer perforation (26.66%), rupture appendix 18.09%, TB intestine perforation 12.38%, gangrene gut 4.76% rupture liver abscess 1.90%, rupture tumor 1.9% and rupture gall bladder 1.9%. Male was predominantly involved. Common age was 21-40 years, majority of patients presented with history of 3-5 days of fever (95.59%). All patients had signs of peritonitis, 76.46%. Patients had signs of peritonitis and 76.46% of patients had gas under diaphragm. 36.23% presented with in 24 hour, 24.47% in 48 hours, 24.47% patients presented in ER after 2 days with acute peritonitis. 97.05% patients had single perforation in gut. Primary closure of gut were made in 61.76% and ileostomy in 38.23%. Post-operative complications occurred in 55.88%. Burst abdomen in 11.76%, surgical site infection in 44.11% and mortality was zero.

*Conclusion:* Typhoid ileal perforation is leading cause of peritonitis in our setup which is preventable disease by good hygienic condition and vaccination. Mortality and morbidity can be reduced by early surgical intervention.

**Key Words:** Ileal perforation, typhoid fever, acute peritonitis, surgical intervention.

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**INTRODUCTION:**

Typhoid intestinal perforation is still common in Pakistan and south Asia. Outcome of these patients is very poor. Fever and abdominal pain are presenting symptoms and majority of patients are perforated between within 14 days of illness. Chest and abdominal radiograph revealed pneumoperitoneum is 74.7% of cases. Ultrasound showed free peritoneal collection in 85.7%<sup>1</sup>. The prevalence of typhoid fever is decreasing worldwide but still common in Indian subcontinent. Most common complication of typhoid is intestinal perforation causing deaths<sup>2</sup>. Hemorrhage also occurs secondary to necrosis of peyer patches at 2-3 weeks after the onset of disease. Mortality rate of typhoid intestinal perforation are recorded which are between 5-62%<sup>2</sup>. Perforation of terminal ileum is a cause of acute peritonitis and patients present with abdominal pain associated with guarding, tenderness and rigidity<sup>2</sup>. Its incidence ranges from 0.9% to 39%. Mortality and morbidity are high and depend on general state of patients, resistance of Salmonella and duration of presentation before the surgical intervention and aggressive resuscitation with antibiotic therapy. Typhoid perforation of gut managed by surgical intervention by simple primary closure or ileostomy. Fecal fistula may occur due to anastomotic leakage or perforation. Primary closure of perforation prevent complication of ileostomy but fecal fistula is life threatening.

Surgical site infection is major complication and most common patients presented were septic shock, fluid and electrolyte imbalance. Surgical Site Infection can result delayed hospitalization. Mortality is due to septic shock. Early surgical intervention can reduce septicemia<sup>3</sup>. Other complications like paralytic ileus, burst abdomen, ARDS and other organ dysfunction are common. So typhoid fever and its life threatening complication is ileal perforation in developing countries, which is due to lack of safe drinking water and inadequate sewerage management. Vaccination, boiled drinking water and washing hands before meal intake can prevent these complications.

Rational of study was to give awareness to general physicians that even now when so good antibiotics are available, still typhoid causing how much mortality and still leading cause of peritonitis which can be prevented only by using boiled drinking water and good hygienic conditions.

Objective of study is to find out frequency of typhoid perforation of gut in peritonitis, its presentation, complications and mortality.

**METHODOLOGY:**

This prospective observational descriptive study was conducted in ward 3. JPMC from October 2016 to October 2018. All patients above twelve years of age admitted through accident and emergency departments of hospital and diagnosed as acute peritonitis. Both male and female were included in study. Peritonitis due to trauma were excluded.

