Kathmandu University Medical Journal (2006), Vol. 4, No. 1, Issue 13, 22-24

Original Article

Results of typhoid perforation management: Our experience in Bir Hospital, Nepal

Karmacharya B[1], Sharma VK[2]
[1]MS Trainee, [2]Senior Consultant Surgeon, Bir Hospital, NAMS

Abstract
Objective: To determine the demographic characteristics, clinical features, operative findings and postoperative complications in patients operated for typhoid enteric perforation.
Methods: A retrospective study was carried out in the Department of General Surgery, Bir Hospital since 2002 to April 2004. Among 189 patients who underwent laparotomy for hollow viscus perforation in two years, ileal perforation was found in 102 patients.
Results: The sex ratio of the patients was 4.66:1, in favor of male, with age range of 14-78 years and mean age 28.35 years. Most of the patients (80.39 %) presented with history of fever for two weeks. Half of the patients presented within 24 hours of onset of generalized abdominal pain. Majority (65.67%) had a solitary perforation on the antimeseteric border of terminal ileum. Eighty one percent of patients had trimming of the ulcer margins and primary closure. Complications included wound infection (35.3%), wound dehiscence (17.6%), fecal fistula (7.84%) and hospital mortality (6.86%).
Conclusion: Typhoid ulcer perforation is common among developing nations, including Nepal. Postoperative complications following surgical management of perforation are high and increases mortality.

Key words: Typhoid perforation, wound dehiscence, hospital mortality

Typhoid fever is a protracted disease that includes bacteremic phase with fever and chills during the first week, widespread reticuloendothelial involvement with rash, abdominal pain and prostration in the second week; and ulceration of Payer's patches with intestinal bleeding and shock during the third week.[1] It is caused by *Salmonella tyhpi*. There forms a longitudinal ulcer on the anti mesenteric border, situated within 45 cms of ileocecal valve in the majority of patients. Intestinal complications of typhoid fever are quite common in developing countries.[2] Perforation of a typhoid ulcer usually occurs during the third week and is occasionally the first sign of the disease.[3] The incidence of perforation varies considerably, 15-33% in West Africa and 1-3% in Egypt and Iran.[4] Typhoid ulcer perforation accounts for 12.96% of patients diagnosed and treated for generalized peritonitis in Nepalgunj[5].Male sex, leucopenia, inadequate antimicrobial therapy, short duration of symptoms are some of the predictors of perforation.[6] The early surgery in enteric perforation is the only accepted form of treatment and give excellent results.[7] There are different methods of repairing the perforation. Primary closure, excision and closure, resection and anastomosis are some of the techniques. The postoperative complications are many including wound sepsis, residual intraabdominal abscesses, wound dehiscence, fecal fistula and death. Many important recommendations are made to improve the outcome including aggressive resuscitation by intravenous hydration for 4 to 6 hours, adequate antibiotics, resection of the last 60 centimeters of ileum and a large abdominal washout.[2]

Materials and methods

In two years period, there were 189 patients who underwent laparotomy for hollow viscus perforation. Typhoid ulcer perforation was found in 102 patients and they were taken for the study. Patients' symptoms, operative findings and postoperative outcome variables were noted. Data were analyzed using SPSS version 10.0. Chi-square test was used to calculate the differences in proportions. P value of <0.05 was taken as significant.

Correspondence
Dr. Bal Gopal Karmacharya,
National Academy of Medical Sciences (NAMS)
E-mail: *kbalgopal@yahoo.com*

Results

There were 84 males and 18 females, thus male: female ratio was 4.66:1. Mean age was 28.35 years (range 14-78 years). Forty-two patients (41.18%) presented with history of fever for one week, 40 patients (39.22%) presented with fever for two weeks and the remaining 20 patients (19.60%) presented with history of fever for three weeks. Majority of patients (50%) presented had generalized abdominal pain within 24 hours. Forty patients (39.22%) presented with history of abdominal pain for 48 hours and 11 patients (10.78%) presented with abdominal pain for 72 hours. Thirty-nine patients (38.24%) had received antibiotic for typhoid fever from private clinics or other hospitals. The patients who presented after twenty-four hours of onset of generalized abdominal pain were the patients who were referred from other hospitals or came from remote places. Sixty-seven patients (65.69%) had single perforation and 35 patients had two or more perforations. Majority of patients (81.37%) had repair of perforation whereas 19 patients (18.63%) had resection and primary end-to-end anastomosis. None of them had ileostomy, simple drainage or ileotransverse anastomosis. Wound infection rate was 34.31%. Eighteen patients (17.65%) had wound dehiscence. Eight patients (7.84%) developed enterocutaneous fistula. Mean hospital stay was 8.46 days. Overall hospital mortality was 6.86%. There was no statistically significant association of hospital mortality with sex of the patient, number of perforations and surgical procedure undertaken (Tables 1, 2 and 3) Hospital mortality was found to be significantly more in patients with wound infection, wound dehiscence and fecal fistula (Tables 4, 5 and 6)

