WEST AFRICAN JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Postoperative Complications after Surgery for Typhoid Ileal Perforation in Adults in Kumasi.

Complications Post- Operatoire de la perforation de la Typhoide Ileale chez les Adultes a Kumasi.

M. Oheneh–Yeboah

ABSTRACT

BACKGROUND: **The surgical complications of typhoid ileitis such as ileal perforations (TIP) continue to cause many deaths especially in countries with poor sanitation and limited health care facilities.**

OBJECTIVE: **To assess and highlight the complications associated with typhoid ileal perforation**

METHODS: **A prospective study of the postoperative complications after closure of TIP was conducted between Jan. 2002 and Dec. 2005 at the Komfo Anokye Teaching Hospital (KATH.)**

RESULTS: **A total of 248 patients aged between 16 and 54 years with a mean age of 24.9 (8.3) and a median of 23.5 years were operated upon for TIP. There were 180 males (72.6%) and 68 females (27.4%) with a male to female ratio of 4: 1. The diagnosis of TIP was based on clinical, radiological and operative findings. The over all complication rate was 49.3%. The most common postoperative complication was wound infection (52.4%).The most serious were persistent peritonitis (34.7%) and enterocutaneous fistula (10.0%) with a mortality of 33.3% and 22.2% respectively. The overall mortality was 10.9%. These complications significantly increased the duration of hospital stay of survivors by several days (p<0.01)**

CONCLUSION: **Very serious complications occur after surgery for TIP in adults. These complications may contribute to the high mortality from this disease. WAJM 2007; 26 (1) 32 – 36.**

Keywords: Post operative complications. Typhoid, perforation, ileus, Mortality, Morbidity.

RESUMÉ

Contexte: *Les complications chirurgicales de la typhoide ileite telles que les perforations ileal (PI) continuent de causer plusieurs morts dans les pays ayant un pauvre systeme sanitaire et des soins de santé limités.*

Objectif: *C'est d'evaluer d'eclaircir les complications associée à la perforation de la Typhoide ileale.*

Méthodes: *Une étude de recherche des complications post operatoires après la fermeture du PI a été conduite de Janvier 2002 à Decembre. 2005 au Centre Hospitalier et Universitaire de Komfo Anokye (CHUKA).*

Résultats: *Au total 248 patients agés de 16 a 54 ans avec une moyenne de 24.9 (8.3) et une mediane de 23.5 ans ont été opérés du PI. comprenant 180 hommes (72.6%) et 68 femmes (27.4%) avec une proportion de 4 femmes pour un hommes. Le diagnostic du PI était basé sur les observations cliniqes, radiologiques et operatoires. Le taux entier des complication étaient de 49.3%. La complication post operatoire la plus commune était l'infection des blessures (52.4%). La plus grave était la peritonite persistante (34.7%) et la fistula enterocutanée (10.0%) avec un taux de mortalité de 33.3% et 22.2% respectivement. Le taux entier de mortalité était de 10.9%. Ces complications ont augmenté d'une maniere significative de plusieurs jours (p<0.01) la durée de l'hospitalisation.*

Conclusion: *La PI produit des complications très graves après une intervention chirurgicale chez les adultes. Ces complications peuvent être attribuée au taux élevé de mortalité de cette maladie.* ***WAJM 2007; 26 (1) 32 – 36.***

Mots Clés: Complications post operatoires,Typhoide, perforation, ileale, Mortalité, Morbidité.

Department of Surgery, School of Medical Sciences, Kwame Nkrumah University of Science & Technology, Kumasi, Ghana. mikeohneneyeboah@yahoo.com

Abbreviations: TIP, typhoid ileal perforation.

