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Childhood intussusception in Ile-ife: What has changed?

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ABSTRACT

Background: Intussusception is one of the most common causes of intestinal obstruction in children. While the outcome has improved in the developed nations, the same cannot be said of the developing countries, more especially in the sub-Saharan region. This study aims to review our current experience in the management of childhood intussusception and factors affecting surgical outcome at the Obafemi Awolowo University Teaching Hospitals Complex Ile-Ife. **Patients and Methods:** This was a retrospective study of 78 patients treated for intussusception at paediatric surgical unit of Obafemi Awolowo University Teaching Hospitals Complex Ile-Ife between January 1993 and December 2011. The case notes of the patients were retrieved and the following information was recorded: Demographic characteristics, month of occurrence, clinical presentation, investigations, and management as well as the post-operative outcome. The patients were divided into two groups in terms of outcome. **Results:** There were 58 males and 20 females (M:F = 2.9-1). The age of most of the patients was between 3 months and 9 months with peak incidence at 6 months. Most patients 46 (58.9%) were seen during the dry season of December to April. Only six patients (7.7%) presented within 24 hours of onset of illness. More than half of the patients presented after 24 hours. Passage of red currant stool, vomiting, abdominal pain, fever, and abdominal distension, passage of watery stool, anal protrusion and palpable abdominal mass in various combinations were the clinical features. All the patients had surgical operations. The most common type of intussusception was ileo-colic type in 64 patients (82.1%). Intestinal resection rate was 41%. The overall mortality rate was 15.4%. **Conclusion:** There was a delay in presentation of children with intussusception with high post-operative mortality.

Key words: childhood, intussusception, mortality

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INTRODUCTION

Intussusception is the invagination of a segment of the intestine, usually the proximal part into distal adjacent bowel.[1,2] The mortality is high in our sub-region due to late presentation and wrong diagnosis from our peripheral health facilities.[1-10] The aetiology of this condition is still unknown. However, upper respiratory tract infection and change in the micro-flora of the gut around the weaning period have been implicated in most cases.[10,11]

The mode of treatment in most developing countries is still surgery[1-11] despite advancement in the modality of treatment from surgical intervention through non-operative barium enema reduction under fluoroscopy to pneumatic reduction in advanced countries.[12,13]

The aim of this study is to review the current pattern of presentation of patients in our hospital and to analyse the treatment outcome and its predictors in these patients. The findings are compared to previous reports from our environment.

PATIENTS AND METHODS

This is a 19-year retrospective study of children aged 15 years and below who were managed for intussusception between January 1993 and December 2011 at the paediatric surgery unit of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. The paediatric surgery unit has 13 beds in its ward with annual admission of about 200 children excluding day case patients. The teaching hospital serves a population of about 21 million people in its catchment states of South-West Nigeria. Children below the age of 15 years constitute about 40% of the entire population who are mainly of Yoruba ethnicity.

Information on the patients' demographic characteristics, clinical presentation, and month of occurrence as well as the operative findings and outcome were obtained

from the paediatric surgery unit record book, case files, and the operating theatre register. Data collected were analysed using Microsoft Excel and Statistical Package for Social Sciences version 17.

RESULTS

There were 78 patients, 58 males (74.4%) and 29 females (25.6%) with M:F = 2.9:1.0. Table 1 shows the age distribution of the patients.

Their ages ranged between 2 months and 120 months (10 years) with a median age of 6 months. The peak age group incidence was 6-9 months. Sixty nine patients (88.5%) were aged 1 year and below. The oldest patients were 10 years (2.6%).

Vomiting, passage of red currant stool, palpable abdominal mass was the most common symptoms [Table 2]. Abdominal pain, fever, abdominal distension, passage of watery stool, and anal prolapse were seen in less than half of the patients.

The duration of symptoms before presentation in the hospital is shown in Table 3.

