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Paediatrics Intussusception-Clinical Presentation and Management in Tertiary Care Centre

Devendra Singh and Praveen Mathur
Department of Pediatrics Surgery, SMS Jaipur, India

ABSTRACT
Intussusception is a medical emergency that occurs in children when a part of the bowel 'telescopes' (folds) into another part of the bowel. This causes pain, vomiting and obstruction, preventing passage. If left untreated, the bowel can perforate, resulting in passage of its contents into the abdominal cavity, causing further complications. In rare cases, these events can cause death. Prompt diagnosis and management reduces associated risks and the need for surgery. To study the clinical and epidemiological characteristics of acute intussusception in paediatrics population. This prospective study included pediatric patients with acute intussusception admitted to the Department of Pediatric Surgery, SMS medical college and hospital Jaipur, from January 2023 to June 2023 for six months periods. total 100 patients included in this study, males are most commonly affected than female, M/F = 3/1 in this study. Most of the patient affected in age group of 12-24 months of age group. Most of the patient's hospital visit time after symptoms are 12-24 hrs. The disease onset was most frequent in April (25%) but it occurred throughout the time without an obvious central tendency. Among the 100 children, 86 (86%) had abdominal pain (young infants presented as paroxysmal crying), 50% have vomiting and 10 patients (10%) had a typical triad of intussusception (abdominal pain +bloody stools +abdominal mass). Most of the patient have no any etiology for disease found, 10% have history of diarrhoea, 15% have vaccination history, 10% have infection history found. The average intussusception depth was 4.0±1.4 cm, with the shortest being 1.1 cm, the longest being 9.0 cm and the median being 3.9 cm. 15% were treated with enema reduction and those not relieved by the initial enema were given repeat air enema. Those who still could not be reduced by delayed enemas were considered as cases of reduction failure. The cases of reduction success were 15%. There were 5 cases of reduction failure, which were all successfully reduced by conversion to surgical reduction. Among them, one case of jejuno-ileal, 10% ileo-ileal and 9% colo-colic types. Most cases are ileo-colic types. No significant abnormalities were found during the intraoperative probing from the ileocecal to the proximal intestinal canal 1.5 cm in length. Out of 100 patients, 2 patients come with recurrence of disease within one years. out of surgically repaired patients, two patients have wound infection and one patient goes into paralytic ileus, which managed conservatively. Paediatric acute intussusception is common. There was no obvious etiology. The clinical manifestations are mostly atypical. Abdominal pain is the most common complaint. Air enema reduction is

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Key Words
Air enema, clinical manifestations, epidemiology, intussusception

Corresponding Author
Praveen Mathur,
Department of Pediatrics Surgery, SMS Jaipur, India

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INTRODUCTION

Intussusception is an invagination of a proximal segment of the intestine into a distal segment of the intestine that may result in bowel obstruction, venous congestion and bowel wall edema[1,2]. It is a common cause of acute abdominal emergencies in infants and children. It is most common in infants and children aged 3 months to 3 years, with a peak incidence between 5 and 9 months of age[1-3]. More than 90% of the cases of intussusception in children are idiopathic but about 5% have a pathological lead point, such as from lymphoid hyperplasia, Meckel diverticulum, duplication cyst, intestinal polyps, mesenteric nodes, lymphoma, surgery, or trauma, that initiates the problem[1,2,4]. Most cases are ileo-colic but small bowel and colonic intussusceptions can also occur[1,2].

Main clinical features are sudden, intermittent abdominal pain, abdominal mass (palpable), usually in right upper quadrants, bilious vomiting, red currant jelly stool (blood or mucous mixed) and altered mental status like irritability, crying, lethargy, apathy and profound listlessness[1,2,5]. The presence of normal bowel sounds does not exclude intussusception[5]. Less common clinical features include painless intussusception, hypovolemic shock, visible peristalsis, diarrhoea or constipation, tenesmus, fever, obstruction, sepsis, syncope and transient hypertension[1,5,6].

Intussusception always treated without any delay because higher risk of ischemia and perforation of these patients[1,2]. When patients come, firstly Intravenous hydration given and urgent paediatrics surgery consultation done before any attempt[1,2]. Most of the cases relived after giving fluid and steroid. Image guided pneumatic enema is the preferred first treatment in most cases of intussusception. Hydrostatic enema can also be used for both diagnosis and treatment. Delayed repeat enema can be indicated in cases where the patient remains clinically stable and the initial enema partially reduces the intussusception, or the intussusception is recurrent.

