

TYPHOID PERFORATION IN MAIDUGURI, NIGERIA

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Abstract

Background: Typhoid fever is still a serious health burden in our environment. Though it is primarily a medical problem, its complications such as perforation require the attention of the surgeon. The disease spares no age or sex; including pregnant women. Four patients with pregnancy and pregnancy related conditions were managed during this period of review and this actually stimulated this study.

Method: This is a retrospective study of all patients managed for typhoid perforation over a five-year period in University of Maiduguri Teaching Hospital.

Results: Four hundred and sixty-seven patients were managed for typhoid fever in University of Maiduguri Teaching Hospital during the 5-year study period. Forty-three (9.2%) of these patients had typhoid perforations. There were six (14%) deaths among those patients with perforations. High rate of mortality was noted among those with pregnancy and pregnancy related perforations (50%) and multiple perforations requiring resection and anastomosis (100%).

Conclusion: The morbidity and mortality associated with typhoid fever in our environment can only be reduced significantly when the nation and public health officials begin to pursue the principles of primary health care with all seriousness it deserves i.e. emphasis on provision of potable water supply and sanitation.

Key words: Typhoid perforation, pregnancy, public health

Introduction

Typhoid fever is still a public health concern in the developing countries because of poverty, ignorance and lack of adequate potable water supply.¹ Perforation of the bowel is the most serious complication of typhoid fever and remains a significant challenge to the surgeon in many parts of the world.¹⁻⁶ Many factors such as late presentation, adequate pre-operative resuscitation, delayed operation, the number of perforations and extent of faecal peritonitis have been found to have a significant effect on the prognosis.⁷⁻¹¹ The diagnosis and management of typhoid perforation can be challenging particularly those occurring during pregnancy or in the puerperal period. Peculiar difficulties or problems in our environment are highlighted. This will serve as basis for further research into the management of these patients here.

Patients and Method

A retrospective study whereby 43 case notes of patients managed for typhoid perforation between January 1996 and December 2000 were traced. Information on: age, sex, symptoms, duration of

symptoms before presentation, signs, investigations, resuscitations, operative findings, post operative treatment, complications and mortality were extracted. Also the number of all confirmed cases of typhoid fever managed in the hospital during the same period was obtained from the statistics division of the medical records. The diagnosis of typhoid fever was made by positive blood, stool, or urine culture, rising Widal titer levels. The diagnosis of perforation was made on clinical grounds of abdominal pain, abdominal distention, tenderness, and buttressed by x-ray findings of pneumoperitoneum or air under the diaphragm.

Results

There were 467 patients with confirmed diagnosis of typhoid fever managed in the hospital during a five-year period (January 1996 to December 2000). Out of these there were 43 cases of typhoid perforation forming 9.2% of all cases of typhoid fever. Three perforations occurred in pregnancy and one in puerperium constituting 9.3% of all cases of perforation. The mean age of the patients was 15.9 years (range 6-32 years). Male to female ratio was 1.4:1.

The main symptoms they presented with were fever, abdominal pain and abdominal distension (Table 1). Mean duration of fever before presentation was 9.6 days (range 3-14 days). Mean duration of abdominal pain was 5.6 days (range 2-11 days). Mean temperature was 38.5°C (range 37.5-39.5°C). Tachycardia with rate ranging between 108-140 beats per minute (mean 116 beats per minutes).

Erect abdominal x-ray was done on 35 patients with 17 patients showing gas under the diaphragm (48.6%). Positive blood culture was obtained in 37 patients (86.0%), stool culture was positive in 30 patients (69.8%) and urine culture was positive in 12 patients (27.9%). Widal test titre value range between 1:160-1:640 with a mean of 1:320. There was no significant electrolyte derangement noted among the patients except for raised urea, which was attributed to dehydration.

All the patients were resuscitated with intravenous fluids, nasogastric tube to decompress the stomach and urethral catheter to monitor urine output. Adequate resuscitation was achieved within 6-10 hours of admission in 90.7% of patients. Intravenous antibiotics comprising chloramphenicol and metronidazole were commenced immediately the diagnosis was made and samples taken for investigations.

Laparotomy under full general anaesthesia with endotracheal intubation was carried out within 24 hours of admission on 39 patients (90.7%) while 4 patients had a delay because resuscitation was not satisfactory due to financial problems. Operative findings were peritoneal soilage, single ileal perforation in 38 patients (88.4%), and multiple

perforations in 5 patients (11.6%). The distance of the perforations from the ileocaecal junction range from 5 to 50 cm (mean 19cm). Forty-one patients had ulcer excision and closure in two layers with chromic catgut 2/0 and silk 2/0. Two patients had resection and anastomosis because of multiple perforations.

Common complications were wound infection in 21 patients (48.8%) wound dehiscence in 4 patients (9.3%), and intra-abdominal abscess in 5 patients (11.6%). There was no case of reperforation noted in this series. Premature birth and abortion occurred in two of the pregnant women at 32 weeks and 20 weeks of gestation respectively. One delivered on the 3rd postoperative day at 36 weeks of gestation and the baby survived. The 4th obstetric patient came three weeks after delivery with perforated typhoid. The total mortality rate was 6 patients (14%), three of whom were those with multiple perforations; of these two had resection and anastomosis. Three from those with single perforation; two were associated with pregnancy, (Table 2). The duration of hospital stay ranged from 8-74 days (mean 21.6 days).