Table 1: Age group of patients

Age group (months)	Number of patients (%)
≤3	10 (12.8)
4-6	31 (39.7)
7-12	28 (35.9)
13-24	2 (2.6)
24-120	7 (9.0)
	78 (100)

Table 2: Clinical features of patients with intussusception

Clinical features	Number of patients (%)
Vomiting	56 (71.8)
Passage of red currant stool	55 (70.5)
Palpable abdominal mass	50 (64.1)
Abdominal pain	36 (46.2)
Fever	17 (21.8)
Abdominal distension	15 (19.2)
Passage of watery stool	12 (15.4)
Anal prolapse	6 (7.7)

Table 3: Duration of symptoms

Days	Number of patients (%)
<1	6 (7.7)
1-2	24 (30.8)
3-7	39 (50.0)
>7	9 (11.5)
	78 (100)

*Figures in parenthesis are percentages

Most of the patents presented late leading to widely varied time interval between onset of symptoms and intervention. Most of the patients presented after 2 days. Only six patients (7.7%) presented in the hospital within 24 hours of onset of symptoms while nine patients (11.5%) presented after 1 week of commencement of illness [Table 3]. The mean age of duration of symptoms was 3.4 days.

More patients 46 (58.9%) were seen between December and April, which coincided with the dry season when there was a high incidence of upper respiratory tract infection [Figure 1].

Diagnosis was based on the clinical features in all patients, but supplemented by ultrasonography and plain abdominal X-ray. Abdominal ultrasonography was diagnostic in 29 patients (37.2%) with dough nut sign or pseudo kidney appearance. Plain X-ray of the abdomen was only carried out in 16 patients (20.5%), which showed multiple air-fluid levels.

All the patients had exploratory laparotomy under general anaesthesia after fluid resuscitation and antibiotics. The mean time interval between admission and operative intervention was 12.27 hours (range: 2-90 hours). Ileo-colic intussusception was the most common variety seen accounting for 64 (82.8%); colo-colic 10 (12.8%); jejuno-jejunal and ileo-ileal were 2 (2.6%) each [Figure 2].

Majority of the intussusceptions, 76 patients (97.4%) were of idiopathic origin while only 2 cases (2.6%) had pathologic lead point which were. Polyps located in the jejunum and colon of a 10-year and 7-year old respectively.

Forty six patients (59%) had successful manual reduction. The remaining 32 patients (41%) who had bowel gangrene and or inability to reduce the apex of the intussusceptum due to pathologic lead point or oedema of bowel wall had intestinal resection. The types of resection carried out were right hemicolectomy in twenty six patients (33.6%), five patients (6.5%) had small bowel resection. One patient each (1.3%) had left hemicolectomy with primary anastomosis; and extended right hemicolectomy with ileostomy and colostomy (mucus fistula) respectively.

Post-operative complications occurred in 13 patients (16.7%), the most common of which was septicemia. Other complications are as shown in Table 3. Six patients were re-operated: One each for manual

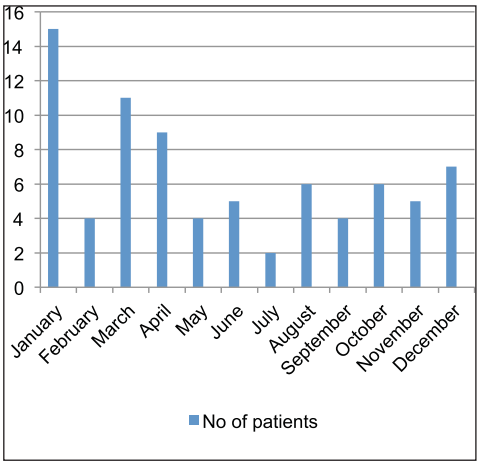


Figure 1: Frequency of month of occurrence

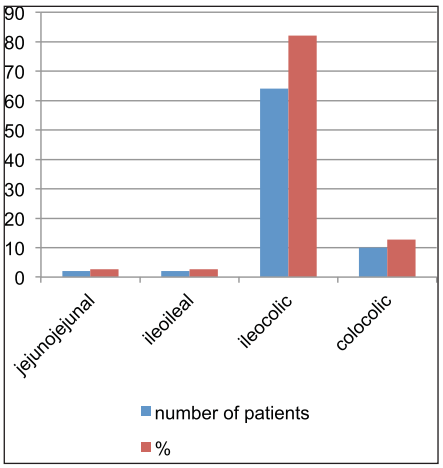


Figure 2: Types of intussusception

reduction of recurrent intussusception, mass closure of the abdomen for burst abdomen, and laparotomy with drainage of intra-peritoneal collections respectively. The three remaining patients had a bowel resection and anastomosis for faecal fistula due to anastomotic dehiscence. The only patient with wound infection was managed non-operatively.

