



ULTRASOUND GUIDED HYDROSTATIC REDUCTION OF INTUSSUSCEPTION IN CHILDREN IN OUR INSTITUTION-A OBSERVATIONAL STUDY

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ABSTRACT

**Aim and background:** To study the outcome and success rate of hydrostatic reduction of intussusception in children using gravity aided saline reduction method presenting in paediatric surgery department in Coimbatore medical college hospital ,Coimbatore. **Materials and methods:** This is the prospective study of 42 patients for whom intussusception diagnosed ultrasonographically and hydrostatic reduction of intussusception using gravity aided saline reduction method was done. The study period between June 2022 to April 2023. **Results:** 42 cases who were confirmed to have intussusception by ultrasonographically, out of which 36 cases successfully reduced by hydrostatic reduction, 4 reduced spontaneously ,2 were failed required laparotomy. **Conclusion:** Our study found that ultrasound guided hydrostatic reduction is a safest and effective non operative treatment for pediatric patients having intussusception. It has a high success rate and therefore to consider as a primary modality in tertiary care centre.

KEYWORDS :

INTRODUCTION:

Intussusception is one of the surgical emergencies in the infancy and early childhood. It should promptly be recognised and treated because misdiagnosis or delay in diagnosis leads to increase morbidity. intussusception is the invagination or telescoping of proximal segment into distal segment. majority of cases in children are idiopathic. 25 to 30% cases have the pathological lead point either focal or diffuse. Meckels diverticulum is the most common followed by polyps and duplication cysts. Most common presentation is the abdominal pain and incessant cry. delayed presentation over time may have vomiting, redcurrant jelly stools, signs of peritonitis. USG is the best method of choice to detect intussusception.

Management includes non-operative techniques like hydrostatic or pneumatic reduction under ultrasound guided and surgical techniques includes laparotomy and manual reduction milking manoeuvre and resection and anastomosis of gangrenous gut. Here in our institution, we observed the outcome and success rate of hydrostatic reduction of intussusception ultra sonogra phically.

MATERIALS AND METHODS:

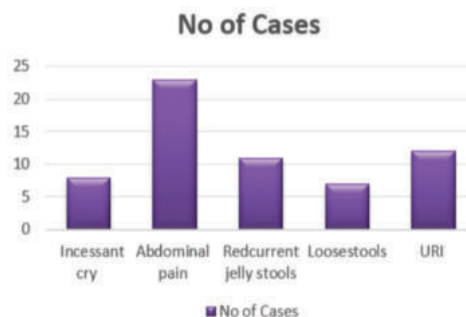
Observational study was done in our institution from the children presenting to the department of paediatric surgery for intussusception from June 2022 to April 2023. Data regarding age, presenting complaint, usg finding, blood reports were recorded. 42 cases who were confirmed to have intussusception by ultrasonographically, out of which 36 cases successfully reduced by hydrostatic reduction,4 reduced spontaneously, 2 were failed required laparotomy.

RESULTS:



Age in Years	No of Cases
<1	11
1-5	24
>5	08

Complaints:



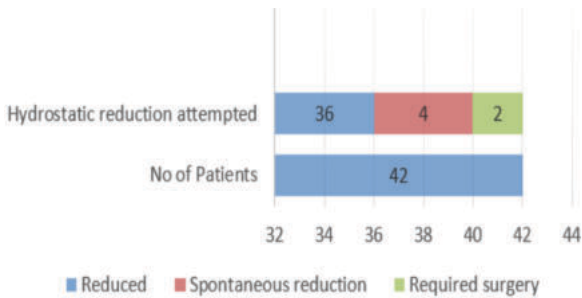
Complaints	No of Cases
Incessant cry	08
Abdominal pain	23
Redcurrant jelly stools	11
Loosestools	07
URI	12

Types of intussusception:



Types	No of Cases
ILEO COLIC	28
ILEO ILEAL	05
COLO COLIC	09

**Success rate:**



No of patient	42
Hydrostatic reduction attempted	38
Reduced	36
Spontaneous reduction	04
Required surgery	02

Total no of patients diagnosed intussusception ultra sono graphically were 42 .out of which ileo colic intussusception were 28, ileo ileal were 05 and colo colic were 09. In ileo ileal intussusception one patient showed delayed spontaneous reduction, taken for hydrostatic reduction. USG taken at the time of presentation to the hospital and repeated 24 hours for check USG. Patient kept on NPO and hydrated before the procedure and maintenance fluid for 24 hrs.

