CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3269848

Available online at: http://www.iajps.com ***Research Article***

TO DETERMINE THE TYPHOID ENTERIC PERFORATION PROGNOSTIC FACTORS

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Article Received: May 2019 **Accepted:** June 2019 **Published:** July 2019

Abstract:

Objective: *To analyze and estimate the importance of various factors in typhoid enteric perforation in a surgical unit.*

Study Design: *A Case Series.*

Place and Duration: *In the Surgical Unit II of Services Hospital Lahore for One year duration from February 2018 to February 2019.*

Methodology: *This study was performed in sixty-two patients clinically diagnosed with typhoid perforation. The diagnosis was mainly clinical and the Widal test was completed with radiological findings of free gas under the diaphragm and operative findings of ileal perforation at the anti-mesenteric border. All patients underwent exploratory laparotomy after adequate resuscitation. Operative findings were observed, the amount of pus and discharged fecal material was calculated and perforation was excluded as ileostomy. Postoperative results were closely monitored and data of each patient was entered into a form.*

Results: *Fifty (80%) patients were male and twelve (20%) patients were female. Fifty-two patients (84%) had single perforation and ten patients (16%) had multiple perforations. Fifty (80%) patients developed postoperative complications such as wound infection, ruptured abdomen, residual intraabdominal abscess, septicemia and fecal fistula. Age and sex had no effect on prognosis. Late presentation, delayed surgery, multiple perforations, and abundant discharge of pus and fecal material from the peritoneal cavity adversely affected mortality. Overall mortality rate was 17.7% (11/62).*

Conclusion: *Mortality, duration of disease, duration of operation and perforation, multiple perforation, abundant peritoneal fluid, septicemia, fecal fistula and abdominal rupture are significantly affected by typhoid perforation; some survivors with fecal fistula and wound infection remain in hospital for a long time.*

Key Words: *Enteric perforation, mortality, prognostic factors, typhoid.*

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Please cite this article in press Sidra Aziz et al., ***To Determine The Typhoid Enteric Perforation Prognostic Factors.,*** *Indo Am. J. P. Sci, 2019; 06[07].*

INTRODUCTION:

The typhoid fever most serious complication is Intestinal perforation. Peritonitis in such a serious patient can be fatal rapidly unless managed vigorously and quickly[1-4]. These cases are difficult treatment problem and, although related with high mortality and morbidity, surgery bids the highest hope for existence[5]. Nowadays, although this mortality rate is still very high, it falls from 1 to 39% with significant morbidity despite therapeutic progress. The mortality rate can be increased by the use of better supportive care, including parenteral nutrition and invasive monitoring. Such measures are inaccessible to many hospitals in the developing world and are difficult to manage in developing countries, often developing in endogenous febrile regions such as Pakistan, India, South America and Africa[6]. There are several factors that affect prognosis and outcome of surgery such as inadequate preoperative resuscitation, late presentation, number of perforations, delay in surgery and degree of fecal contamination[7]. Intestinal perforation due to typhoid fever is a common and persistent disease and must not be considered a local or limited perforation such as appendicitis, trauma or perforated ulcer.

MATERIALS AND METHODS:

This Case Series was held in the Surgical Unit II of Services Hospital Lahore for One year duration from February 2018 to February 2019. All patients were over 12 years of age and were up to 60 years old. Since typhoid fever is widespread in this area, it is assumed that fever patients who develop a clinical picture matched with intestinal perforation for all practical purposes are cases of typhoid enteric perforation lasting 1-3 weeks. The diagnosis was mainly clinical and was completed with Widal test, free gas under the diaphragm by radiological findings, operative findings of ileal perforation at the anti-mesenteric border, edema and sharp inflamed terminal ileum. Traumatic perforation was rejected because of no trauma history; Tuberculous perforations were rejected by biopsy and typical surgical findings. The perforation was explained by increase in abdominal pain linked with more pronounced rigidity, sensitivity and alertness in the right iliac fossa; However, for some patients in severe toxicity, these symptoms were hidden with delay in detection and adequate surgical intervention.

Prior to surgery, all patients underwent resuscitation for 12 to 24 hours until recovery of the circulating volume, and after adequate resuscitation, exploratory laparotomy was performed. Operative findings were observed and the volume of pus and fecal material discharged was calculated. The edge of the ileal perforation was excised with the mesenteric lymph node for histopathology and perforation was closed as ileostomy. In the case of a plurality of openings, the distal puncture is closed while substantially proximal to the exterior. Abundant peritoneal lavage was performed with normal saline, drainage was performed in the pelvis and intensive abdominal closure was performed. The postoperative outcome was closely monitored and the data of each patient was prepared for the study. All data were analyzed with Fisher's exact test to determine the effect of the variables examined. Differences were considered significant only if p value <0.05.

RESULTS:

Fifty (80%) patients were male and twelve (20%) patients were female. Their ages ranged from 12 to 60 years; the maximum number of patients belonged to 25 - 40 age group 37 (60%). The time between the first prodromal signal and the estimated perforation time ranged from 4 to 28 days, which was 10.3 days on average. Fifty-one patients (82%) presented with a mortality of 11.7% (less than 51 patients) within two weeks of onset, and 11 (18%) patients presented with a mortality rate of 45% two weeks later 5 out of 11 patients). Fourteen (22.5%) patients were operated within an estimated 24 hours of perforation without a fatal death, while 48 patients (77.4%) were operated with a 23% mortality rate (11 of 48 patients) after 24 hours. Fifty-two patients (84%) had single perforation and 10 patients (16%) had multiple perforations. Mortality rates were 7.7% and 70% in single and multiple perforation groups, whereas morbidity was 77% and 100%, respectively. All perforations were found at the anti-mesenteric border of the ileum, approximately 25 cm proximal to the ileocecal valve, from the ileocecal valve to approximately 80 cm. The effect of the number of perforations on the complications and postoperative results can be seen in Table I.