DISCUSSION

The male preponderance in this report is similar to findings in other parts of the world.[1,2,6,7,14] Majority of the children presented during infancy with a median age of 6 months and a peak age group incidence of 6-9 months. Most literature reports agree with our findings.[1,4,6,10] However, Abdur-Rahman *et al.*,[9] as well as Osifo *et al.*,[11] in Nigeria observed a much lower peak age group incidence of 3-6 months.

Reports indicate that intussusception has a seasonal pattern.[10,15] We observed in this series a higher number of intussusception during the dry season. The high incidence of this condition during the dry season in this study may relate to the hyperplasia of the payers patches caused by a viral infection of the respiratory tract, which is more prevalent during this period.[10] This finding is similar to that of Keita *et al.*[10]

The classical clinical features of vomiting, abdominal pain, passage of bloody mucoid stool, and palpable abdominal mass are the most predominant findings in our study, and this concur with reports from available literature.[5,6,14]

Most of the patients in this study presented late to the hospital as in the previous report and studies carried out in other centres [1,4,9-11] with a mean duration of 3.4 days between the onset of disease and commencement of treatment. Only six patients presented within 24 hours. The delay in presentation could be attributed to poverty, ignorance, wrong diagnosis, and delayed referral. The medical officers in most peripheral centres often manage most children with intussusception for dysentery, gastro-enteritis, and sometimes rectal prolapse before referral.[9,10]

The diagnosis was made clinically and confirmed at laparotomy, but sometimes supplemented by abdominal ultrasound and plain abdominal X-ray. In recent times, air-contrast enema and hydrostatic reduction under fluoroscopy of intussusception in infants have gained popularity. None of our patients benefited from this non-operative approach due to late presentation, technical constraint, and their poor clinical condition that usually require prolong resuscitation.

In this study, all our patients had exploratory laparotomy. Ileo-colic intussusception was the most common variety observed. This agrees with the general pattern.[7-12] Most of the intussusception was idiopathic in origin with just 2 patients having pathologic lead points. These two cases were found in older children aged 7 and 10 years respectively. This is in accordance with other series.[7,9,10]

The spectrum of post-operative complications observed is similar to other reports [Table 4]. They followed intestinal gangrene and consequent bowel resection caused by delayed presentation.

Thirty two patients (41%) had intestinal resection with primary anastomosis. This figure was high compared with the data from the Western world.[12,13] The high rate of bowel resection in our study is as a result of

Table 4: Spectrum of post-operative complications

Post-operative complications	Number (%)
Wound infection	1 (1.3)
Wound dehiscence	1 (1.3)
Septicaemia	6 (7.8)
Intra-abdominal collection	1 (1.3)
Faecal fistula	3 (3.9)
Recurrent intussusception	1 (1.3)
	13 (16.7)

inability to reduce apex of edematous intussusceptum, and bowel gangrene.

Data extracted from available literature from developed countries reported significantly lower post-operative mortality rate.[12,13] This cannot be said of in our sub-Saharan region.[8-10,14] In this study, we recorded a high mortality rate of 15.4%; although this figure is lower than the previous report of 23.1% from our centre.[1] In Nigeria, mortality ranges between 6.2% and 25%,[9,14] while in other parts of Africa, it ranges between 6.2% and 35.1%.[8,10] In this study, infants constituted 91.6% of the mortality. This may be primarily because they constitute the majority of patients. This is similar to reports from other centres.[9-11]

We attribute the high mortality in this series to late presentation and the metabolic stress of open surgery on these sick children who have poor physiologic reserve.

In conclusion, although the mortality rate has marginally reduced, most of our patients still present late to us. A high index of suspicion among health care givers is necessary to make early diagnosis in the age group presenting with the quartet of vomiting, abdominal colics, passage of bloody mucoid stool, and palpable abdominal mass.

Early referral to specialized centres where adequate equipment is available to handle these children would reduce the high mortality.

In this sub-region, public enlightenment campaign should be instituted to facility early attendance of specialized health centre. There is need for paradigm shift from open surgery to barium or air contrast reduction among children presenting early enough to the hospital in our sub-region.

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