Patients diagnosed with typhoid ileal perforation on the basis of typical history clinical examination, supported by radiological, laboratory investigation and confirmed by operative finding, histopathological examination of the edges of perforation. Other causes of peritonitis like a ruptured appendix, perforated peptic ulcer, tuberculous ileal perforation, ruptured liver abscess, ruptured gall bladder, gangrenous gut were included in study only to find out the frequency of typhoid ileal perforation due to typhoid. Data of typhoid ileal perforation were collected in Performa form for study. It included demographic details of age, sex and address. Also in Performa duration of symptoms of presentation, investigation, duration of onset of peritonitis and surgical intervention, gas under diaphragm in chest x-ray, procedure performed was recorded. Pre-operative resuscitation was IV fluids; intravenous, antibiotic cephalosporin and metronidazole were immediately given. Urethral catheterization and NG tube were placed. Investigation like full blood count, typhi dot test, blood culture, serum urea and creatinine, electrolytes and chest x-ray were done. Adequate resuscitation was done until systolic blood pressure reached to 100mmhg and urinary output of 40ml/hour was obtained. Then exploratory laparotomy through midline incision under general anesthesia was performed. Peritoneal lavage with 4-6 liters of normal saline was done. Primary closure of perforation was performed when there was single perforation seen at anti mesenteric border with minimal contamination and presentation within 48 hours. Ileostomy was made only when perforation of gut seen at mesenteric border or multiple perforation of the gut. Abdomen was closed in single layer with polypropylene No.1 Post-operatively ceftriaxone and metronidazole were given with intravenous fluids till gut started function usually for one week. Post-operative complication like wound infection, paralytic ileus, burst abdomen and mortality of typhoid ileal perforation were recorded in Performa.

Results were analyzed in terms of frequency of typhoid perforation in peritonitis presentation and outcome with SPSS version 24.

**RESULTS:**

A total 210 patients of acute peritonitis were including in study. 68 patients were diagnosed as typhoid ileal perforation. Among these typhoid ileal perforations 38 (55.88%) were male and 30 (44.12%) were female. Female to male ratio was 1: 1.27. Age

range was 13 to 70 years of typhoid ileal perforation. 13 to 20 years of the age were 15 (22.06 %) patients, 21 to 40 years of age were 40 (58.82%), 41-60 years 12 (17.65%) and above 60 years were only one (1.48 %).

**Table-I** Frequency of Typhoid Ileal Perforation in Acute Peritonitis.

	Diseases causing Peritonitis	No. of Patients	Total Patients	Percentage
1	Typhoid Ileal Perforation	68	210	38.38
2	Duodenal Perforation	56	210	26.66
3	Ruptured Appendix	38	210	18.09
4	TB Intestine Perforation	26	210	12.38
5	Gangrenous Gut	10	210	4.76
6	Ruptured Liver Abscess	4	210	1.90
7	Large Gut Tumor Perforation	4	210	1.90
8	Gall Bladder Perforation	4	210	1.90

Leading cause of peritonitis was typhoid ileal perforation and then duodenal ulcer perforation. 65/68 (95.59%). Patients presented with history of fever for 5-7 days and then developed sign and symptoms of generalized peritonitis. 3/68 (4.42%) patients presented with history of fever more than 10 days before developing generalized peritonitis. Duration of acute peritonitis due to typhoid ileal perforation was 24 hours during presentation in 26/68 (38.23 %), 18/68 (24.47%), presented with acute peritonitis between 24 to 48 hours and 26.47% patients presented after 2 days of developing generalized peritonitis. All patients had abdominal pain, vomiting, generalized tenderness, absent gut sounds and 52/68 (76.47%) had gas under right dome of diaphragm.

Exploratory laparotomy was done in every patient. Gas came out on opening abdomen in all patients. 66/68 (97.05%) had one perforation in intestine and 2/68 (2.95%) had multiple perforations in gut. Primary repair of gut was done in 42/68 (61.76%) patients and ileostomy was done in 20/68 (38.23%) patients.

Post-operative complication occurred in 38/68 (55.88%) and others recovered uneventfully. Surgical site infection was seen in 30/68 (44.11%) patients and burst abdomen in 8/68 (11.76%) patients. Fortunately there was no mortality (zero) in this study due to typhoid fever. Some patient expired because of tuberculosis and duodenal perforation.

**DISCUSSION:**

Typhoid fever is caused by *salmonella Typhi* bacteria and spreads through contaminated water and food. Patients usually present with fever, abdominal pain and intestinal perforation occurred in 3<sup>rd</sup> week. Less common complications are like myocarditis,

endocarditis, pancreatitis, kidney, bladder infection<sup>5</sup>. But in this study typhoid ileal perforation occurred in majority of patients in first week of fever.