Complications	Single Perforation	Multiple Perforation	DF	Fisher Exact Test (P-Value)
Wound Infection	40	10	1	0.136 (> 0.05)
Burst Abdomen	18	6	1	0.092 (> 0.05)
Residual Abscess	5	2	1	0.237 (> 0.05)
Septicemia	6	8	1	0.000 (< 0.05)
Fecal Fistula	2	3	1	0.031 (< 0.05)
Death	4	7	1	0.000 (< 0.05)
Total No. of Patients	52	10		

Table I. Effect of number of perforation on outcome

The amount of peritoneal fluid varies between 718 ml and 200-2,300 ml. Thirty-four (54.8%) patients had volumes <1,000 ml and three (8.8%) died; Mortality had a significant effect on mortality in 28 patients (45.1%) and> 1,000 ml and in eight patients (28.5%). Fifty (80%) patients had wound infection in 50 (80%), wound opened in 24 (38.7%) and septicemia in 14 (22.5%), septicemia in 07. 11%) had residual intra-abdominal abscess and 5 (8%) had enterocutaneous fistula. The duration of the disease, the time between operation and perforation, the number of perforations, abdominal rupture, septicemia and fecal fistula have significant effects on mortality. Morbidity and mortality are detailed in Table I and Table II.

Table II. Variables associated with prognosis

Variables	Mortality	DF	(P-Value)
Sex			
Male	9/50		
Female	2/12	1	0.325
Age			
≤ 40 years	8/50		
> 40 years	3/12	1	0.232
Duration of symptoms			
< 2 weeks	6/51		
> 2 weeks	5/11	1	0.007
Perforation-operation interval			
< 24 hours	0/14		
> 24 hours	11/48	1	0.044
Number of perforations			
Single	4/52		
Multiple (> 2)	7/10	1	0.000
Amount of peritoneal fluid			
< 1000 ml	3/34		
> 1000 ml	8/24	1	0.036
Burst abdomen	9/24	1	0.001
Septicemia	8/14	1	0.000
Fecal fistula	3/5	1	0.032

Overall mortality rate was 17.7% (11/62). The average hospital stay for survivors was 15.1 days, 8 to 62 days.

DISCUSSION:

In the developing world; Typhoid fever remains a public health problem and intestinal perforation is the main obstacle[8]. Although this complication is fatal mostly, with the advancement of safe anaesthesia techniques and specific antibiotics, surgery is used to close perforations and increase survival rate[9]. In fact, the morbidity and mortality rate does not rely on the surgical method, but on the patient's general condition, the virulence of the microbes and the duration of the evolution of the disease before surgical treatment[10]. Therefore, it is very important to provide appropriate preoperative treatment associated with antibiotic treatment of aggressive resuscitation. This study was conducted to help improve knowledge about prognostic factors of this disease.

Typhoid ileal perforation is still common in our environment, with a 4: 1 ratio of men and women in our study, similar to other studies. Most of the patients in our study were between 25-40 years, which is the same as the other studies of Aziz and Ajao[11]. Symptoms and findings did not differ from other studies in 82% of patients with an average symptom duration before the 11.8-day presentation and presented within 14 days of onset of symptoms. Along with fever, vomiting, abdominal pain and diffuse abdominal pain was the main complaints. All patients were from a low socioeconomic class and 70% were from rural or slum areas where water supply and sewerage systems were not sufficient. Although many factors affect the prognosis of typhoid perforation, the most important is the duration of the disease and the time interval between perforation and surgery. The need for adequate resuscitation resulted in an additional delay before surgery in some of our poor patients, which adversely affected the outcome. The effect of disease duration and perforation on mortality is shown in Table II reported in other studies[12].

There was no difference in survival between male and female patients; Age was not an important prognostic factor and was not reported by others in their studies. Peritoneal fluid / pus volume and the number of perforation in the intestine have negative effects on outcome in terms of survival[13]. Less fluid / pus volume (less than 1000 ml) and associated with complications such as single perforation, wound infection, wound separation, and residual abscess, too many fluid / pus in the peritoneal cavity (more than 2 liters) and Fecal fistula and multiple perforation related with increased mortality (Tables I and II). The overall mortality rate was 17.7%, comparable to other studies: 28% reported by Adesunkanmi and Ajao, 16.4% by Talwar, 3.8% by Aziz and 48% by Ameh[14]. These figures are much higher than those reported in other tropical countries, for example in Nepal 6.8 and 10.5% in India. However, in some parts of the developed world where socioeconomic infrastructures are well developed, mortality rates of 1.5-2% have been reported. The majority of patients died early postoperatively, and after 10 days postoperative survival was associated with the possibility of full recovery. The survivors of typhoid perforation faced several postoperative complications, including long-term hospitalization and higher treatment costs, as well as wound infection and wound separation[15]. Global wound infection was observed in 80.6%. Wound infection has been observed in the literature in 33-100%. Attempts were made to reduce the incidence of wound infection with delayed primary closure, but these were not fully effective.

CONCLUSION:

This study demonstrated that mortality in typhoid perforation was significantly affected by disease duration, interval between operation and perforation, multiple perforation, abundant peritoneal fluid, septicemia, fecal fistula, and explosion. Some survivors with abdominal fecal fistula, wound infection and wound opening remain in hospital for a long time.

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