Antibiotics at the time of presentation and were repeated 12th Hourly for next 24 hrs .out of 38 patients attempted for hydrostatic reduction ,19 patients had ileal caecal valve edema, for which one dose of dexamethasone intravenously given post hydrostatic reduction. All the patients received syrup hydroxyzine (0.4mg/kg/dose)for 48 hrs .

Out of 2 patients required surgery, one patient were presented with the signs of peritonitis –ileocolic intussusception were noted (meckels diverticulum were seen as the leading point) resection and anastomosis done and other patient were failed reduction were taken up for laparotomy –ileo colic intussusception (manual reduction was done).

**DISCUSSION:**

Telescoping (prolapse) of a portion of the intestine within another immediately adjacent portion of intestine. This decreases the supply of blood to the affected part of the intestine, and frequently leads to intestinal obstruction. The pressure created by the two walls of the intestine pressing together causes inflammation, swelling, and reduces the bloodflow. Death of bowel tissue can occur, with significant bleeding, perforation, abdominal infection, and shock occurring very rapidly

Intussusception is after appendicitis, the second most common cause of an acute abdomen in children and the most common cause of small bowel obstruction in young infants .The worldwide incidence of intussusceptions ranges from 15 to 300 / 100 000 children per year. Intestinal intussusception is usually seen in children between 3 months and 3 years of age, with a peak incidence between 4 and 9 months of age . Boys are affected approximately twice as often as girls

In many cases of intussusception an influence of viral factors has been suspected as almost 30% of the children experience a viral illness before the onset of intussuscep-tions. An association with the adenovirus species C in more than one third of the cases has been reported in a prospective case-control study in Vietnam and Australia . Recently an association with the respiratory syncytial virus has also been described . The presence of a pathological lead point (PLP) occurs in 1,5 to 12% of the cases of intussusceptions .The most common PLP in children is the Meckel's diverticulum,

but other PLP as polyps, tumor, lympho-ma, duplication cysts, parasites, hematoma, vascular malformation, inflamed appendix and inverted appendi-ceal stump have also been described. Usually PLP are found in children younger than 3 months of age and in children older than 5 years, with the incidence increasing with advancing age .

The initial symptoms of intussusception are sudden onset of significant, colicky abdominal pain that recurs every 15 to 20 minutes, often with vomiting. The child appears relatively well between episodes. Later, as intestinal ischemia develops, pain becomes steady, the child becomes lethargic, and mucosal hemorrhage causes heme-positive stool on rectal examination and sometimes spontaneous passage of a currant-jelly stool. The latter, however, is a late occurrence, and physicians should not wait for this symptom to occur to suspect intussusception. A palpable abdominal mass, described as sausage-shaped, is sometimes present. Perforation results in signs of peritonitis, with significant tenderness, guarding, and rigidity. Pallor, tachycardia, and diaphoresis indicate shock.

About 5 to 10% of children present without the colicky pain phase. Instead, they appear lethargic, as if drugged (atypical or apathetic presentation). In such cases, the diagnosis of intussusception is often missed until the currant-jelly stool appears or an abdominal mass is palpated.

Suspicion of the diagnosis must be high, particularly in children with atypical presentation, and studies and intervention must be done urgently, because survival and likelihood of nonoperative reduction decrease significantly with time. Approach depends on clinical findings. Ill children with signs of peritonitis require fluid resuscitation, broad-spectrum antibiotics (eg, ampicillin, plus gentamicin and clindamycin; metronidazole plus either cefotaxime or piperacillin-tazobactam), nasogastric suction, and surgery. Clinically stable children require imaging studies to confirm the diagnosis and treat the disorder.