INTRODUCTION

With an estimated annual incidence of 540 per 100,000, typhoid fever remains a major health problem in most developing countries[1]. Typhoid perforation of the ileum is a major life threatening complication of typhoid fever [2-4]. In Komfo Anokye Teaching Hospital (KATH), typhoid ileal perforation (TIP) is the second most common cause of acute surgical admission for abdominal pain in adults.[5]. Over the past three decades the mortality from TIP has been decreasing from an unacceptably high level of 40-50% to 10 - 15% in the West African Sub region due to a better understanding of the fluid and electrolyte losses in TIP, aggressive resuscitation and timed surgical intervention [6-11]. The patients who survive the surgery are however confronted with several complications that may be fatal or lead to considerable morbidity [12-13,15]. This is a report on the complications after surgery for TIP on a large number of patients operated upon for this condition at KATH over a 4 –year period from January 2000 to December 2005. The aim of the study is to highlight the complications that may influence morbidity and mortality after surgery for TIP.

PATIENTS AND METHODS

A proforma was designed and completed for all adult patients admitted and treated for TIP at the Emergency Surgical Department of KATH Kumasi, Ghana, from January 2002 to December 2005. Data recorded included the age and sex of all the patients, the duration of illness, the duration of hospital resuscitation, the operative findings such as the number of perforations and their distance from ileocaecal junction and the surgical procedures performed. Other recorded data were the postoperative complications, length of hospital stay, the number of deaths and the causes of these deaths. All patients were operated upon after adequate fluid resuscitation, appropriate antibiotics and blood transfusion when indicated. The diagnosis of TIP was based on characteristic clinical features, plain abdominal or chest X-ray findings of air under the diaphragm (free intra peritoneal air) and the typical operative findings of ileal perforations on the anti mesenteric border. All the operations were performed using a lower midline incision. The simple direct suture closure technique was used to close all the perforations in two layers with 3/0 polyglycolic acid (PGA) sutures after excising the edges. In cases of multiple perforations that were close together a resection and immediate end to end anastomosis was done. The peritoneum was toileted with at least a litre of warm normal saline and the abdomen closed with No.2 nylon using the mass closure technique.

TREATMENT OF THE POST OPERATIVE COMPLICATIONS

Wound infection: Selected sutures were removed to allow free drainage of discharge and wound swabs taken for culture and sensitivity. Intravenous ciprofloxacin 2gm. daily and intravenous Metronidazole 1.5gm daily administered for the treatment of typhoid peritonitis was continued and later changed to the oral preparations as soon as the patients could tolerate oral intake. The antibiotics may be altered according to the culture reports.

Wound Dehiscence (Superficial): These were dressed daily with Povidone iodine solutions until healthy granulation tissue has been established and then closed by secondary suture.

Burst Abdomen (Complete wound dehiscence): The abdomen was in closed as an emergency with the mass closure technique. No tension sutures were inserted to avoid the abdominal compartment syndrome.

Persistent Peritonitis: All patients who develop this complication were treated by a relaparotomy as soon as possible. The operative findings at re-exploration were all recorded. Any reperforations found were closed, previous suture lines were carefully inspected for leakage and any abscesses drained.

Intestinal Obstruction: Nasogastric decompression established as soon the diagnosis was made. A laparotomy was done if there was no clinical improvement within 24 hours. The number of patients that required a re-exploration and the findings at surgery were recorded. All fibrinuos adhesions were released and any abscesses drained.

Enterocutaneuos or Feacal Fistula: All the 25 patients who developed feacal fistulas were initially treated expectantly. Laporotomy was required in 10 patients in whom the fistula persisted after 10 to 14 days of conservative treatment. Ileal resection and anastomosis was done for these patients.

Statistical Analysis: Numerical data was entered into an IBM compatible P.C. Means, standard deviations and frequencies were computed using the SPSS version 9 statistical soft-ware. The P- Value for statistical significance was determined at 0.05 level of significance

