Management of Intussusception in Children

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Abstract:

Background: Intussusception is an invagination of one segment of intestine (the intussusceptum) into another segment of intestine (the intussuscipiens) , commonly in a proximal to distal direction. The commonest area to be affected is the ileum intussuscepting into the cecum and ascending colon**.** Intussusception is a frequent cause of bowel obstruction in infants & children.

Aims of the study: To describe the clinical presentation & management of intussusception cases admitted to the Central Teaching Hospital of Pediatric in Baghdad for the period from January 2008 to January 2010.

Patients & methods: This study was conducted by patient's relative interview in Central Teaching Hospital of Pediatric in Baghdad for the period from January 2008 to January 2010 .All patients were under (12) years old who were admitted and underwent surgical interference & followed up under the study group, This study for analyzing (80) infants & children.

Results: Intussusception was rank as a second most common surgical emergency in pediatric age group (20%) coming after acute appendicitis (35%) among total admission of 400 cases as emergency to our pediatric surgical unit during a period of our study. The peak incidence was between 6 months to 2 years of age & occurred in 55 patients (68.75%), also there was a seasonal variation with increased incidence in spring & winter which correlated with increased episodes of respiratory tract infection & viral gastroenteritis. Thirty-five patients (43.75%) have had duration of symptoms less than 24 hours while forty-one patients (51.25%) had duration of symptoms from one day to one week. Male affected more than the female (50 male: 30 female patients) in ratio of male to female (1.7 : 1).

Conclusions: Intussusception is the second common surgical emergency in pediatric age group especially between 6 month – 2 year (which is the typical age group for intussusception).idiopathic type was the commonest type while Meckel's diverticulum considered as the commonest pathological lead point for secondary intussusception which required surgical resection.

Recommendations: Early diagnosis and surgical interference are vital in management of intussusception to preserve the bowel & decrease morbidity & mortality.

Keywords: Intussusception, Currant jelly stool, Meckel's diverticulum.

Introduction

Intussusception most commonly occur in an idiopathic form (75- 95%) with a peak incidence at 3-9 months. It is believed that hyperplasia of Peyer's patches in the terminal ileum may be the initiating event.

This may occur secondary to weaning. Children with secondary intussuseption usually occur secondary to the presence of pathological lead point such as Meckel's diverticulum, polyp, duplication, Henoch-Scholein purpura or appendix & Children usually older than idiopathic cases.[1,2] Intussusception produces cramping abdominal pain which begins acutely with signs of severe discomfort in an infant who has previously been comfortable. The child may stiffen and pull the legs up to the abdomen.

Hyperextension, writhing & breath holding may be followed by vomiting. The attack often ceases as suddenly as it started. Between attacks the child may appear comfortable or may fall asleep. After some time, the child becomes lethargic between episodes of pain.

Also patient may have bile stained vomiting. Later in the course, the stools may be tinged with blood. Still later in the progression of the bowel ischemia, dark red mucoid clots or "Currant-jelly" stools passed.[3,4,5]

The child's vital signs are usually normal early in the course of the disease. During episodes of pain, hyperperistaltic rashes may be audible. Between episodes of cramping, the right lower abdominal quadrant may appear flat or empty (Dance's sign).During the relaxed interval between pains, a mass may be delineated almost any where in the abdomen. Palpation of intussuscepted mass on abdominal examination is possible.

On rectal examination, blood-stained mucus (currant-jelly stool) may be encountered.

If the obstructive process has been prolonged, dehydration and bactermia ensue, leading to tachycardia and fever.[5,6], Ultrasound is the technique of choice for establishing the presence of an intussusception and should be performed in all cases of suspected intussusception and especially those in which the clinical findings are equivocal.[6,7]

Once the diagnosis of intussusception has been confirmed on ultrasound, radiological reduction will be attempted provided the patient is adequately resuscitated & there are no contraindications, such as free intraperitoneal air or signs of peritonism. Radiological reduction is performed using air under fluoroscopic guidance. It is also possible to use water or air under ultrasound guidance.

Fluoroscopy allows visualization of the whole abdomen, and therefore early detection of perforation.[2,8], Laparatomy is required in children with signs of or peritonitis and those who have incomplete hydrostatic pressure or pneumatic reduction. [4,5],

The indications for operative reduction in intussusception include the following: Initial evidence

of perforation or peritonism, Perforation during radiological reduction & failure of radiological reduction. [2, 3, 5, 9].

Aim of the study

To describe the clinical presentation & management of intussusception in children under 12 years old & to evaluate the methods of diagnosis.

Patients and methods

A total number of 80 patients with intussusception were evaluated in infants and children below (12) years old of age in the pediatric surgical department of Central Teaching Hospital of Pediatric in Baghdad in the period from January 2008 to January 2010 on patients admitted to the hospital.

A standardized data sheets were prepared for collection of data including Name, age, sex, body weight, clinical presentation(vomiting, abdominal pain, Currant-jelly stool, abdominal distension, fever, constipation, diarrhea, abdominal mass, & prolapse of mass through the rectum), methods of diagnosis, duration of symptoms before surgery, seasonal distribution of intussusception, time of surgery & duration of operation, intraoperative findings, number of lead points, number of patient underwent surgical duration, post operative complications & duration of hospital stay. The total numbers of emergency cases during the period of the study were (400) cases, (35%) of them were acute appendicitis followed by intussusception (20%).

A full clinical examination and investigations were done including abdominal x-ray in erect & supine position, abdominal ultrasound, and barium enema & in two cases CT scan of the abdomen was needed. Complete blood picture, blood film, renal function test & liver function test were evaluated.