Barium enema was once the preferred initial study because it revealed the classic coiled-spring appearance around the intussusceptum. In addition to being diagnostic, barium enema was also usually therapeutic; the pressure of the barium often reduced the telescoped segments. However, barium occasionally enters the peritoneum through a clinically unsuspected perforation and causes significant peritonitis. Currently, ultrasonography is the preferred means of diagnosis; it is easily done, relatively inexpensive, and safe; the characteristic finding is termed the target sign.

At times, an intussusception is seen incidentally on an imaging study, such as a CT scan. If children have no symptoms of intussusception, they can be followed and no intervention is required.

Management includes hydration and stabilization as needed. Keep patient NPO in case of possible surgery, Contrast (Hydrostatic) enema is diagnostic in approximately 95% of intussusception cases. It is therapeutic and curative in most cases with less than 24-hour duration. Oral/Nasal gastric decompression, antibiotic therapy, Surgical intervention is necessary if not reduced, 10% may reduce spontaneously. Admission is indicated for all patients because up to 10% of those with successful radiologic reduction have a recurrence, usually in the first 24 hours. Complications- Intestinal hemorrhage, Necrosis and bowel perforation, Shock and Sepsis, and Recurrence.

**REFERENCES:**

1. Buettcher M, Baer G, Bonhoeffer J, Schaad UB, Heininger U. Three year surveillance of intussusception in children in Switzerland.
2. Eisen LK, Cunningham JD, Aufses AH Jr. Intussusception in adults:

- institutional review. *J Am Coll Surg* 1999
3. Zubaidi A, Al-Saif F, Silverman R. Adult intussusception: a retrospective review. *Dis Colon Rectum* 2006;49
  4. Saverino BP, Lava C, Lowe LH, Rivard DC. Radiographic findings in the diagnosis of pediatric ileocolic intussusception: comparison to a control population. *Pediatr Emerg Care* 2010
  5. Weihmiller SN, Buonomo C, Bachur R. Risk stratification of children being evaluated for intussusception. *Pediatrics* 2011;127
  6. Wiersma F, Allema JH, Holscher HC. Ileocolic intussusception in children: ultrasonographic differentiation from ileocolic intussusception. *Pediatr Radiol* 2006;36(11):1177-1181
  7. Boyle MJ, Arkell LJ, Williams JT. Ultrasonic diagnosis of adult intussusception. *Am J Gastroenterol* 1993;88(4):617-618
  8. Ciftci F. Diagnosis and treatment of intestinal intussusception in adults: a rare experience for surgeons. *Int J Clin Exp Med* 2015;
  9. Yakan S, Caliskan C, Makay O, Denecli AG, Korkut MA. Intussusception in adults: clinical characteristics, diagnosis and operative strategies. *World J Gastroenterol* 2009;15(16):1985-1989
  10. Rao PL, Kumar V. Waugh's syndrome. *Indian J Pediatr* 2005;72(1):86
  11. Wasseem m., rosenberg H. K. Intussusception. *Pediatr Emerg Care*, 2008, 24: 793-800.
  12. aPplegate K. e. Intussusception in children : evidence-based diagnosis and treatment. *Pediatr Radiol*, 2009, 39 Suppl 2: S140-143.
  13. Ito Y., KusaKaWa I., murata Y. et al. Japanese guidelines for the management of intussusception in children, 2011. *Pediatr Int*, 2012, 54: 948-958.
  14. Jlang J., Jlang b., ParasHar U. et al. Childhood intussusception : a literature review. *PLoS One*, 2013, 8 : e68482.
  15. JenKe a. C., Klaassen-melKe r., Zllbauer M. et al. Intussusception : incidence and treatment insights from the nationwide German surveillance. *J Pediatr Gastroenterol Nutr*, 2011, 52: 446-451.
  16. samad l., marven s., basHr H. e. et al. Prospective surveillance study of the management of intussusception in the UK and Irish infants. *Br J Surg*, 2012, 99: 411-415.
  17. nYlund C. m., denson l. a., noel J. m. Bacterial enteritis as risk factor for childhood intussusception : A retrospective cohort study. *J Pediatr*, 2010, 156 : 791-795