

## EDITORIAL

### INTESTINAL OBSTRUCTION IN CHILDREN AT EL OBEID HOSPITAL, WESTERN SUDAN.

El Bushra Ahmed Doumi, Mohamed Ibrahim Mohamed, Awadalla Musa Abbakar, Mohamed Yousof Bakhiet, Mohamed Babelrahma Bashier.

The University Surgical Department, El Obeid Teaching Hospital,  
Faculty of Medicine & Health Sciences,  
University of Kordofan,  
El Obeid, Sudan.

Correspondence to: [elbushradoumi@hotmail.com](mailto:elbushradoumi@hotmail.com)

#### ABSTRACT

**Background:** Intestinal obstruction is a common cause of childhood surgical emergency in the developing countries with considerable morbidity and mortality.

**Objectives:** To assess the magnitude, pattern and management outcomes of intestinal obstruction in children presenting to a General Surgical Unit at a rural setup, in Western Sudan.

**Patients and Methods:** The clinical records of all children below 15 years of age admitted to the University General Surgical Unit at El Obeid Teaching Hospital, in Western Sudan with the diagnosis of intestinal obstruction during the period from 2006 to 2007 were retrospectively reviewed. The mean age, gender, causes of obstruction and management outcomes were studied and analyzed.

**Results:** There were 72 patients. 48 were males (66.7%). Neonates and infants were 70% of patients. Hirschsprung's disease, intussusception, obstructed hernias and ano-rectal anomalies accounted for 21.8%, 19.4%, 16.7% and 13.9% respectively. Less common causes were pyloric stenosis 8.3% and gut atresia 6.9%. Lymphoma, adhesions, peritonitis and faecal impaction were 2% each. The overall mortality rate was 13.9%.

**Conclusions:** The main causes of childhood intestinal obstruction at Western Sudan were congenital anomalies in neonates, intussusception in infants and obstructed hernias in elder children. The management was associated with high mortality due to poor hospital facilities and late presentations resulting in bowel ischaemia.

**Key words:** Congenital anomalies, intussusception, obstructed hernias, gut atresia.

#### INTRODUCTION

Intestinal obstruction was a common surgical emergency at El Obeid Hospital, Western Sudan with considerable morbidity and high mortality<sup>1</sup>. Children constitute 30-40% of the total population in many countries, especially so at the developing world<sup>2</sup>. Children presenting with acute intestinal obstruction, were at higher risk of complications and they form a real challenge that needs to be cared for in specialized Paediatric Surgical Units with intensive care facilities<sup>2</sup>.

In this study we report our local experience with this condition where such patients were looked after in a general surgical unit at a rural setup in Western Sudan.

#### Patients and Methods:

The clinical records of all children below 15 years admitted to the University General Surgical Unit at El Obeid Teaching Hospital, in Western Sudan during the period from January 2006 to December 2007 were retrospectively studied. The mean age, gender, the causes of obstruction and management outcomes were reviewed. Analysis of data was done using the SPSS PC packages

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version 11.5.

### **Results:**

There were 72 patients. 48 were males (66.7%). 32 patients were neonates their age ranging between one day and 21 days (mean 5 days). 18 patients were infants, their age ranging between one and 10 months (mean 4.6 months). 10 patients were preschool children, their age ranging between one and 5 years (mean 3.2 years). 12 patients were elder children between six and 15 years (mean 9.5 years). The causes of intestinal obstruction were shown in table 1. Patients with adhesive intestinal obstruction and faecal impaction (4 cases) were managed conservatively.

68 other patients had operative treatment, the outcomes of which were shown in table 2. For patients with Hirschsprung's disease and ano-rectal anomalies (37.5%), temporary colostomies were done and later they were referred for definitive treatment in higher centres.

Patients presenting with obstructed hernias were: six umbilical hernias their ages ranging between 1.5 and 15 years (mean 6.2 years); and eight indirect inguinal hernias their ages ranging between 0.5 and 9 years (mean 3.7 years). At operation the hernia content was omentum in six patients and small bowel in eight cases, three of whom were strangulated gangrenous small intestine for which resection and anastomosis was performed. One patient with bowel ischaemia died on table and the other two patients died post-operatively (21.4% mortality rate).

Five neonates presented with small bowel atresia; one duodenal, three jejunal and one ileal atresia. Bypass operation was done for the duodenal atresia, while resection and anastomosis were done for the rest, with 80% postoperative mortality rate.

Twelve patients presented with intussusceptions. At laporatomy seven had manual reduction and five needed bowel resection and anastomosis for gangrenous bowel of whom three died postoperatively (25% mortality rate).

**The overall mortality rate was 13.9% of all cases.**

### **DISCUSSION**

In this study males were more commonly affected than females (M: F ratio was 2:1). Similar male predominance was observed in other African countries (3:1 & 4.4:1)<sup>3,4</sup>

The alterations in the physiology of patients with acute intestinal obstruction were at their maximal effect in children, especially so neonates and infants. Neonates and infants were the majority of patients (69.4%). This was due to the high prevalence of congenital anomalies (ano-rectal 13.9%, Hirschsprung's disease 23.6% and gut atresia 6.9%) accounting for 44.4%. Ameh et al and Uba et al found congenital anomalies (ano-rectal, Hirschsprung's disease & gut atresia) accounting for 82.9% and 57.4% of their series<sup>3,4</sup>. Most of our cases were from rural and poor socio- economic background. The high prevalence of congenital anomalies in rural underserved communities may suggest a nutritional deficiency factor<sup>5</sup>.