Table 1: Mortality in different sexes

Male	5/84
Female	2/18
X^2=0.555, df=1, p<0.05	

Table 2: Mortality according to number of perforations

One perforation	3/67
Two or more perforations	4/35
X^2=1.78, df=1, p<0.05	

Table 3: Mortality in different treatment groups

Repair of perforation	5/83
Resection-anastomosis	2/19
X^2=0.49, df=1, p<0.05	

Table 4: Mortality in wound infection

Wound infection	5/36
No wound infection	2/64
X^2=4.21 ,df=1, p>0.05	

Table 5: Mortality in wound dehiscence

Wound dehiscence	4/18
No wound dehiscence	3/84
X^2= 8.07, df=1, p>0.01	

Table 6: Mortality in fecal fistula

Fecal fistula	5/8
No fecal fistula	2/94
X^2= 42.04, df=1, p>0.001	

Discussion

In developed countries, spontaneous ileal perforations are reported to be mostly because of foreign bodies, radiotherapy, drugs, Crohn's disease and malignancies. But in developing countries like ours, enteric perforation is still the commonest. Early detection, timely and proper surgical interventions are required to produce better results.

Typhoid perforation is still common, with preponderance among males, (4.66 male to 1 female in our study) similar to findings on previous studies. [8,9,10] It affects young productive people with mean age ranging from 19 to 34 years.[2,9,10] Mean age in this series was 28.35 years. Operative procedures carried out in our study, namely, repair and resection and anastomosis were similar to previous studies. All of our patients were operated under general anesthesia. None of them had exteriorization or simple drainage. Simple debridement and repair of perforation is shown to be effective. However, Athie CG et al have suggested directed intestinal resection as elective surgery, resecting 10 cms on sides of proximal and distal perforation.[13]

The overall morbidity and mortality of typhoid perforation is still higher.[2, 9, 10, 11, 12, 13, 14] Wound complications are the most common ones. However, delayed primary closure has not been found to prevent abdominal wound infections.[7] The incidence of fecal fistula can be reduced by doing side-to-side ileotransverse anastomosis.[13] Hospital stay of our patients was considerably shorter compared to previous study.[2] Overall mortality in our study (6.86%) is lower compared with previous studies[9,13]. However this figure is similar to a previous study carried out in Tribhuvan University Teaching Hospital[15].This may be attributed to vigorous resuscitation we carry out before subjecting the patient to operation. Mortality in those with wound infection, wound dehiscence and fecal fistula was found significant. We found that the survivors were faced with overwhelming wound infection and high incidence of wound dehiscence.

References

1. 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.
2. Kouame J, Kouadio L, Turquin HT.Typhoid ileal perforation: surgical experience of 64 cases. Acta Chir Belg. 2004 Aug;104(4):445-7.
3. Russell RCG, Williams NS, Bulstrode CJR editors. Bailey and Love's Short Practice of Surgery, 23rd ed. Arnold London. 2000
4. Cuschieri A, Steele RJC, Moosa AR editors. Essential Surgical Practice, 4th ed. Arnold London. 2002
5. Khan S, Khan IU, Aslam S, Haque A. Retrospective analysis of abdominal surgery at Nepalgunj Medical College (NGMC), Nepalgunj, Nepal: 2 year's experience. KUMJ 2004; 4(8), 336-343
6. Hosoglu S, Aldemir M, Akalin S, Geyik MF, Tacyildiz IH, Loeb M Risk factors for enteric perforation in patients with typhoid Fever. Am J Epidemiol. 2004 Jul 1; 160(1): 46-50.
7. Ramachandran CS, Agarwal S, Dip DG, Arora V. Laparoscopic surgical management of perforative peritonitis in enteric fever: a preliminary study. Surg Laparosc Endosc Percutan Tech. 2004 Jun;14(3):122-4.
8. Adesunkanmi AR, Ajao OG. Typhoid ileal perforation: the value of delayed primary closure of abdominal wounds Afr J Med Med Sci. 1996 Dec; 25(4): 311-5.
9. Adesunkanmi AR, Ajao OG. The prognostic factors in typhoid ileal perforation: a prospective study of 50 patients J R Coll Surg Edinb. 1997 Dec; 42(6): 395-9.
10. Agbakwuru EA, Adesunkanmi AR, Fadiora SO, Olayinka OS, Aderonmu AO, Ogundoyin OO. A review of typhoid perforation in a rural African hospital. West Afr J Med. 2003 Jan-Mar; 22(1): 22-5.
11. Shukla VK, Sahoo SP, Chauhan VS, Pandey M, Gautam A. Enteric perforation--single-layer closure. Dig Dis Sci. 2004 Jan; 49(1): 161-4.
12. Chatterjee H, Jagdish S, Pai D, Satish N, Jayadev D, Reddy PS. Changing trends in outcome of typhoid ileal perforations over three decades in Pondicherry Trop Gastroenterol. 2001 Jul-Sep; 22(3): 155-8.
13. Athie CG, Guizar CB, Alcantara AV, Alcaraz GH, Montalvo EJ. Twenty-five years of experience in the surgical treatment of perforation of the ileum caused by Salmonella typhi at the General Hospital of Mexico City, Mexico. Surgery. 1998 Jun; 123 (6): 632-6.
14. Pal DK. Evaluation of best surgical procedures in typhoid perforation-an experience of 60 cases. Trop Doct. 1998 Jan; 28 (1): 16-8.
15. Rijal B, Shrestha ML, Shrestha ML, Shrestha BR, Singh Y, Khakurel M. Typhoid perforation in adults. J of IOM 1998 Dec; 20(1and2): 198-202