

## A prospective study of clinical profile of pediatric patients with intussusception in a tertiary care Rural medical college & hospital of U.P.

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### Abstract

**Introduction:** Intussusception a pathological telescoping of a portion of bowel into an adjacent part. It is usually occur due to lymphoid hyperplasia in infancy and early childhood, where as in older children and adults, it is usually secondary to some identifiable pathological lead point. Intussusception has been reported in several studies to have a seasonal variation, with peaks coinciding with the peak incidence of viral respiratory tract infections and diarrheal disease. The currently approved rotavirus vaccines are associated with a slightly increased risk of intussusception as shown by some studies. **Materials and Methods:** This was a prospective case series study conducted in the Department of General Surgery, Government Medical College & Superfacility Hospital, Azamgarh. All children aged up to 12 years admitted with clinical diagnosis of intussusception and confirmed by USG were enrolled in the study. The study period was from January 2017 to December 2020. Patient details including demographic data, symptoms, physical signs, and radiological findings were prospectively recorded. Abdominal X-ray was taken if there were features of perforation or peritonitis. **Results:** 150 infants and children were evaluated and treated for intussusception during the study period. All of them had clinical signs and sonological features of intussusception. There were 104 males (69.33%) and 46 females (30.66%) The median age of patients was 13.87 months (range 3 months-12 years). 122 patients (81.3%) were below 1 year of age. Majority of patients presented between 4-6 months of age. There was no significant seasonal variation in the incidence of intussusception cases in the present study. **Conclusion:** Awareness in population (Child bearing age group) by any medium, about the clinical presentation of intussusception & their complications helps in early diagnosis and prompt treatment of this common pediatric emergency and helps to prevent mortality in pediatric age group.

**Key Words:** Intussusception, lymphoid hyperplasia, USG, Abdominal X-ray, rotavirus vaccines.

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### Introduction

Intussusception a pathological telescoping of a portion of bowel into an adjacent part of bowel. It is usually occur due to lymphoid hyperplasia in infancy and early childhood due to viral infection, where as in older children and adults, it is usually secondary to some identifiable pathological lead point[1].

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Intussusception has been reported in several studies to have a seasonal variation, with peaks coinciding with the peak incidence of viral respiratory tract infections and diarrheal disease. The currently approved rotavirus vaccines are associated with a slightly increased risk of intussusception as shown by some studies[2].

When the clinical history and physical findings suggest intussusception, an ultrasound abdomen with colour Doppler is typically performed which is very reliable, noninvasive and gives assessment of bowel viability and reducibility. Reduction of an acute intussusception is an emergency procedure and should be performed immediately after diagnosis, in preparation for possible surgery[3]. Spontaneous reduction of intussusception occurs in about 4-10% of patients. Recurrent intussusception is noted in about 10%, and after

surgical reduction it is 2-5%. The classic triads have been shown to be present in less than a quarter of children, making intussusception a difficult clinical diagnosis. Due to unknown factors, incidence of intussusception has been observed to an average of about 2-5 cases per month in our center[4].

Different treatment options present for intussusception are radiological reduction, manual reduction, resection of gangrenous segment, closure of perforation or excision of pathological lead point by either laparotomy or laparoscopy. There are very few Indian studies describing the demographics profile of intussusceptions[5,6] Thus this study on intussusception is being done in our hospital, so that it may help primary physicians and pediatricians for early detection, initiating therapeutic measures at earliest and improving outcomes by preventing complications & they also increase awareness in patients.

## Materials and methods

### Study Design

A prospective study

### Study Location

Department of General Surgery, Government Medical College & Superfacility Hospital, Azamgarh.

### Study Duration

January 2017 to December 2020.

This was a prospective case series study conducted in the Department of General Surgery, Government Medical College & Superfacility Hospital, Azamgarh. All children aged up to 12 years admitted with clinical diagnosis of intussusception and confirmed by USG were enrolled in the study. The study period was from January 2017 to December 2020. Patient details including demographic data, symptoms, physical signs, radiological findings were prospectively recorded. Abdominal X-ray was taken if there were clinical features suggestive of perforation peritonitis.

