Intestinal Obstruction in Children – Jordan University Hospital (JUH) Experience

Hashem Al- Momani, MD, FRCS, Moh'd M. Saleem, MD, K. Ghandoor, MD and M. Abu Khalaf, MD*

General Surgery Department, Jordan University Hospital

Amman- Jordan

Abstract

Objectives: The aim of this study was to determine the presentation, etiology, management, and outcome of intestinal obstruction in children at JUH over a 30-year span.

Methods: The medical records of all the children who presented with intestinal obstruction from January 1973 through July 2003 at Jordan University Hospital were reviewed retrospectively. The data obtained included: age, sex, clinical presentation, diagnostic investigations, mode of treatment, and results.

Results: Three hundred and six children (223 male, 83 female) presented with intestinal obstruction. Their mean age was 2.8 years (range 1 day to 15 years). The clinical features included vomiting (73.1%), abdominal pain (58.7%), abdominal distension (45.3 %), constipation (37 %), rectal bleeding (29.7 %) and abdominal mass (25.6 %). The causes of intestinal obstruction were: intussusception (109 patients), postoperative adhesions (58 patients), inguinal hernias (34 patients), anorectal malformation (31 patients), Hirschsprung's disease (21 patients), malrotation (18 patients), intestinal atresias and stenosis (7 patients), congenital bands (7 patients), Meckels diverticulum(5 patients), tumors (4 patients), other causes (12 patients). Two hundred and forty four patients (79.7%) ultimately required surgical intervention. The mortality rate was 3.9 % and the post-operative complication rate was 13.4 %, the recurrence rate was 7.8%.

Conclusions: This study shows intussusception as the leading cause of intestinal obstruction followed by congenital anomalies and adhesions, whereas hernias are seen less frequently. The mortality rate is 3.9 %, the recurrence rate is 7.8% and the post-operative complication rate is 13.4%.

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Keywords

Intestinal Obstruction; Children; Preschool; Infant, Neonate; Postoperative Complications; mortality.

Introduction

The pattern of intestinal obstruction is variable from country to country and from time to time as seen in different retrospective and prospective studies. [3, 5, 6, 9, 10] This variation is reported among the general population of patients including adults and children. As reports on intestinal obstruction in children are scarce in the literature, this study was conducted to determine the pattern of intestinal obstruction in children at Jordan University Hospital which was the only referral university hospital in Jordan till the year 2002. More than half (52%) of the population of Jordan are under 15 years of age. In this study, we reviewed the causes and the outcome of intestinal obstruction in the pediatric age group.

Methods

In this retrospective study, three hundred and six children with intestinal obstruction were managed at Jordan University Hospital from January 1973 through July 2003. The medical records of these children were reviewed with regards to age, sex, clinical presentation, investigations, mode of treatment, and results. The patients were subdivided into four groups according to age: neonates (the first month of life); infants (the first year of life); preschool age (children under 6 years); school age (children 6-15 years). The etiology, the clinical presentation, treatment and complications were analyzed.

Correspondence should be addressed to:

Hashem Al Momani, MD, FRCS
Department of general surgery- Jordan University Hospital, Amman – Jordan
E-mail: hashemmomani@yahoo.com.

Results

Three hundred and six children, 223 males and 83 females were treated for intestinal obstruction. The mean age was 2.8 years (range 1 day to 15 years). The distribution of the patients in relation to age groups is shown in table (1).

Table (1): Distribution of the patients according to age groups.

	Neonates	Infants	Preschool	School Age
Number	48(15.7%)	139(45.4%)	66(21.6%)	52 (17%)
Male	35	102	51	34
Female	13	37	15	18

The Clinical Presentation: Sixty one percent of the patients were under the age of one year. Vomiting was the commonest symptom (73.1%) which became more prominent as the patient gets older; this was followed by pain which was seen in 58.7 % of patients. Rectal bleeding was seen mainly in infants where intussusception predominates, table (2) summarizes the clinical presentation.

Table 2: Clinical Presentation.

	Overall	Neonates	Infants	Preschool	School Age
Vomiting	73.1%	42%	63%	61%	86%
Pain	58.7%	2%	67%	81%	84%
Distension	45.3%	56%	39%	46%	42%
Constipation	37%	49%	23%	48%	42%
Rectal Bleeding	29.7%	2%	57%	8%	5%

The causes of intestinal obstruction are summarized in table (3), which shows intussusception as the leading cause of intestinal obstruction followed by the congenital causes which are further summarized in table (4).

Table (3): Causes of Intestinal Obstruction.