In some cases, surgical intervention is indicated, including peritonitis, free air, shock, sepsis, perforation, repeat enema failure and persistent symptomatic small-bowel obstruction[1,2]. Small bowel intussusceptions are not common in children and are often associated with a spontaneous reduction[6]. The risk of mortality following successful treatment of intussusception is low[2].

Recurrent intussusception occurs in up to 10% of cases following enema reduction and 1% of cases following surgical reduction. A recurrence is seen within 48 hrs in 2.5% of the patients after initial successful air enema reduction[7].

Aims and objective:

- This prospective observational cohort study included paediatric patients with acute intussusception admitted to SMS medical college and hospital Jaipur Rajasthan from January 2023 to June 2023 in 100 children.
- 'To study the clinical and epidemiological characteristics of acute intussusception in paediatrics population

MATERIALS AND METHODS

This prospective observational cohort study included paediatric patients with acute intussusception admitted to SMS medical college and hospital Jaipur Rajasthan from January 2023 to June 2023 in 100 children.

The inclusion criteria were:

- Age 0-10 years
- Diagnosed with intussusception.

The exclusion criteria were:

- Combined with other surgical acute abdominal conditions
- History of previous abdominal surgery
- Missing data

All children were diagnosed by abdominal ultrasound, showing a "target ring sign" or a "concentric circle sign" in the transverse section and a "sleeve sign" in the longitudinal section.

Data collection: The clinical data of all children were prospectively collected from historical medical recorders, including sex, age, month of onset, disease duration, etiology, clinical symptoms, intussusception depth, treatments, outcomes and relapses.

Statistical analysis: SPSS 19.0 (IBM, Armonk, NY, USA) was used for data analysis. Continuous data were expressed as means±standard deviation and analysed using Student's t-test. Categorical data were expressed as n (%) and analysed using the chi-square test. Two-sided p-values 5 years old.

OBSERVATIONS AND RESULTS

From this study we observed that:

- Males are most commonly affected than female, M/F = 3/1 in this study (Table 1)
- Most of the patient affected in age group of 12-24 months of age group
- Most of the patient's hospital visit time after symptoms are 12-24 hrs

Fig. 1: Ileo-colic intussusception

Fig. 2: Intussusception causing bowel obstruction

Table 1: Epidemiology

Epidemiological factors	No.	Percentages
Sex		
Male	75	75
Female	25	25
Age		
1-6 months	4	4
6-12 months	15	15
12-24 months	30	30
24-36 months	20	20
36-48 months	15	15
More than 48 months	16	16
Initial hospital visit		
Within 12 hrs	30	30
12-24 hrs	50	50
24-48 hrs	15	15
More than 48 hrs	5	5
Monthly		
January	10	10
February	13	13
March	20	20
April	25	25
May	20	20
June	12	12
Religion		
Hindu	70	70
Muslims	30	30

Table 2: Etiological and clinical presentation

Parameters	No.	Percentages
Etiology		
Diarrhoea	10	10
Post vaccination	15	15
Post infection	10	10
History of cold and cough	5	5
Not known	65	65
Clinical presentation		
Abdominal pain	86	86
Vomiting	50	50
URTI	10	10
Triad	10	10

- The disease onset was most frequent in April (25%) but it occurred throughout the time without an obvious central tendency (Table 2)
- Among the 100 children, 86 (86%) had abdominal pain (young infants presented as paroxysmal crying), 50% have vomiting and 10 patients (10%) had a typical triad of intussusception (abdominal pain+bloody stools+abdominal mass)

Table 3: Types and treatment

Parameters	No.	Percentages
Types		
Jejuno-ileal	1	1
Ileo-ileal	10	10
Ileo-colic	80	80
Colo-colic	9	9
Treatment		
Conservative	70	70
Enema	15	15
Manual reduction	10	10
Surgical repair	5	5
Reoperation	1	1
Complication		
Wound infection	2	2
Paralytic ileus	1	1

