

Typhoid Ileal Perforation: A Review of a Rural District Hospital Experience

Author: Ojuka KD *Affiliation:* Department of Surgery, University of Nairobi P.O. Box 30197 -00100 Nairobi. *Correspondence:* Dr. Daniel Ojuka, Email address dkinyuru@yahoo.com

Abstract

Background: Enteric fever is endemic in developing countries and frequently complicates with ileal perforation. Surgical intervention for the perforation is the usual treatment but attendant rate of post-operative complications high. It is unclear what the spectrum of enteric fever perforations is in rural hospital practice in Kenya, where the diagnosis most often in intraoperative.

Objective: To describe the surgical experience of typhoid perforations at a rural district hospital in Kenya.

Patient and Methods: This was a retrospective chart review of patients who underwent laparotomies for peritonitis at the Kapenguria District Hospital in Kenya between April 2007 and October 2009. Data abstracted from patient files included demographics, presenting symptom, duration of symptoms, investigations (Widal and/or stool culture), operative management, complications, length of stay, and death. Widal test was indicative when titer was 1:160 for "O" antigen or above. Antimesenteric longitudinal perforation was assumed to be a complication

of enteric fever. The data were analyzed using SPSS version 16.0. The results are presented in frequency tables, bar charts and pie charts.

Results: Of the 50 files retrieved with diagnosis of peritonitis, 21(42%) were found at operation to have had ileal perforations. Of these 15(71.5%) had resection and primary anastomosis, 2(9.5%) had refreshing and anastomosis (simple anastomosis) and 4 (19%) had ileostomy. Male to female ratio was 4:1, majority were aged 6-15 years (38.1%). Wound infection was 8(38.1%), enterocutaneous fistulae were 7(33.3%), while 7(33.3%) required second laparotomy and 4(19%) were referred due to complications which could not be managed at this level. Mortality was 3(14.3%) and average length of stay was 17days.

Conclusion: Morbidity and mortality arising from typhoid ileal perforation is high in this environment making it a major challenge in a resource poor environment. Prevention by use of protocols is highly recommended.

Introduction

Typhoid fever is endemic in most developing countries and perforation is the most common surgical complication seen in both children and adults (1, 2). It is usually a prolonged disease with bacteremia phase characterized by fever and chills during week one, reticuloendothelial involvement with rash, abdominal pain and prostration in week two, ulceration (which are longitudinal and on the antimesenteric border situated within 45cm of the ileocaecal valve) of Peyer's patches with bleeding and perforation in the third week (1,3,4). Perforation could be the first sign of the disease (5). The incidence of perforation varies considerably, 15-33% in West Africa 12.96% in Nepal and 1-3% in Egypt and Iran (6, 7). Male sex, leucopenia, inadequate antimicrobial therapy and short duration of symptoms are some of the predictors of enteric perforation (4). Surgical intervention is the main method of treatment with good results (8). Primary closure, excision and closure, resection and anastomosis, ileostomy, ileotransverse anastomosis and ileotransverse anastomosis plus hemicolectomy are

proposed operative techniques treatments. The postoperative complications are mainly wound sepsis, residual intra-abdominal abscess, wound dehiscence, fecal fistula and death. These have continued to be high in areas where typhoid fever is endemic (2, 8-13).

There is no study done to demonstrate the practice and the attendant complications in rural Kenya. This study sought to audit the experience in management of typhoid perforation in a rural district hospital in Kenya.

Patients and Methods

This was a retrospective chart review of surgical cases treated between April 2007 and October 2009. The data collected from the file included diagnosis at admission, tests done pre-operatively or post-operatively to confirm the diagnosis, presenting symptoms, duration of symptoms, operative technique used, complications, need for second operation, need for referral, mortality and length of stay in the hospital. The Widal test indicated infection when the titer for antigen 'O' was 1:160 or above. The surgical finding of antimesenteric longitudinal perfora-

Table 1. Presenting symptoms

Clinical Feature	Number	Percentage
Fever	20	95.2
Abdominal pain	19	90.5
Abdominal distension	14	66.7
Constipation	16	76.2
Abdominal tenderness	18	85.7
Vomiting	1	4.8
Diarrhea	2	9.5

Table 2: Duration of symptoms

Duration	Frequency	Percentage
Less than one week	14	66.7
One week	1	4.8
One to two weeks	5	23.8
More than two weeks	1	4.8