Pathology	No of Patients	Age average
Intussusception	109 (35.6%)	1.4 year
Congenital	90 (29.4%)	1.8 year
Adhesions	58(19%)	6.5 year
Inguinal Hernia	34 (11.1%)	1.3 year
Others	15 (4.9%)	5.6

Table (4): Congenital anomalies presenting with intestinal obstruction.

Pathology	No of Patients	Age average
ARM(Ano-rectal Malformation)	31	4 Months
Hirschschsprung's	21	1.2 years
Malrotation	18	1.9 years
Internal Hernias	3	6.6 years
Duodenal Atresia	4	2 days
Colon Atresia	1	23 days
Small Intestinal Atresia	2	2 days
Congenital Bands	7	3.2 years
MEC. ILEUS	1	1 day
Duplication	1	10 years
Gastric Volvulus	1	5 months

Other causes of intestinal obstruction are shown in table (5).

Table (5): Other Causes.

Pathology	No of Patients	M/F	Age average
Meckels	5	6:0	2.6 years
Tumors	4	3:1	4.5 years
Appendicitis	3	3:0	5.7 years
Fecal Impaction	2	1:1	7 years
N.E.C (necrotizing enterocolitis)	1	0:1	2 months

Surgical intervention was carried out in 244 patients (79.7% of patients), whereas 62 patients (20.3%) were treated non operatively.

Mortality: A total of 12 patients died (3.9 %) with equal sex distribution, all were under the age of two years, with a clinical history of intestinal obstruction of more than two days. one patient died shortly after arrival to the emergency department with no definitive diagnosis of the underlying cause of intestinal obstruction, half of the deaths (6 out of 12) occurred in the intussusception group and one fourth (3/12) occur in the Malrotation group. One child died after adhesolysis and one after resection of Neuroblastoma that caused the intestinal obstruction. The causes of death were mainly due to late presentation, sepsis, anastomotic leak and aspiration.

Recurrence of Obstrcution: Twenty four patients (7.8%) had recurrence of the intestinal obstruction. The causes of recurrent intestinal obstruction was mainly due to post-operative adhesions (17 out of the 24 patients). Intussusception recurred in 3 out of the 109 patients who had intussusception (2.8%) stricture following A. R. M. repair occurred in 3 patients. One patient developed prolapse of the colostomy and caused recurrent obstruction.

Post– operative Complications:

Post-operative complications occurred in 41 patients (13.4%), wound infection was the most common complication. Table (6) summarizes the pattern of complications seen in this study.

Table (6): Post-operative complications.

Pathology	*Number*
Wound infection	15
Burst abdomen	7
Chest infection	5
G.I.T. fistulae	3
Anastomotic leak	2
Convulsion	2
Fever	2
Prolapsed colostomy	2
Jaundice	1
Superficial thrombophlebitis	1
Salmonella sepsis	1

Discussion

The exact incidence of intestinal obstruction in children is not known worldwide, though an incidence of 41.7% of all abdominal emergencies and 1.03% of all admissions in pediatric patients was reported. [1] Thus, it seems to be a significant cause of hospital admissions as well as abdominal surgical emergency. In the literature, reports on the pattern of intestinal obstruction in the general population are well recognized. [3, 5, 6, 9, 10] The causes of intestinal obstruction in the general population (adults and children) vary considerably from country to country, as well as from time to time. Obstructed hernias are reported as the commonest cause of bowel obstruction in the developing countries such as Jordan, [10] Libya, [5] and Khartoum –Sudan; [9] whereas post operative adhesions are the main cause of bowel obstruction in developed countries such as the United Kingdom. [6] In children, reports on intestinal obstruction are scarce. [1, 2, 4, 7] and the causes follow different patterns with intussusception as the leading cause in most reported series [1, 4, 7] followed by obstructed hernias . [4, 7]

In this study, intussusception constituted 35.6% of the cases, being the most common cause followed by congenital anomalies (29.4%), adhesions (19%), and obstructed inguinal hernia (11.1%). Due to the increased public awareness and the improvement in medical care, inguinal hernias are seen less as a cause of intestinal obstruction. It seems that they are operated upon early after diagnosis.

The main diagnostic modalities were based on clinical grounds supplemented by plain abdominal x-ray. Other diagnostic studies as Contrastive studies were done where appropriate as in cases of intussusception and malrotation.