RESULTS

There were a total of 248 patients 180 (72.6%) males and 68 (27.4%) females with an M: F ratio of 4: 1. The ages ranged from 16 to 55 years with a mean age of 24.9(8.3) and a median age of 23.5 years. Table 1 shows the age and sex distribution of the 248 patients by age and sex. All the perforations noted in the 248 patients were found at distances of between 5 and 46 cm from the ileo-caecal junction along the antimesenteric border of the ileum. The number of perforations varied from 1 to 8. Table 2 shows the number of perforations found at operation, the surgical procedure performed and resulting complications and deaths. Of the 86 patients who developed persistent peritonitis 40 (46.6%) were found at re-operation to have re-perforated and 46 (53.5%) had residual intra – abdominal abscesses. Of the 10 patients who developed postoperative acute intestinal obstruction, seven had a repeat laparotomy. At the second operation four patients were found to have developed fibrinuos adhesions that were causing the obstruction. These were carefully divided and the abdomen washed with two litres of warm saline. The other three patients who had re- exploration were found to have developed large intra-loop abscesses. These abscesses were drained by a combination of suction and saline

wash –out. The remaining three patients who developed obstruction were treated conservatively. The mean length of hospital stay for uncomplicated cases was 10.5 days. Of the six patients who died after treatment for faecal fistula four required repeated laparotomies on two different occasions. The rest of the results are shown in Tables 3 and 4.

Table 1: Distribution of Patients by Age and Sex

Age group in years	Male	Female	Total	Percent
15 – 24	96	29	125	50.4
25 – 34	60	21	81	32.7
35 – 44	18	12	30	12.1
45 – 54	6	6	12	4.8
Total	**180**	**68**	**248**	**100.0**

Table 2: Distributions of subjects by number of perforations, surgical procedure and outcome

Perforations [N(%)]		Outcome of Procedure									
		SCLT	RA	Died	WI	WD	PP	BA	IO	FF	IH
	152 (61.3)	143	9	11	75	35	50	5	2	8	23
	79 (31.2)	69	10	7	45	27	25	5	4	14	18
	13 (5.2)	4	9	5	10	5	9	6	5	3	5
	3(1.2)	0	3	3	0	0	2	0	1	0	0
	1(0.4)	0	1	1	0	0	0	0	0	0	0
Total	**248 (100)**	**223**	**25**	**27**	**130**	**67**	**86**	**16**	**10**	**25**	**46**
%	**100**	**90**	**10**	**10.9**	**52.4**	**27.0**	**34.7**	**6.5**	**4.0**	**10.0**	**18.5**

WI, Wound Infection; **WD**,Wound Dehiscence; **PP**, Persistent Peritonitis; **BA**, Burst Abdomen; **IO**; Intestinal Obstruction; **FF**, Faecal Fistula; **IH**, Incisional Hernia; **SCLT**, Simple Closure in Two layers; **RA** ,Resection and Anastomosis.

Table 3: The Postoperative Complications, Morbidity and Mortality after Surgery.

Type of Complication	N. (%)	Deaths (%)	Hospital stay (p)*	Cause of death			
				SH	ARF	ARDS	PHK
Wound Infection	130(52.4)	1 (3.7)	5.2 (>0.10)	-	-	1	-
Wound Dehiscence	67(27.0)	3(11.1)	10.3 (<0.01)	1	2	-	-
Persistent Peritonitis	86(34.7)	9(33.3)	14.6 (<0.01)	4	3	1	1
Intestinal Obstruction	10 (4.0)	5(18.5)	14.0 (<0.01)	3	1	-	1
Enterocutaneuos Fistula	25(10.1)	6 (22.2)	46.4 (<0.001)	3	2	-	1
Burst Abdomen	16 (6.5)	3 (11.1)	12.7 (<0.01)	1	2	-	-

Some patients had multiple complications. * Statistical significance of differences between length of hospital stay beyond 10.5 days for patients without and with the specified complication. **SH**, Septic Shock; **ARF**, Acute Renal Failure; **ARDS**, Adult Respiratory Distress Syndrome; **PHK**, Persistent Hypokalaemia.

Table 4: Mortality according to age group.

Age group in years	n	Deaths	MR%	OVR%
15 – 24	125	12	9.6	4.8
25 – 34	81	7	8.6	2.8
35 – 44	30	5	16.6	2.1
45 – 54	12	3	25.0	1.2
Total	**248**	**27**	**-**	**10.9**

MR, mortality rate; OVR, overall mortality rate.