Results

1-Age incidence:

During two years period from January 2008 t0 January 2010 ,eighty cases of intussusception were collected and divided into three age groups as shown in (table 1)

Table (1) age distribution of the studied sample.

Age	Number of cases	percentage
Less than (6) months	13	16.25
6 month- 2 year	55	68.75
2 year – 12 year	12	15
Total	80	100

2-sex distribution of intussusception:

Male account for (50 patients: 62.5%) while female account for (30 patients: 37.5%) in ratio of male to female 1.7:1.

3-seasonal variation

The most cases of intussusception happened in spring (40%) & in winter (35%) which coexists with increased risk of upper respiratory tract infection and gastroenteritis, as shown in table 2.

Table (2) seasonal distribution of intussusception

Season	No. of patients	percentage
spring	32	40
summer	9	11.25
autumn	11	13.75
winter	28	35

4-duration of symptoms:

Thirty-five patients (43.75%) had duration of symptoms less than 24 hours while forty-one patients (51.25%) had duration of symptoms from one day to one week .Only four patients (5%) had duration of symptoms more than a week.

5-presentation:

Abdominal pain was the most common presentation (72 patients 90%) followed by bile-stained vomiting (70 patients 87.5%) & bleeding per rectum (53 patients 66.25%) as shown in table (3)

Table (3) presentation of patient with intussusception:

Signs& symptoms	No. of patients	percentage
Abdominal pain	72	90
Vomiting	70	87.5
Bleeding per rectum	53	66.25
Abdominal mass	48	60
Abdominal distension	4	5
Fever	10	12.5
constipation	20	25
Prolapse of mass through the rectum	3	3.75

6-Methods of diagnosis:

Most of the patients were diagnosed clinically as the patient had screaming attacks (abdominal pain), currant –jelly stool, bile stained vomiting and abdominal mass.

Table (4) demonstrates the methods of diagnosis:

Methods of diagnosis	No. of patients	percentage
History&Clinical examination.	68	85
Ultrasound of abdomen	55	68.75
Ba-enema	36	45
Plain x-ray	20	25
Explorative laparotomy	1	1.25

7-distribution of lead point in intussusception:

Fifteen cases had secondary intussusception (18.25%).Most of the cases with secondary intussusception occurred below six month of age 46 % among all lead points and also above two year of age 40% and both this age are atypical age for intussusception.

Table (5) demonstrates number of lead points according to age:

age	Number of leads points	`percentage of all lead points
Less 6 month	7	46.7
6 month - 2 year	2	13.2
2 year – 12 year	6	40.1
Total	15	100

8- Causes of secondary intussusception:

Meckel's diverticulum was the most common lead point for secondary intussusception and occurred in (6) patient 39.9% of all causes of secondary intussusception followed by lymphoma(5 patients 33.4%")

(Table 6): frequency of lead points in intussusception:

Lead point	No. of patients	percentage
Meckel's diverticulum	6	39.96
lymphoma	5	33.4
Intestinal polyp	1	6.66
Henoch-Scholein purpura	1	6.66
Submucosal lipoma of bowel	1	6.66
Duplication of bowel	1	6.66

Discussion

Intussusception is the most common surgical emergency in pediatric age group, in this study peak incidence was between 6 months to 2 years of age & occurred in 55 patients (68.75%) & this finding was consistent with other published series (10),(11),(12).

Also there were 15 cases of intussusception in this study caused by pathological lead point forming (18.75%) of all cases with high incidence below 6 month of age (46.7%) & above 2 years (13.3%) (atypical age of intussusception) while lower incidence was found in the age between 6 months to 2 years & this results similar to Mohammad[12] & Sigmund .[13].

There were seasonal variations in our study with peak incidence of intussusception in spring (40%) & winter (35%) of all patients & this results differ from Wayne .[14] & Sigmund.[13].

The most common presentation of our patients were abdominal pain (90%), bile stained vomiting (87.5%) & bleeding per rectum "Currant jelly stool" (66.25%) & this results are similar to previous studies as in Akram.[15] & Young Sahkim [16] studies.

The abdominal mass was palpable in 60% of our patients which was higher than other studies like Mohammad .[12], Mommoh"[17] .Prolapse of the mass through the rectum was found only in 3.75% of all the patients which was similar to the previous studies like Robert [10], Mangete [11] & Mohammad . [12].

There is a delay in the diagnosis of intussusception in four patients (5%) in current work due to lack of awareness of attending practitioner & also due to the variability of the signs & symptoms of intussusception which in some cases mimic to bloody diarrhea of gastroenteritis, all these patients underwent during surgical resection of part of bowel which involved in the mass of intussusception. Most of the patients with secondary intussusception caused by Meckel's diverticulum (39.96% among secondary causes of secondary intussusception) & then followed by lymphoma which affect gastrointestinal tract (33.4%), the incidence of lymphoma as secondary cause of intussusception in this study was high in comparison to other previous studies as Mangete [11] & Mohammad [12].

Conclusion

- Intussusception is a common surgical emergency in pediatric age group especially in age between 6 month – 2 year (which is the typical age group for intussusception).
- Most of the cases of intussusception can be diagnosed clinically.
- Secondary intussusception most commonly occurs in atypical age for intussusception (below 6month & above 2 year).
- Meckel's diverticulum was the most common cause of secondary intussusception followed by lymphoma.
- Cases with delayed diagnosis are more liable to have resection of bowel.

Recommendations

- We must raise a high suspicion of intussusception in any child had currant jelly stool with screaming attacks.
- Early diagnosis and surgical interference are vital in management of intussusception to preserve the bowel & decrease morbidity & mortality.

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