The patients with ano-rectal anomalies (13.9%) and Hirschsprung's disease (23.6%) were offered temporary colostomies and later referred to specialized paediatric surgery centres. As stoma nurses and colostomy appliances were not available at our setup, the procedure was found to add on the miseries of the families who were mainly illiterate<sup>6</sup>.

All patients with gut atresia presented late in a state of dehydration and electrolyte imbalance. One patient with duodenal atresia (had bypass operation) and three patients with small bowel atresia (had resection and anastomoses) died shortly post-operative. The exact cause of death was unknown, but hypokalaemia and chest infection were documented as possible factors. This high mortality rate (80%) was double that reported by Ameh et al (40%)<sup>3</sup>. Late presentation, delay in diagnosis, absence of neonatal intensive care units and possibly the co-existence of other

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congenital anomalies contributed to this<sup>4, 7, 8</sup>. No case of intestinal atresia was noted beyond the neonatal period and also no neonate had intussusception or obstructed hernia. The six patients who presented with hypertrophic pyloric stenosis during infancy had better outcomes as they were operated after necessary resuscitation and were cured without noticeable morbidity or mortality in line with other reports<sup>9, 10</sup>.

The majority of the patients presenting with acute intussusception, were found in infants (83.3%), accounting for 55.6% of patients with intestinal obstruction at this age group. Other two patients reported at preschool age. The postoperative mortality rate was 25%, due to late presentations, misdiagnosis at primary health-care-settings and absence of intensive care facilities<sup>11-14</sup>.

Among the study group there were 13.9% of preschool children. The main causes of intestinal obstruction among this category were obstructed hernias (40% of cases), intussusceptions (20%), peritonitis following perforated appendix (20%) and faecal impaction (20%). Cases of faecal impaction needed disimpaction and colon evacuation as described before<sup>15</sup>.

In school goers children; obstructed hernias (66.6%), lymphoma (16.7%) and adhesions of previous operations (16.7%) were the main causes of intestinal obstruction. 14 patients were operated for obstructed and/or strangulated hernias; two at infancy, four pre-school children and eight school goers. This pattern was similar to the findings of other workers<sup>16</sup>, although we found higher prevalence of obstructed hernias in school goers. The postoperative mortality was 21.4% of the hernias but 75% of the bowel ischaemia group. Bowel ischaemia was well identified as a risk factor for high postoperative mortality<sup>1, 11-14</sup>. Unlike reports from other developing countries, Meckel's diverticulum<sup>16, and 17</sup> or round worm infestations<sup>18</sup> were not identified among causes of childhood intestinal obstruction in our patients. The reason for such differences was not clear.

The overall mortality rate was 13.9%, similar to the report of Uba et al (11.1%)<sup>4</sup>. However; if colostomy operations were excluded the postoperative mortality rate was found to reach 24.4%. As the society is developing, more health awareness occurs among the people and this necessitates the establishment of a specialized paediatric surgery unit with critical care backup and continuous training facilities to face the situation.

In conclusion; at El Obeid Hospital in Western Sudan the main causes of intestinal obstruction in neonates were congenital anomalies like ano-rectal, Hirschsprung's disease and gut atresia. In infants hypertrophic pyloric stenosis and intussusceptions were commonly seen, while obstructed hernias were commoner in elder children. Late presentations, the associated morbidity, poor hospital facilities and absence of a specialized paediatric surgery unit resulted in high mortality rate.

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Table 1: Causes of intestinal Obstruction: n=72

Clinical Diagnosis	No	%
Hirschsprung's Disease	17	23.6
Obstructed hernia	14	19.4
Intussusceptions	12	16.7
Ano-rectal anomalies	10	13.9
Pyloric stenosis	06	08.3
Gut atresia	05	06.9
Peritonitis	02	02.8
Lymphoma	02	02.8
Adhesive	02	02.8
Faecal impaction	02	02.8
Total	72	100.0

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Table 2: Operative Management Outcomes. n=68

Clinical Diagnosis	No	Operation	Outcomes
Hirschsprung's Disease	17	Colostomy	Referred
Obstructed hernia	14	Hernia reduction + Herniotomy + 3 R&A*	3 died
Intussusceptions	12	Laporatomy (Manual Reduction / R & A)*	3 died
Ano-rectal anomalies	10	Colostomy	Referred
Pyloric stenosis	06	Ramstedt's operation	Cured
Gut atresia	05	Bypass	4 died
Peritonitis ( perforated appendix)	02	Laporatomy+ Appendicectomy	Cured
Lymphoma	02	Laporatomy + Biopsy	Referred
Total	68		

\* R&A = Bowel Resection and Anastomosis