The operative mortality in this study is 3.9 %, relatively low as compared with other studies; [5, 6, 9, 10] because JUH is a referral hospital and only the relatively stable patients can be transferred, whereas the very sick couldn't be safely transferred. Sepsis and anastomotic leak were the main causes of death. The complication rate is 13.4% with wound infection being the most common; this is comparable to one reported series. [1]

Meconium ilius was seen in only one patient, which is relatively rare in our study as there were 109 cases of cystic fibrosis during the same period of the study giving an incidence of 0.91% which is relatively low as compared to 7.2% in patients with cystic fibrosis in Jordan. [8] This retrospective study, that spans over a long period of time still maintains the clinical spectrum of intestinal obstruction in children, clearly demonstrates the seriousness of this disease entity that still carries a significant morbidity and mortality rate. Close cooperation among multidisciplinary groups should be the rule in treating the pediatric patient. Early referral, recognition and treatment of these conditions are emphasized. Prospective, individual disease entity study is recommended.

References

1. Adejuyigbe O, Fashakin EO. Acute intestinal obstruction in Nigerian children. Trop Gastroenterol. 1989; 10:33-40.

2. Archibong AE, Ndoma-Egba R, Asindi AA: Intestinal obstruction in southeastern Nigerian children. East Afr Med J. 1994; 71:286-9.

3. Fuzun M., Kaymak E. Harmancioglu O. and Astarcioglu K. Principal causes of mechanical bowel obstruction in surgically treated adults in Western Turkey Br.J. Surg. 1991; 78: 202-203.

4. Ikeda H, Matsuyama S, Suzuki N, Takahashi A, Kuroiwa M, Hatakeyama S. Small bowel obstruction in children: Review of 10 years experience: Acta Paediatr Jpn 1993; 35: 504-7.

5. Kuruvilla, - M.K. Chhallani C.R., Rajagopal A. K., Salem Rakas.F. Major causes of intestinal obstruction in Libya: Br.J. Surg. 1987; 74: 314-315.

6. McEntee, G. Pender D., Mulvin D., McCullough Majella, Naeeder S., Farah S., Badurdeen M. S., Ferraro V., Cham C, Gillham N. and Matthews P. Current spectrum of intestinal obstruction Br.J. Surg. 1987; 74: 976-980.

7. Olumide F, Adedeji A, Adesika AO Intestinal obstruction in Nigerian children. J Pediatr Surg 1976; 11: 195-204.

8. Rawashdeh Mohd & Haddad Manal Cystic fibrosis in Arabs: a prototype from Jordan Annals of Tropical Pediatrics. 2000; 20: 283-285.

9. Sourkati EO; Fahal OH; Suliman SH; el Razig SA; Arabi YE Intestinal obstruction in Khartoum East Afr Med J. 1996; 73(5): 316-9.

10. Steitiyeh M.R., Garaibeh K. I., Ammari F. F. Current Pattern of Intestinal Obstruction in Northern Jordan. Saudi medical Journal. 1993; 14(1):50-52.

الإنسدادات المعوية عند الأطفال في مستشفى الجامعة الأردنية

د. هاشم المومني، د. محمد سليم، د. ك. غندور، أ. د. محمود ابو خلف – مستشفى الجامعة الأردنية– قسم الجراحة العامة

ملخص:

الهدف:

دراسة الإنسدادات المعوية عند الأطفال من حيث الأعراض السريرية والمسببات وطرق العلاج والنتائج في مستشفى الجامعة الأردنية على مدى 30 سنة.

الطرق:

مراجعة السجلات الطبية لكُل الأطفال الذين تم ادخالهم الى مستشفى الجامعة الأردنية من كانون الثّاني 1973 إلى تموز 2003. اشتملت البيانات على العمر، الجنس، الأعراض السريرية، التشخيص، نمط المعالجة، والنتائج.

النتائج:

تمت دراسة ثلاثمائة وستة أطفال (223 ذكر، 83 أنثى). كان متوسط أعمارهم 2.8 سنة (مدى، يوم 1 إلى 15 سنة). تضمنت الأعراض السريرية: تقيؤ(73.1 %)، ألم بطني (58.7 %)، إنتفاخ بطني (45.3 %)، إمساك (37 %)، نزف شرجي (29.7 %) وكتلة بطنية (25.6 %)، كانت أسباب الإنسدادات المعوية على النحو التالي:
اللفائف (109 مريضا)، إلتصاقات ما بعد الجراحة (58 مريضا)، فتق اربي (34 مريضا)، تشوّهات شرجية (31 مريضا)، مرض نقص جذور الأعصاب (21 مريضا) وسوء استدارة الأمعاء (18 مريضا)، رتق وتضيّق معوي (7 مرضى)، أربطة خلقية (7 مرضى)، جيب ميكل مرضى، أورام (4 مرضى)، أسباب أخرى (12 مريضا). مئتان و أربعة وأربعون مريض (79.7 %) تطلبوا تدخّلا جراحيا. كان معدل الوفيات (3.9 %) وكانت نسبة مضاعفات ما بعد الجراحة (13.4 %)، ونسبة تكرار الإنسدادات (7.8 %).