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ORIGINAL ARTICLE

The Management of Gut Enteric Perforation, Including Clinical Symptoms, in Both Adults and Children a Single Center Study

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ABSTRACT

Objective: This comparative study evaluated enteric gut perforation's clinical symptoms and management in adults and children.

Methods: This single-center study was conducted in the department of surgery, hmc Peshawar, a tertiary care hospital, for two years, between September 2019 to October 2021. The analysis of the medical records of adults and children diagnosed with intestinal perforation who were hospitalized in. Age, gender, length of illness, hemodynamic condition, and first admission testing data were examined. Patients who required extended resuscitation and were operated on more than 24 hours after admission were reviewed for the necessity for a tube laparostomy, operational findings, the kind of surgical therapy administered, and the postoperative outcome. The information was analyzed using SPSS version 23.

Results: A total of 194 patients were treated throughout the study period, with 122(62.88%) male and 72(37.12%) female, ranging in age from 3 to 60 (mean 33.5, ± 2.88 years). And the average number of days with symptoms was 5–30 (mean 14.94, ± 8.59 days). All patients (100%) had a high-degree fever and abdominal pain. On abdominal X-rays, pneumoperitoneum was discovered in 145(74.74%) patients. Before surgery, 49(25.25%) patients needed blood transfusions due to anemia. Although 49(25.25%) patients required further resuscitation and tube laparotomies, the first surgical procedures were conducted 24 hours later. 145(74.74%) patients were optimized and operated on within that time. One hundred eight patients (74.48%) had a single perforation, 31 patients (21.37%) had multiple perforations, and six patients (4.13%) had sealed perforations. Primary perforation repair was done in 61(42.06%) patients, while ileostomy was performed in 84 (57.93%) patients. After surgery, intra-abdominal collections were seen in 13 patients (26.53%), a ruptured abdomen in 3 patients (6.12%), and 33 cases (67.34%) of wound infection. Mortality was 7.21% overall.

Conclusions: Due to prolonged illness, enteric perforation in adults and children usually presents as hemodynamic instability and sepsis. Thus, surgery is linked to significant morbidity and death rates regardless of the surgical approach.

Keywords: Enteric perforation, gut perforation, clinical symptoms, Ileostomy, Tube laparostomy.

INTRODUCTION

The capability of the existing healthcare system to detect Salmonella Typhi infections has been challenged by the development of drug-resistant forms of the disease and treat enteric fever, which is still a significant health problem in developing countries.[1] Despite global efforts to eliminate it, the illness still exists because of a lack of clean drinking water, unhygienic living conditions, and insufficient healthcare delivery networks.[2,3] Children are commonly impacted by this disease.[4] Even though enteric fever is a medical disease, if untreated, it may lead to intestinal perforation, which can be dangerous.[5] Prolonged fever followed by complications from intestinal perforation cause high morbidity and death rates.[6] The treatment of enteric perforations is very difficult for surgeons.[7] The current study aimed to assess the clinical characteristics and surgical results in adults and children with intestinal perforations.

METHODS

this single-center study was conducted in the department of surgery hmc Peshawar, a tertiary care hospital, for two years, from September 2019 to October 2021. This study investigated the medical records of adults and children with diagnoses of intestinal perforation who were admitted to a tertiary care hospital Age, gender, length of illness, hemodynamic condition, and first admission testing data were examined.

After the institutional review board's ethical permission, a medical history review was conducted to identify all patients based on the history of a high-grade fever persisting for more than a week, indications of peritonitis, and intraoperative findings of a distant intestine perforation at its anti-mesenteric boundary. Any intestine perforations caused by trauma, TB, gut volvulus, etc., were excluded.

The study included information on the patient's age, gender, length of symptoms, and hemodynamic condition at admission. Blood chemistry, electrolytes, blood urea nitrogen, serum creatinine, and free air were collected on an abdominal X-ray. Data on patients who needed resuscitation, blood transfusions and blood products, electrolyte correction, and a tube laparostomy were examined. Patients who needed protracted resuscitation due to sepsis or hemodynamic instability had tube laparostomy as a bridging surgery under institutional practice. Also, information on postoperative complications, surgical techniques used to conduct either primary perforation repair or exteriorization of perforation (ileostomy), and operational findings were evaluated. Patients who had significant peritoneal contamination, a friable and inflammatory gut, and who underwent surgery had ileostomies done. Primary repair was carried out in other circumstances with less pollution, and the heart was healthy and less brittle overall. The information was analyzed using SPSS version 23.