- Most of the patient have no any etiology for disease found, 10% have history of diarrhoea, 15% have vaccination history, 10% have infection history found (Fig. 1 and 2)
- The average intussusception depth was 4.0±1.2 cm, with the shortest being 1.0 cm, the longest being 9.0 cm and the median being 3.9 cm
- Among the 100 patients, 15% were treated with enema reduction and those not relieved by the initial enema were given repeat air enema. Those who still could not be reduced by delayed air enemas were considered as cases of reduction failure. The cases of reduction success were 15%. There were 5 cases of reduction failure, which were all successfully reduced by conversion to surgical reduction (Table 3)
- Among them, one case of jejuno-ileal, 10% ileo-ileal and 9% colo-colic types. Most cases are ileo-colic types. No significant abnormalities were found during the intraoperative probing from the ileocecal to the proximal intestinal canal 1.5 cm in length
- Out of 100 patients, 2 patients come with recurrence of disease within one years
- Out of surgically repaired patients, two patients have wound infection and one patient goes into paralytic ileus, which managed conservatively

DISCUSSIONS

This study suggested that acute intussusception is common in infants and young children but is also not uncommon in older children. There is no obvious predisposing factor before the onset of the disease and the clinical manifestations are mostly atypical, with paroxysmal abdominal pain/crying being the most common. Acute intussusception is generally considered to be more common in kids under 2 years old, especially in infants aged 4-9 months[1-3].

Males are most commonly affected than female, M/F = 3/1 in this study. Most of the patient affected in age group of 12-24 months of age group. Most of the patient's hospital visit time after symptoms are 12-24 hrs. The disease onset was most frequent in April (25%) but it occurred throughout the time without an obvious central tendency.

The etiology and pathogenesis of intussusception are still not fully understood.

In the present study, Among the 100 children, 86 (86%) had abdominal pain (young infants presented as paroxysmal crying), 50% have vomiting and 10 patients (10%) had a typical triad of intussusception (abdominal pain +bloody stools +abdominal mass). Most of the patient have no any etiology for disease found, 10% have history of diarrhoea, 15% have vaccination history, 10% have infection history found. Ntoulia *et al*.[8] found that around 75% of paediatrics acute intussusception cases have no clear predisposing factor.

In pediatrics patients, when strong suspicion of intussusception, abdominal ultrasound and abdominal x-ray should be done immediately to rule out this because ultrasound is a preferred methods for detecting intussusception. Ultrasound can provide insight into the site of intussusception and allow observation of blood flow changes, intestinal dilatation and ascites[9]. It can also be used to observe the effect of reduction in real time. The sensitivity and specificity of ultrasonography by experienced operators approach 100%[10,11].

In this study, an enema is the first choice for clinically stable children who had no evidence of intestinal perforation and shock. During the treatment, for children whose intussusception head moves but does not completely disappear with the initial enema and whose general conditions are stable, it may be considered to try again after some time (ranging from 30 min to several hours), which is called delayed repeated enema[12].

The average intussusception depth was 4.0±1.2 cm, with the shortest being 1.0 cm, the longest being 9.0 cm and the median being 3.9 cm.

Among the 100 patients, 15% were treated with air enema reduction and those not relieved by the initial enema were given repeat air enema. Those who still could not be reduced by delayed air enemas were considered as cases of reduction failure. The cases of reduction success were 15%. There were 5 cases of reduction failure, which were all successfully reduced by conversion to surgical reduction.

Among them, one case of jejuno-ileal, 10% ileo-ileal and 9% colo-colic types. Most cases are ileo-colic types. No significant abnormalities were found during the intraoperative probing from the ileocecal to the proximal intestinal canal 1.5 cm in length.

Out of 100 patients, 2 patients come with recurrence of disease within one years.

Out of surgically repaired patients, two patients have wound infection and one patient goes into paralytic ileus, which managed conservatively.

Children with advanced intussusception, like poor general conditions or failed air enemas, surgery should be performed promptly. Laparoscopic intussusception reduction is chosen as the surgical method, which has the advantages of less trauma and faster recovery compared with open surgery.

This study showed that about 1% of the children suffered relapses and the age distribution of the children with relapse was approximately the same as the overall age distribution of the children with the disease.

Some studies reported that about 10% of children would relapse after successful non-surgical reduction of intussusception and the risk of relapse is higher in children >1 year old[13].

CONCLUSION

In conclusion, acute intussusception is a common acute abdominal disease in children, occurring in infants and young children but also in older children. There was no obvious aetiology. The clinical manifestations are atypical in most cases. Abdominal pain is the most common complaint from children presenting with intussusception. Air enema reduction is an effective treatment.

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