Table 1: Main presenting symptoms

Symptom	No. (%)
Fever	43(100)
Abdominal pain	43(100)
Abdominal distention	43(100)
Diarrhoea	22(51.2)
Vomiting	20(46.5)
Constipation	2(4.7)

Table 2: Type of perforation, mortality and associated factors

Type of perforation	No.	Mortality (%)	Associated factors	No.
Single	39	3(7.7)	Pregnancy associated	2
			Non-pregnancy associated	1
Multiple	5	3(60.0)	Resection and anastomosis	2
			Simple closure	1
Total	43	6 (14.0)		6

Discussion

Typhoid perforation is still seen in our environment with slight higher male incidence (1.4:1). This is similar to reports in other series.¹⁰⁻¹⁵ It may be that the young boys; as apprentice and job seekers are more exposed to eating outside the home where the hygiene may be below par. The mean age of our patients was 15.9 years (range 6-32 years), which is similar to previous reports.^{10, 14, 16} Symptoms and signs were not different from those in other series with a mean duration of fever 9.6 days (range 3-14 days), and abdominal pains 5.6 days (range 2-11 days). Therefore late presentation is still a major problem. This is obviously related to poverty and ignorance. These poor patients who cannot afford

hospital treatment often first resort to patent medicine shops or native medications, thereby wasting valuable time when early diagnosis and adequate treatment in the hospital may influence the outcome of management. Most perforations occurred within two weeks of onset of the symptoms, which is in agreement with previous reports of early perforation being very common in West African patients.^{8, 11, 13, 17} The organism (*Salmonella typhi*) settles in the Peyer's patches, which are in high concentration in the ileum particularly terminal ileum in the second week of the infection, having multiplied in the reticulo-endothelial systems. They get to this location by either bacteraemic spread or via the bile. Ulceration occurs and there is an associated mesenteric adenitis. The main inflammatory cells involved in this phase are

macrophages; some lymphocytes are also present but polymorph nuclear leucocytes are almost completely absent.^{1,3,6} It has been postulated that much of the damage done may be due to the body's response to the organism (the mononuclear cell response is characteristic of delayed hypersensitivity). This may help to explain the fact that perforation is known to occur also in patients already on anti-salmonella treatment or even recur after laparotomy and closure of the perforation.⁶ The early perforation in west African patients have been attributed to hypersensitivity in the Peyers' patches in West African patients, who also have higher perforation rate as compared with other regions of the world where typhoid is endemic.⁸ The rate of sub diaphragmatic air in this series was 48.6%, which is low compared to other series, which have up to 75%.^{1,2} Definitive diagnosis of typhoid fever is made by blood, stool and urine culture, which were positive in 86%, 69.8%, and 27.9% of patients respectively. A rising titer of agglutinin (the Widal test) is usually diagnostic, but a single test may mislead, especially if the patient had previous typhoid vaccination. In this review, the single titer levels ranged from 1:160-1:640 with a mean of 1:320.

The universally accepted treatment for typhoid perforation is surgical after adequate resuscitation, correction of electrolyte imbalance and commencement of appropriate antibiotic therapy.^{11,13,14,20} Ninety per cent (39) patients had laparotomy within 24 hours of admission and 10% (5 patients) delayed longer than 24 hours due to inadequate resuscitation from some financial constraints and delayed laboratory results. Findings at surgery vary from single to multiple perforations. The exact surgical management of the perforation remains controversial and ranges from simple closure, ulcer excision and closure, wedge excision and closure, ileal resection and anastomosis.¹ Forty-one (95.3%), of the patients had ulcer excision and closure, while 2(4.7%), had resection and anastomosis. This is because majority of the patients 38(88.4%) had single perforation compared to 5(11.6%) whom had multiple perforations. Two of those with multiple perforations had resection and anastomosis. In all 3 of the patients (60%) with multiple perforations died. Therefore multiple perforations are clearly associated with high mortality rate. This may be associated with the extent of toxemia coupled with the stress of major surgery. Most (93%) of the perforations were located within a distance of 30cm from the ileocaecal junction in this review.

Complications recorded were wound infection 48.8%, wound dehiscence 9.3%, and intra abdominal abscesses 11.6%, and are comparable with other reports.¹¹ There was no faecal fistula nor reperforation recorded in this series contrary to other reports that suggests that late presentation is associated with these complications.^{7,11,14,17} Pregnancy is noted to be associated with high fetal losses, particularly when it occurs during the first and second trimester. Mortality rate seems to be high among the pregnant patients as two of the four (50%)

women who had perforation during pregnancy or puerperal period died. The physiological changes in pregnancy coupled with the stress of typhoid infection and intra abdominal sepsis may overwhelm a pregnant patient thus leading to the fetal loss and increased mortality. Therefore fever in pregnancy should be investigated early and treated adequately. Also abdominal pain should not be dismissed simply as due to physiological and anatomical changes in pregnancy until after thorough evaluation. Overall the mortality in this series was 6(14%) is low compared to those reported in other series.^{2,6,11,12} Adequate resuscitation and early surgical intervention are essential for improved outcome. Mean duration of hospital stay was 21.6 days; Ameh reported 30 days in children.¹² Complications prolonged the hospital stay particularly in those that had to be re operated for intra abdominal abscesses, as was the case in 3 patients.

The persisting high prevalence of typhoid fever and its complications in our environment underscores the need to reduce the scourge through improved sanitation, public health education and adequate potable water supply. Incidentally these form the basis of the primary health care principles to which the country had pledged to pursue. Therefore the authorities that be, and our public health officials should be reminded to sit up to their responsibilities to the public by pursuing those principles with all the seriousness it deserves.

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