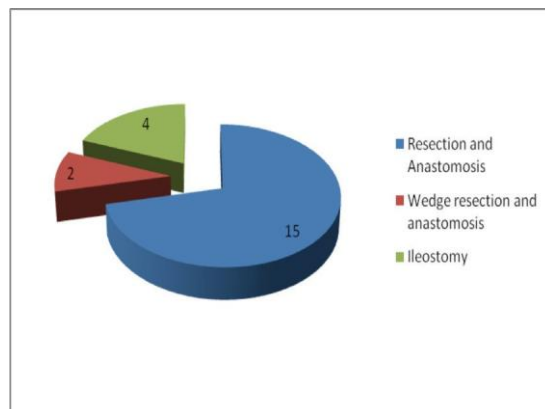


Figure 1: Procedures performed for typhoid perforation

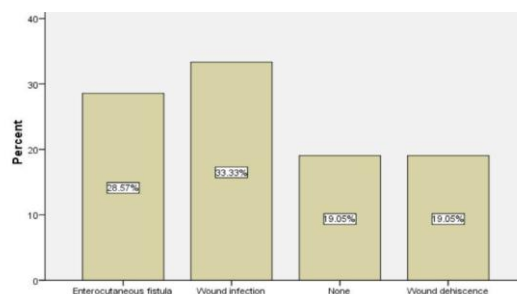


Fig 2 Complication after primary surgery

tion was used as confirming typhoid fever as the cause of the perforation (1, 2, 8). Data were analyzed using SPSS version 16.0. Results were presented on tables, bar charts and pie charts. Chi-square test was used to calculate the differences in proportions.

Results

Fifty files of patients operated for laparotomy were retrieved. Out of these, 21 had terminal ileal perforations. Of the twenty one patients, 17 were male, (male to female ratio of 4:1), with age range of 6-61 years and a mean of 21.29 years. Eighteen had admission diagnosis of general peritonitis with no known cause while three had preoperative diagnosis of typhoid fever and were admitted in medical wards before being diagnosed with peritonitis.

Only eight (38.1%) had Widal test performed, three of which were preoperative while five were post-operative. All tests were indicative of typhoid. In one patient, culture of excised tissue was performed and was indicative of salmo-

nella infection. Twenty patients (95.2%) presented with fever (Table 1) and 14 (66.7%) presented with history of less than one week (Table 2). The number of perforations ranged from two to five with an average of 2. The most often performed technique was resection and anastomosis (71.4%) (Figure 1). The complications encountered were wound dehiscence (19.05%), enterocutaneous fistula (28.57%) and wound infection (33.3%) (Figure 2). Ten patients (47.6%) required reoperation, while four (19%) were referred due to recurrent enterocutaneous fistula. Three patients (14.2%) died while the average length of stay was 17 days.

Discussion

Spontaneous ileal perforation is an important condition in condition in developing countries. Common cases involve typhoid fever and tuberculosis (13). While tuberculosis perforations are transverse and in mesenteric border, typhoid ones are longitudinal and in antimesen-

Typhoid Ileal Perforation: A Retrospective Review of Rural District Hospital Experience

Ojuka KD

teric border. The male preponderance seen in this study confirms what has been reported in West Africa (6, 8,14), Iran (4,8), Turkey (4, 6, 8) and the Indian subcontinent (15). The young age of presentation is also consistent with previous reports (16). The short duration of symptoms in the study suggests a more virulent strain as reports indicate that most perforations occur in the 2nd to 3rd week (17). Like in other reports (5), this mirrors our situation where 18 out of 21(85.7%) were diagnosed intraoperatively. The diagnosis was presumed due to the morphology of the perforation along the antimesenteric border (1, 2, 8). Only five patients managed to perform Widal test afterward and confirmed the diagnosis.

Early surgical intervention is essential (8, 18, 19) to eliminate peritoneal soilage. Different techniques have been proposed including simple repair(single or double layer), wedge or sleeve resection and anastomosis, and resection and anastomosis of affected segment of gut, simple closure and temporary lateral ileostomy through healthy gut, terminal ileostomy, ileostomy through the site of perforation, closure of the perforation and ileotransverse colostomy, and exteriorized anastomosis (17,18,19,20). In this study only resection and anastomosis, simple closure and temporary lateral ileostomy were used. The morbidity has been reported to be high. The rate of 33.3% for wound infection, in this study however seems to be lower since rates such as 68.2% to 87.5% (8,16) have been reported. The fistula rate of 28.6% is among the highest rates from 6.7% to 25.8% (10-17) to have been reported. A number of factors may explain for this kind of results. The number of patients were more in the other studies than in this study. Those studies also reported use of standard protocol, which was not present in this rural hospital. The protocol includes preoperative resuscitation and proper resuscitative measures post operatively. In our rural setup, patients are

largely managed by the medical officers and not surgeons. The average length of stay of 17days is moderate; in some reports it has been as high as 30 days (10). Mortality rate of 14.3% in this study is within the range in reported literature (6, 8, 17).

