*IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*
*e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 19, Issue 1 Ser.15 (January. 2020), PP 55-59*
*www.iosrjournals.org*

# The Management Outcome for Typhoid Ileal Perforation in Bida, Nigeria.

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***Background:*** *Typhoid ileal perforation is a common emergency seen in developing countries. The management of this condition is challenging and is associated with high morbidity and mortality.*
*Aims: The study aimed to evaluate the mode of presentation and outcome of management in Bida.*
***Methodology:*** *This was a retrospective study of patients who had been operation for typhoid ileal perforation at Federal Medical Centre, Bida between January 2017 and December 2018.*
***Result:*** *There were 71 patients with clinical and intra-operative diagnosis of typhoid ileal perforation during the study period. The age ranged from 2 to 41 years and their median age was 15 years. There were 40 (56.4%) males and 31 (43.6.5%) females with a male to female ratio of 1.3: 1. Fever 66 (92.9%) and abdominal pain 65(91.1%) were the commonest symptoms. Most of the 27(38.0%) patients had surgery within 12–24 hours of admission.*
*At surgery, the number of ileal perforations ranged from 1 to 7 however, the majority of the patients had a single perforation 50(70.4%). The median distance between perforation site to the ileo-caecal valves was 20cm. The size of the perforations varied between from o.4cm to 12cm. Majority of the procedures performed were simple closure of ileal perforation 54(76.1%). Post-operative complications were surgical site infection in 64.4%, intraabdominal abscess 2(2.8%), and faecal fistulae 3(4.2%). The mortality was 5.6%.*
***Conclusion:*** *The morbidity following management of typhoid ileal perforation is high.*

Date of Submission: 13-01-2020 Date of Acceptance: 29-01-2020

## I. Introduction

Typhoid Ileal perforation stands as the most serious complication of typhoid fever[1]. In the West Africa sub region the incidence ranges between 15% to 33%[2]. The disease is associated with high morbidity and mortality. The mortality ranges between 5% to 62%[3,4].

Management of patient with typhoid ileal perforation can be challenging. It is best managed by early operative intervention after aggressive resuscitation[5]. A successful operation for typhoid perforation must control abdominal infection by thorough peritoneal lavage and repair or resection of the perforation site. The strategy to control the perforation should take into consideration the risks of re-perforation and anastomotic disruption, the development of which carry serious consequences for the patient[6].

The aim of this study was to determine the mode of presentation and the outcome of management in Federal Medical Centre, Bida.

## II. Methodology

This was a retrospective study of patients who had operation for typhoid ileal perforation at Federal Medical Centre(FMC), Bida between January 2017 and December 2018. FMC, Bida is a tertiary hospital in Niger State, Nigeria with a bed capacity of 200. All the patients were admitted through either emergency paediatrics unit or accident and emergency unit of the hospital. The diagnosis of typhoid ileal perforation was made through clinical features, laboratory and radiological investigations and was confirmed from operative findings. All relevant information was obtained from the patients' records; this included the socio-demographic characteristics, clinical history on admission, admission–operation time, operative findings, types of operation, outcome of surgery.

## III. Results:

There were 71 patients with clinical and intra-operative diagnosis of typhoid ileal perforation during the study period. The age ranged from 2 to 41 years and their median age was 15 years. There were 40 (56.3%) males and 31 (43.7%) females with a male to female ratio of 1.3: 1. Majority of the patients were single 52 (73.2%) while 19 (26.7%) were married, 27 (38.0%) were Nupe, 10 (14.1%) were Hausas, 13(18.3%) were

Fulanis, 1(1.4%) Igbo while 20 (28.2%) were from the minority tribes. Most of the cases were in the paediatric age group 0–15 years 40(56.3%).(Table 1)

**TABLE 1:** SOCIODEMOGRAHIC CHARACTERISTIC OF THE PATIENTS

| AGE IN GROUPS | Nunber of patients(71) | %(100) |
|---|---|---|
| 0-9 | 20 | 28.2 |
| 10-19 | 27 | 38.0 |
| 20-29 | 15 | 21.1 |
| 30-39 | 3 | 4.2 |
| 40-49 | 6 | 8.5 |
| SEX | | |
| Male | 40 | 56.3 |
| Female | 31 | 43.7 |
| MARITAL STATUS | | |
| Single | 51 | 74.4 |
| Married | 19 | 25.6 |
| TRIBE | | |
| Nupe | 27 | 38.0 |
| Hausa | 10 | 14.1 |
| Fulani | 13 | 18.3 |
| Igbo | 1 | 1.4 |
| Others | 20 | 28.2 |
| RELIGION | | |
| Islam | 66 | 93.0 |
| Christainity | 5 | 7.0 |