RESULTS

A total of 194 patients were treated throughout the study period, 122(62.88%) of whom were male, and 72(37.12%) were female. The patient's ages ranged from 3 to 60 (mean 33.5, ± 2.88 years), and the length of their symptoms ranged from 5 to 30 days (mean 14.94, ± 8.59 days). The most frequent observation was a high-grade fever followed by stomach discomfort in every case (100%) examined. Table I lists other clinical characteristics. Six patients also reported altered sensorium.

Twenty-four patients (48.97%) needed platelet transfusions before surgery, while 49(25.25%) were anemic and required transfusions. On presentation, electrolyte imbalance was evident in 25 patients (51.02%). On an abdominal x-ray, subdiaphragmatic free air was found in 145(74.74%) patients. Within 24 hours, 145(74.74%) patients were optimized and had laparotomy. In 49 (25.25%) patients, a tube laparostomy was performed, followed by surgery 24 hours later. One hundred eight patients (74.48%) had

single perforations, 31 patients (21.37%) had multiple perforations, and six patients (4.13%) had sealed perforations—table -2.

Sixty-one patients (42.06%) had their perforation repaired initially. Thirty-three patients (67.34%) had wound infections, four had fecal fistulas, three died from sepsis, and one had a burst abdomen due to a leak, requiring the insertion of an ileostomy. This patient later passed away as well. 5patients were readmitted due to a high fever and stomach discomfort. They were shown to have inter-loop collections and to react to non-operative management.

In this study, 84 patients (57.93%) had an ileostomy as their first procedure. In 33 (67.34%) patients, there was postoperative wound infection and varied wound dehiscence. There were 3 cases of an abdomen ruptured and 13 (26.53%) occurrences of intra-abdominal collecting. Among the group of patients with burst abdomens, two patients had repeat surgery for closure, although in 1 instance, only skin closure was feasible. Sepsis claimed the lives of eight individuals who had tube laparostomy at first, followed by stoma development. One patient passed away after being released from the hospital. In this study, 14 patients (7.21%) died suddenly, 5 with primary repair and 9 with an initial ileostomy. It is important to note that some patients experienced multiple complications (Fig -1).

Table-1: clinical parameters at admission

Characteristics	number of patients	Percent (n=194)
Gender		
Male	122	62.88%
Female	72	37.12%
Symptoms		
Abdominal pain	194	100%
Fever	194	100%
Abdominal distension	115	59.27%
Vomiting	34	17.52%
Diarrhea	24	12.37%
Constipation	15	7.73%
Altered sensorium	6	3.09%

Table-2: Patient's condition before and after surgery.

Characteristics	No of patients n=194	% age
Anemic Requiring Transfusion	49	25.25%
Platelets Transfusion	24	48.97%
Electrolyte Imbalance	25	51.02%
Sub diaphragmatic free air	145	74.74%
Laparotomy	145	74.74%
Tube laparostomy	49	25.25%
Single Perforation	108	74.48%
Multiple Perforation	31	21.37%
Sealed Perforation	6	4.13%