In conclusion morbidity and mortality arising from typhoid ileal perforation is high in this environment making it a major challenge in a resource poor environment. Protocols should be developed in these areas so that management in the preoperative, operative and postoperative phases is known to all involved as a first step in lowering the morbidity and mortality.

Reference

1. Abantanga FA, Wiafe-Addai BB. Postoperative complications after surgery for typhoid perforation in children in Ghana. *Pediatr Surg Int* 1998; 14: 55-58.
2. Na'aya HU, Eni HE, Chama CM. Typhoid perforation in Maiduguri, Nigeria. *A. of Afr Med* 2004; 3: 69-72.
3. Samuelson J, von Lichtenberg F. Infectious Diseases. In Cotran RS, Kumar V, Robbins S (eds): *Robbin's Pathological Basis of Disease*, 5th ed. Philadelphia, WB Saunders, 1994.
4. Hosoglu S, Aldemir M, Akalin S, et al. Risk Factors for Enteric Perforation in Patients with Typhoid Fever. *Am J Epidemiol* 2004; 160: 46-50.
5. Neil J, Mortensen, Oliver G. The Small and Large Intestine. Russell RCG, Williams NS, Bulstrode CJR eds. *Bailey and Love's Short Practice of Surgery*, 23rd ED. Arnold H London 2004, pp: 1173.
6. Cuschieri A, Steele RJC, Moosa AR editors. *Essential Surgical Practice*, 4th ed. Arnold London. 2002
7. Khan S, Khan IU, Aslam S, et al. Retrospective analysis of abdominal surgery at Nepalgunj Medical College (NGMC), Nepalgunj, Nepal: 2 year's experience. *KUMJ* 2004; 4(8), 336-343
8. Ansari AG, Hussain SQ N, Ghumro AA, et al. Management of typhoid ileal perforation: A surgical experience of 44 cases. *Gomal J Med Sci*. 2009; 7(1):27-30.
9. Karmacharya B, Sharma VK. Results of typhoid perforation management: Our experience in Bir Hospital, Nepal. *Kathmandu Univ Med J* 2006; 4: 22-4.
10. Kouame J, Kouadio L, Turquin HT. Typhoid Ileal Perfora-

-
- tion, Surgical Experience of 64 Cases. *Acta Chir Belg* 2004; 104: 445-7.
11. Malik AM, Laghari AA, Mallah Q, et al. Different Surgical Options and Ileostomy in Typhoid Perforation *World J of Med Sci* 2006; 1: 112-6.
 12. Chanh NQ, Everest P, Khoa TT, et al. A clinical, microbiological, and pathological study of intestinal perforation associated with Typhoid Fever. *Clin Inf Dis* 2004; 39: 61-7
 13. Wani RA, Parray FQ, Bhat NA, et al. Nontraumatic terminal ileal perforation. *World J Emerg Surg.* 2006; 1:7
 14. Ekenze SO, Okoro PE, Amah CC, et al. Typhoid ileal perforation: analysis of morbidity and mortality in 89 children. *Nigerian J Clin Practice.* 2008; 11:59-63.
 15. Sitaran V, Ananda SF, Booshanam VM, et al. Typhoid ileal perforations: a retrospective study. *Ann Roy Coll Surg England* 1990; 72: 347-349.
 16. Irabor DO. Fifteen years of typhoid perforations in children in Ibadan. Still a millstone around the surgeon's neck. *Nigerian J Surg Res* 2003;5(3-4):92-99
 17. Tanveer A, Khan IM, Hussain ES, et al. Perforation operation interval as a prognostic factor in typhoid ileal perforation. *J Surg Pakistan (Int)* 2009; 14(1): 11-14.
 18. Adeniram JO, Taiwo JO, Abdur-Rahman LO. Salmonella perforations :(27 perforations in one, 14 perforations in another) Are goal posts changing? *J Indian Assoc Pediatr Surg* 2005;10(4):248-251
 19. Saxe JM, Cropsey R. Is operative management effective in treatment of perforated typhoid? *Am J Surg.* 2005; 189: 342-44.
 20. Ghani FS, Jan MS, Ghani AS, et al. Outcome of Ileostomy in the Management of Ileal Perforation. *J Liaquat Uni Med Health Sci* 2008; 7(3):168-172.