### Statistical Analysis

Statistical methods used in the our study were: 1) Frequency distribution of the clinical variables were expressed in mean  $\pm$  standard deviation and median with range. 2) Percentage analysis was done.

### Results

150 infants and children were admitted, evaluated and treated for intussusception during the study period. All infants & children had clinical signs and sonological features of intussusception. There were 104 males (69.33%) and 46 females (30.66%) The median age of patients was 13.87 months (range 3 months-12 years). 122 patients (81.3%) were below 1 year of age. Majority of patients presented between 4-6 months of age. There was no significant seasonal variation in the incidence of intussusception in the present study.

**Table 1: Age Distribution**

S.No	Age Group	No of cases	Percentage
1	<3 months	7	4.66
2	4-6 months	65	43.33
3	6 months-1 years	50	33.33
4	1-2 years	20	13.33
5	2-5 years	6	4.00
6	>5 years	2	1.33

When the clinical history was reviewed, 8 children (5.33%) had past history of intussusception. These patients presented within 24 hours to the hospital during the recurrence since their parents were already aware of the symptoms. 26 patients (17.33%) had fever at the time of presentation in hospital. Abdominal lump was palpable in 130 patients (86.66%), on examination under general anesthesia. Most of these masses were felt in the right upper quadrant. Abdominal distention was reported in 24 patients (16.0%). Rectal examination revealed red currant jelly stool in 81 patients (54%) and frank blood in 18 patients (12.0%) and palpable rectal mass in 1 patients (0.66%). 4 children had features of peritonitis and three had features of intestinal obstruction at the time of presentation in hospital. Intestinal obstruction was diagnosed by the presence of multiple air fluid levels in the plain x-ray abdomen.

**Table 2: Clinical features in Patients (N=150)**

Clinical feature	No of cases	Percentage
<b>Gender</b>		
Male	104	69.33
Female	46	30.66
<b>Clinical Features</b>		
<b>Symptoms</b>		
Cry/Pain	118	78.66
Vomiting	116	77.33
Bleeding PR	100	66.66
Diarrhoea	32	21.33
Fever	26	17.33
Abdominal Distension	24	16.0
Constipation	12	8.0
Convulsion	3	2.0
Rectal Mass	1	0.66
<b>Signs</b>		
Abdominal Lump	130	86.66
Currant Red Jelly Stools PR	81	54
Fever	26	17.33
Abdominal Distension	24	16.0
Frank blood PR	18	12.0
Rectal Mass	1	0.66
<b>History of Presentation</b>		

Had past history of intussusception	8	5.33
Fresh Case	142	94.66
<b>Time of Presentation in Hospital For Treatment after onset of Symptoms</b>		
With in 24 Hour	92	61.33
With in 24 - 48 Hour	30	20.0
With in 48- 72 Hour	18	12.0
After 72 Hour	10	6.67

### Discussion

Intussusception is a common abdominal pediatrics disease. This study enrolled 150 patients with intussusception during the three year study period. Intussusception rates among Indian infants were low (~18 cases per 100,000 infant years of follow-up). The overall incidence of intussusception reported by Trotta et al in their study from Italy reported the overall incidence rate of intussusception as 21/100,000 children less than 15 years[7]. The incidence varies from one country to another country. This may be due to difference in the genetic predisposition, prevalence of enteric infection, feeding practices, and prevalence of malnutrition among different population.

Intussusception is known to have male preponderance[8]. The male to female ratio observed in our study was 2.26:1 (104 male, 46 female). Most of the studies report male: female ratio 3:1.

In our study, 61.33% patients presented within 24 hours of onset of symptoms. 20% patients presented within 48 hours and 12% presented at 72 hours & 6.67% presented after 72 hours or later. The late presentation may be due to delay in seeking medical advice or missing the diagnosis by the attending physician.

The classical triad of abdominal colic, palpable abdominal mass and rectal bleeding which clinches the diagnosis was seen in more than 54% patients in our study. Various studies report the incidence of this triad as 12-40%. The most common symptom reported by patients in our study were incessant/intermittent cry, abdominal pain (in older children) followed by rectal bleed. The presence of rectal blood and abdominal mass were the most common signs on examination.