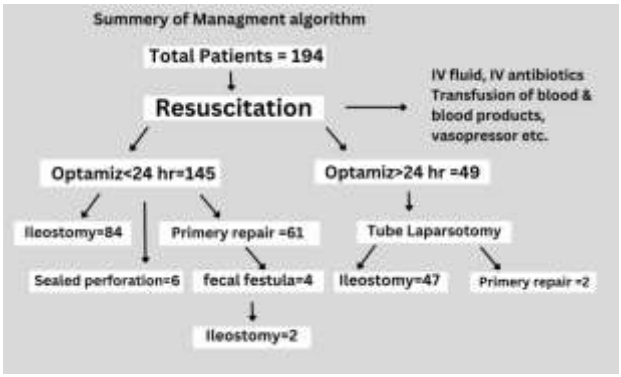

Fig-1: A summary of the management Algorithm is shown below

DISCUSSION

In our part of the world, intestinal perforation—a serious enteric fever complication—is frequently observed. This can be the result of improper or delayed therapy.[8] In the current study, males were more likely to have this grave complication. The more frequent eating and drinking outside of the home that males engage in comparison to females may be the reasonable explanation for their dominance. Khan M. et al., however, indicated that genetics and also feasible that the patient's inflammatory response is essential.[9] The most typical indication in various studies was high-grade fever followed by stomach discomfort.[10] Psychosis was seen in three patients. While rare in patients, neurological symptoms such as delirium, dystonia, hyperreflexia, and clonus may happen in 5%–35% of cases.[11]

Due to their pre- and postoperative effects, enteric perforations have significant surgical difficulty. These individuals might exhibit sepsis, anemia, electrolyte imbalance, hemodynamic instability, and more.[12] Surgery must be delayed until the patient is adequately optimized regarding fluid and electrolyte balance, hemoglobin and platelet correction, and producing a urine output of more than 1 ml/kg/hour.[13]

Before surgery, platelet transfusions were necessary for 24(48.07%) patients and blood transfusions in 25 (below-optimal hemoglobin) patients. Patients requiring prolonged optimization to lower the septic burden and increased intra-abdominal pressure.[14,15] tube laparotomy—a bridging technique before surgery —was performed in 26.53% of patients.

Although surgeons are constantly attracted to primary closure, it is only sometimes possible due to several challenges.[16] Primary repair was only achievable in 42.06% of cases in the current study since most patients had pro-long disease duration, poor clinical condition, and severe peritoneal contamination. Studies have shown that the gut is inflamed, unable to retain sutures, and frequently cut through in enteric fever. Freshening of the margins makes the perforation bigger, making layered closure much more challenging. Resection anastomosis is very susceptible to breakdown. In this condition, proximal ileostomy and exteriorization of the perforation are preferable.[17] In our study, this was done in 57.93% of the patients.

Complications after surgery increase mortality and morbidity.[18] 33(67.34%) of the patients in this study had various types of wound dehiscence and wound infection, which was treated conservatively. According to studies, an infected wound with some sutures was removed to allow purulent discharge to drain, and daily dressings healed on their own. [19] abdominal rupture is a serious matter.

In addition to having a poor ability for healing, Complications might include an intra-abdominal collection or a stomach leak after surgery. Infected foci cause accumulation despite proper irrigation of the abdominal cavity and the installation of a drain. So, it's crucial to properly examine the burst abdomen, search for leaks, and check for drain collections during secondary surgery. In 3(6.12%) of the patients, the abdomen burst, with 13 instances having intra-abdominal collections and one having a leak. [20]

One of the largest morbidities a patient should deal with is the addition of a stoma. Early postoperative wound contamination from the stoma might result in secondary wound infection. The effects of the later loss of enzyme-rich and hyperosmolar fluid from the stoma include peristomal skin excoriation, fluid and electrolyte imbalance, and lack of development.[20] Managing stoma bags in young children may be rugged. Parents must be careful to empty the bag regularly to avoid overflow and removal from its base due to the bag's increasing pressure. Some parents choose to cover the stoma with fabric because of the high expense of stoma bags and

maintenance concerns.[21] This increases morbidity even more. Early reversal is advocated, given the circumstances above. Sepsis was the primary factor in 13 (26.53%) of the patients' deaths, with one dying from fluid and electrolyte loss.

Study Restrictions: As some patients with suspected intestinal perforations passed away before getting surgical repair and were left out of the study, it is impossible to identify the precise quantity. Although the diagnosis was established only based on clinical grounds, the absence of blood and tissue culture data was another limitation.

CONCLUSION

The most common symptoms of enteric perforation in adults and children are hemodynamic instability and septic shock, which are brought on by a protracted period of sickness. As a result, there is a substantial risk of morbidity and death associated with surgical procedures, notwithstanding the operation carried out.

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