DISCUSSION

This study confirms the typical age and sex distribution of patients treated for TIP as previously reported from our environment [5-8] and from other communities similar to our own especially in the West African sub region [9-10]. One – half of the patients we studied were aged below 25 years (Table 1) and predominantly males [9,11,12]. The reason for this epidemiological pattern of the patients affected by TIP is not clear although it may be a reflection of the population structure of our communities.

It is now widely accepted that the most appropriate treatment of TIP is a laparotomy [5-6,8]. The importance of adequate preoperative preparations- such as fluid resuscitation, correction of electrolyte deficiencies, appropriate antibiotics therapy and blood transfusions as required for a successful outcome- has been stressed repeatedly by previous investigators of TIP 7-11. We believe that the lower operative mortality and morbidity figures reported here as compared to previous reports [3] have been due to our strict application of the above pre- operative resuscitative measures. Over the past five decades many different surgical procedures have been described and used to halt further contamination of the peritoneal cavity and eradicate existing septic collections [5,6,8,9,11-13]. We believe that simple closure of the perforation in two layers after excision of the edges as performed for the majority of our patients (233 or 90%) is a quick and effective way of halting further contamination. The outcome as shown in Table 2 compares favourably with previous series which report that the most common post operative complications are usually wound infections and wound dehiscence [9-13,15] which were noted in more than one – half (52.4%) and almost a third (27.0 %) of our series respectively. (Tables 2 and 3).

Many factors may account for the reported high incidence of wound infections and wound dehiscence in patients who survive surgery for TIP. It is a fact that laparotomy for TIP exposes the tissues of the anterior abdominal wall to severe contamination from the contents of the perforated loop of bowel and intra peritoneal pus, hence the noted high frequency of wound sepsis. The containment of the contamination may reduce wound infection rates. At laparotomy the contamination of the surgical wound may be reduced by simply covering the wound with abdominal packs and then washed with normal saline before closure. It has been strongly suggested that leaving the wounds open to heal by secondary intension may reduce the wound infection rate [9]. The satisfactory response to antibiotic treatment noted in the patients who developed wound infection has been reported by previous workers and as in this series the associated mortality and morbidity are often low [9, 11-13].

The over all mortality in our series was 10.9%. This figure confirms the steady improvement in the survival of patients treated surgically for TIP over the past 2 to 3 decades especially in the West African subregion [8-15]. Many postoperative complications other than wound infections have however been noted and these have often resulted in a fatal outcome [11-14]. The most fatal complications seen in our series were persistent peritonitis and faecal fistula which were noted in 34.7% and 10.1% of the patients and accounted for 33.3% and 22.2% of the 27 deaths respectively. These findings represent an improvement in the survival of patients who develop post operative complications after surgery for TIP when compared to figures published nearly a decade ago where 75% of the patients who developed a faecal fistula after surgery died [16]. The treatment of faecal fistula in this series (with early surgery) is not consistent with the new concept of fistula management which emphasises the important role of nutrition and control of sepsis [17] Using well prepared enteral or total parenteral nutrition regimes, mortality rates of 36% and fistula closure period of between 7 and 150 days [16] have been reported. In this series we operated on the patients early in order to shorten total hospital stay. The need for repeated laparotomies, as was required in 4 patients of our series, is a disadvantage of the early operation approach. A longer period of conservative management of these patients may have lead to a lower mortality and fewer re- operations.

In our series as in previously published data [12, 14, many more deaths were associated with other complications such as intestinal obstruction, wound dehiscence and burst abdomen (Table 3). The causes and age the distribution of these deaths as shown in Tables 3 and 4 relate to the effects of prolonged sepsis. Many patients who survive the operation for TIP and who do not die from the postoperative complications stay in hospital for between 5.2 and 46.4 days beyond the expected 10.5 days [10,12-13,15]. In this study except for wound infection all the patients with the other postoperative complications had significantly prolonged stay in the hospital (Table 3). This paper concludes that significant complications occur after surgery for TIP.

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