A total of 66 (93.0%) patients had fever, 65 (91.5%) had abdominal pain, 55 (77.5%) had abdominal distention, 53 (74.6%) had vomiting, and 24(33.8%) had constipation . Common signs elicited were tachycardia 70 (98.6%) and tachypnea 69(97.2%). All the patients had abdominal signs of general peritonitis.(Table 2)

The median duration of presentation was 8 days (range, 2–30 days), with majority of patients 33(46.5%) presenting during the first week of illness 10.8+6.8 days.(Table 3)

**TABLE 2:** CLINICAL PRESENTATION OF THE PATIENTS

| Common Features | Numbers of Patients | % |
|---|---|---|
| Fever | 66 | 93.0 |
| Abdominal pain | 65 | 91.5 |
| Vomiting | 53 | 74.6 |
| Constipation | 24 | 33.8 |
| Diarrhea | 17 | 23.9 |
| Psychosis | 4 | 5.6 |
| Abdominal distension | 55 | 77.5 |
| Tachycardiac | 70 | 98.6 |
| Tachypneic | 69 | 97.2 |
| Shock | 9 | 12.7 |

**TABLE 3:** DURATION OF ILLNESS BEFORE PRESENTATION

| Duration of symptoms | Number of patients | % |
|---|---|---|
| First week | 33 | 46.5 |
| Second week | 25 | 35.2 |
| Third week | 11 | 15.5 |
| Fourth week | 2 | 2.8 |

On admission, 30(42.3%) patients had anaemia , 21(29.6%) Hypokalemia, 23(32.4%) hyponatriemia and 24(33.8%) elevated urea .All the patients were resuscitated which involved correction of fluid and electrolyte derangements ,administration of pareneteral antibiotics and analgesics. Those with PCVs below 30% had preoperative blood transfusion before surgery. All the patients had exploratory laparotomy after resuscitation. Most of the patients had surgery within 12–24 hours (51.5%) of admission.(Table 4)

**TABLE 4:** WAITING TIME FROM ADMISSION TO OPERATION

| Waiting time (hours) | Number of patients(71) | %(100) |
|---|---|---|
| < 12 | 3 | 4.2 |
| 12-24 | 27 | 38.0 |
| 25-48 | 19 | 26.8 |
| >48 | 21 | 29.6 |

At surgery, the number of ileal perforations range from 1 to 7 however, the majority of the patients had a single perforation 50(70.4%). The distance between the most distal perforation site to the ileo-caecal valves ranged between 1 and 100 cm with median distance of 20cm; most perforations were found 11 and 20cm from the ileo-caecal junction 24(33.8%). The size of the perforations was variable from o.4cm to 12cm (mean 1.8±2.3,median 1).(Table 5)

**Table 5:** OPERATIVE FINDINGS IN THE PATIENTS

| Number of perforation | Number of patients(71) | %(100) |
|---|---|---|
| 1 | 50 | 70.4 |
| 2 | 17 | 23.9 |
| 3 | 2 | 2.8 |
| 4 | 1 | 1.4 |
| 5 and above | 1 | 1.4 |
| Size of perforations(cm) | Number of perforation(101) | %(100) |
| 0.1 – 2.0 | 88 | 87.1 |
| 2.1 – 4.0 | 9 | 8.9 |
| > 4.0 | 4 | 4.0 |
| Most distal perforation from ICJ(cm) | Number of patients(71) | %(100) |
| < 10cm | 17 | 23.9 |
| 11 – 20 | 24 | 33.8 |
| 21 – 30 | 14 | 19.7 |
| 31 – 40 | 13 | 18.3 |
| 41 – 50 | 6 | 8.5 |
| >50 | 3 | 4.2 |
| Estimated volume of contaminants(L) | Number of patients(71) | %(100) |
| 0.1 – 1.0 | 38 | 53.5 |
| 1.1 – 2.0 | 12 | 16.9 |
| 2.1 – 3.0 | 9 | 12.8 |
| 3.1 – 4.0 | 4 | 5.6 |
| >4.0 | 4 | 5.6 |
| Missing value | 4 | 5.6 |

The procedures done were simple closure of ileal perforation in 54 (76.1 %) patients , resection and anastomosis in 6(8.5%) patients, resection and ileostomy in 6(8.5%) patients and right hemicolectomy in 5(7.0%).(Table 6)

**TABLE 6:** PROCEDURE DONE IN THE PATIENTS

| Procedure | Number(71) | %(100) |
|---|---|---|
| Simple closure | 54 | 76.1 |
| Resection and anastomosis | 6 | 8.5 |
| Resection with ileostomy | 6 | 8.5 |
| Right hemicolectomy | 5 | 7.0 |