In this study interval between perforation and surgical intervention was 24 hours in 28.23% patients So mortality was zero and 24.47% patients presented within 2 days and only 24.47% presented late. Patients who presented late after 2 days developed Post-operative complications. Another study also showed good outcome in early presentation within 2 days<sup>5</sup>. Males were predominantly involved in this study. It is same as in international study<sup>6</sup>. In another study mostly patients belonged to 21-45 years of age<sup>5</sup> and same results revealed in this study.

In another study operative findings were 87.5% single perforation<sup>5</sup>. In this study 97.88% patients had single perforation. This may be due to early presentation in the study and due to same reason mortality was zero in the study.

In another study primary closure was done in 95.7% but in this study 61.75% cases primary repair was done<sup>5</sup>. In this study surgical site infection was recorded in 44.11% as compared to the other study where it occurred in 55.3%<sup>5</sup> and mortality rate was 8.5%<sup>5</sup> but in the study mortality rate was zero. Wound dehiscence recorded in the present study was 11.78% same as another study 14.9%<sup>6</sup>.

Intestinal perforation is dreaded complication of typhoid fever. Only early diagnosis, early surgical intervention, aggressive resuscitation can minimize the post-operative morbidity and mortality. Early presentation and physician's early referral patients can decrease morbidity and mortality.

Leading cause of peritonitis in international study is duodenal ulcer perforation<sup>7, 8, 9, 10</sup> but in this study majority of patients causing perforation and peritonitis were typhoid fever. This is due to unhygienic conditions and use of contaminated water in our set up. Peptic ulcer disease causes 46% and typhoid perforation in gut 32%<sup>8</sup>. In another study acid peptic disease 80.05% and typhoid ileal perforation 11.02%<sup>9</sup>. In another study commonest cause was acid peptic disease, ruptured appendix and third common was typhoid perforation<sup>7</sup>. But in this study leading cause was typhoid perforation of ileum. Gas under diaphragm was found 79% in other study<sup>7</sup> and 87.2% in other study<sup>11</sup> while in this study 76.46% had gas under diaphragm. Gas in peritoneum cavity absorbed with late presentation.

Mortality in this study was zero may be due to early surgical intervention and early presentation of patients in tertiary medical center but mortality in TB intestine and duodenal perforation was found in this study.

In western countries review of literature had shown malignancy is common cause<sup>8</sup> of intestinal perforation but in present study typhoid perforation was leading causes of peritonitis.

Prevention is better than cure. Late intervention patients more likely to develop complication and mortality raised us as compared with late surgical intervention. Pre-operative hypotension also effects post-operative complications. So adequate aggressive resuscitation and surgical intervention within six hours improve the post-operative outcome<sup>12</sup>

In developing nations goal should be to prevent typhoid fever is safe drinking water, improved sanitation, adequate medical care and vaccination in high risk population<sup>13</sup>. Two vaccines are available, one is injected in single dose and other is oral capsules form. One capsule is to be taken every other day<sup>13</sup> but vaccine could not provide 100% protection, so washing hands with soapy water, wash before eating prepared food and after using toilet can reduce the chances of infection. Avoid untreated drinking water. Carbonated water is safer than un-carbonated, use drinks without ice, use bottled water to brush teeth. Raw fruits and vegetables may be washed with safe water. Take early antibiotics when you are infected and avoid food handling, when you are infected to prevent transmit disease to another person. Avoid stored food and use hot food. These measures can prevent typhoid fever. Early ceftriaxone intake can eradicate the disease<sup>14</sup> in typhoid fever. When peritonitis already developed, then early surgical intervention is associated with higher survival.

Limitation of the study was that we have excluded children up to 12 years of age, and some patient

presented BP less and pulse less those were excluded. These patients can affect the mortality rate in the study.

#### CONCLUSION:

Typhoid ileal perforation causing peritonitis is leading cause of peritonitis is our setup. Early diagnoses and early surgical intervention can minimize the post-operative complications so control of typhoid by simple preventive measures can decrease the frequency of peritonitis due to typhoid fever, its morbidity and mortality.

#### CONTRIBUTION OF AUTHORS:

Abdul Malik Magsi: Data collection, Manuscript writing, Data Interpretation.

Mazhar Iqbal: Conceived idea.

Mariam Malik: Data collection, Statistical analysis.

Munazza Shamim: Literature review.

Sidra Khan: Data collection

Sughra Parveen: Design methodology.

Muhammad Iqbal Khan: Manuscript final reading.

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