John et al in their study reported that 92% cases had five or more symptoms[9]. The most common symptom observed in their study was vomiting (76.9%) followed by incessant cry (65.38%). In their study blood in stool were present in 53.84% & mass abdomen was found in 11.53%, but in our study most common symptoms observed was incessant stools (78.66%) followed by vomiting (77.33%). In their study blood in stools were present in 54.00% and mass abdomen was found in 86.66%.

No significant seasonal variation in the incidence of intussusception was observed in our study. Liu et al in his study from China has made similar observation. No patient had died in our cohort[10]. In the study reported by Trotta et al which was a nationwide cross sectional study spanning 10 years, consisting of 20,524 children with intussusception, mortality rate reported was 0.39/1000. In contrast to this, some regions of Brazil report a high in hospital mortality of 4-5%, mainly attributed to delay in presentation to hospital.

In our study eight children (5.33%) had past history of intussusception. In a meta analysis published by Ye et al which included 12008 participants from 10 studies reported that presence of fever and pathological lead point poses high risk of recurrence following enema reduction for intussusception. In a study reported by Gupta et al from Chandigarh, they have observed seasonal variation in the incidence of intussusception and they attributed this to the seasonality in acute diarrhoeal disease in North India. They have also observed that there is no seasonal variation of intussusception cases in north India which is similar to our observation.

**Conflict of Interest: Nil**

**Source of support: Nil**

### Conclusion

81.33% cases intussusception occurred in less than 1 year of age. Intussusception occurs more commonly in males than females. There is no seasonal variation in the incidence of intussusception. The classical triad of abdominal colic pain, palpable abdominal mass and rectal bleeding was seen in more than 54% patients in our study. Incessant/intermittent cry, abdominal pain and rectal bleed were the most common symptoms reported. Untreated intussusception leads to lymphatic obstruction, venous congestion, arterial ischemia, bowel gangrene and death. All the patients in our study group received appropriate treatment because they come to hospital timely so there was no mortality.

### References

1. Wyllie R: Ileus, adhesions, intussusception and closed-loop obstruction. In Nelson Textbook of Pediatrics. 18th edition. Edited by Kliegman RM, Behrman RE, Jenson HB, Stanton BF. Philadelphia, PA: Saunders; 2007:1568-71.
2. WHO (2002) Acute intussusception in infants and children. Incidence, clinical presentation and management: a global perspective. Geneva: World Health Organization. Document WHO/V & B/02.19. 1-98.
3. Chalya P, Kayagez NM, Chandika AB et al: Childhood intussusceptions at a tertiary care hospital in northwestern Tanzania: a diagnostic and therapeutic challenge in resource-limited setting. Italian Journal of Pediatrics 2014, 40:2-8
4. Simon, N.M., Philip, R.R. et al. Intussusception: Single Center Experience of 10 Years. Indian Pediatr .2019;56, 29-32
5. Shakya VC, Agrawal CS, Sinha AK, Bhatta NK, Khania S, Adhikary S et al. Childhood Intussusception: A Prospective Institutional Study at BPKIHS. J Nepal Paediatr Soc 2011;31(1):6-10.
6. Jehangir S, John J, Rajkumar S, Mani B, Srinivasan R, Kang G et al: Intussusception in southern India: Comparison of retrospective analysis and active surveillance Vaccine 32S (2014) A99-A103.
7. Mahajan D, Nigam S, Kohli K et al. Abdominal tuberculosis presenting as ileocolic intussusception in an infant. Pediatr Dev Pathol 2007;10:477-80.
8. Manas Kumar Nayak et al., Intussusception Surveillance with Rotavirus Vaccination Program: A Hospital Based Study, Odisha, India Journal of Clinical and Diagnostic Research: 2019; 13(2): SC09-SC12.
9. Trotta F, Da Cas R, Bella A, Santuccio C, Salmaso S. Intussusception hospitalizations incidence in the pediatric population in Italy: a nationwide cross-sectional study. Italian J Pediatr. 2016;42:89.
10. John M.A clinical study of children with intussusception. Int J Contemp Pediatr. 2016;3(3):1083-8.