Post-operative wound complications were surgical site infection(SSI) in 46 (64.7%) of the patients. Of the 46 patients had SSI, 33 (71.7%) were superficial, 11(23.9%) were deep while 2(4.3%) had intraabdominal abscess (organ space). Other wound complications noted from the study were, enterocutaneous fistulae 3(4.2%) and incisional hernia 3(4.2%). Other complications recorded were atelectasis 5(7.0%), prolonged ileus 4(5.6%), renal failure 5(7.0%). The operative mortality was 4 (5.6%). Three of them died from septic shock while one from hemolytic reaction from blood transfusion. All patients with intraabdominal abscesses and enterocutaneous fistula were re-explored. Patients with wound dehiscence had secondary closure.

**TABLE 7:** OUTCOME OF MANAGEMENT

| Complications | Number of patients | %(100) |
|---|---|---|
| Surgical site infection | 48 | 64.8 |
| Superficial | 33 | 71.7 |
| Deep | 11 | 23.9 |
| Organ space | 2 | 4.3 |
| Enterocutaneous fistula | 3 | 4.2 |
| Incisional hernia | 3 | 4.2 |
| Atelectasis | 5 | 7.0 |
| Prolong ileus | 4 | 5.6 |
| Renal failure | 5 | 7.0 |
| Mortality | 4 | 5.6 |

## IV. Discussion

Typhoid ileal perforation is the commonest abdominal emergency seen in our centre. The study was designed to look at the mode of presentation and the outcome of management in our hospital. As previously documented in the literature, the peak age of presentation was the first and second decade of life with male preponderance[7,8]. In this study, the highest presentation of typhoid ileal perforation was in the age group 10-19 years and majority of the patients were male. However, Edino et al from his series reported a female preponderance[2].

The mode of presentation of patients in this study was similar to those in endemic region[7,9,10] with fever and abdominal pain being present in most of the patients. Most of the patients in our study presented in the first week of illness surprisingly even though significant numbers presented during second week of illness. However, intestinal perforation for typhoid fever usually occurred during second week. The result from our study differs from others who reported that their patients presented during early second week[2,7,10]. This may be due to malnutrion and reduced immunity[9]. Also large volume of innoculum of the bacteria consumption due lack of good water supply may also account for why the patients are presented earlier.

Prompt diagnosis, aggressive and early surgical intervention is imperative to prevent complications with its attendant high morbidity and mortality. Gupta *et al*. concluded from his work that early surgical intervention improves the prognosis[11]. Majority of our patients (57.3%) had to wait over 24 hours before surgical operation, however Grema et al reported that 52% of the patients in his study were operated on within 13–24 hours post-admission. Reason being that many of the patient belong to the low socioeconomics and don't health insurance so they have to seek for fund to get things needed for treatment.

The number of perforations in our study ranged from one to seven, which was similar to the one to eight reported by Grema et al and Anyanwu et al[10,12]. We noted that most of the patients in the study had single perforation; this was similar to what has been previously documented [9,12,13].

All the patients had exploratory laparotomy and the procedure performed was based on the operative findings and the impact of the disease (severity) on the patients. Majority of the patients in our study had excision of the ulcer and simple closure of the perforation in 2 layers. Many other studies reported similar procedures were done in their series[2,7,9,10]. The reasons many may opt for this option is that it is fast, easy to perform and patient do not need to stay long under anaesthesia which may contribute to morbidity and mortality.

Before the mortality rate of typhoid ileal perforation ranged from 9% to 43%[14]. However, the mortality has been on gradual but variable decline worldwide. Centers capable of better quality of care are now reporting mortality rates less than 5%[6]. The mortality from the study was 5.6%, however most of the studies in Nigeria had reported higher mortality[2,10,12,14]. The low mortality recorded might be due to adequate resuscitation ,close monitoring of the patients pre-operatively and post-operatively and experienced surgeons and anesthetists.

With most patients now surviving surgery for typhoid ileal perforation, the focus is gradually shifting to the high morbidity rate and prolonged hospital stay which have over-burdened health systems and increased medical expenditure [6]. The significant morbidity recorded in this study was surgical site infection (SSI) which about 64.8%. Ugochukwu et al and Chalya et al from their studies also recorded higher SSI rate of 63.6% and

55.5% respectively[7,9]. This is not unexpected because typhoid ileal perforation is considered dirty wound which carries a high SSI rate.

## V. Conclusion

We concluded that with aggressive resuscitation and close monitoring in our limited resources environment we have been able to reduce mortality however the wound morbidity was still significantly high,

Funding: No funding sources
Conflict of interest: None declared

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