

Childhood Intussusception: Timely Management Leads to Decreased Surgical Risk

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Abstract

Intussusception is the most common cause of intestinal obstruction in infants and children in < 1yr of age (1). Intussusception cases usually reported late therefore operative procedure was inevitable and results in significant morbidity and mortality. By this study we emphasized on timely transfer of intussusception case to a pediatric surgical center so as to decrease surgical risk. The surgical morbidity was low in those who were admitted early or directly to our center.

Methods - We retrospectively reviewed cases of intussusception in children <15 years. Children were treated from October 2015 to December 2107 at pediatric surgery department of SMS medical college Jaipur Rajasthan. Age, sex, month of admission, symptom with duration, diagnostic methods, and treatment modalities were recorded and analyzed.

Results - We studied 300 patients with intussusception. 272 (90%) were treated surgically. We recently started ultrasonography guided pneumatic reduction and 24(85.7%) out of 28 treated successfully by it. Out of the patients requiring surgery 202 (67.34%) patients were reduced by per-operative manual reduction and in 60(22%) patients resection and anastomosis with 10(3.6%) treated with resection and ileostomy. 25.34% cases have delayed diagnosis and lately transferred from peripheral hospitals requiring resection and diversion.

Conclusion - In conclusion, Intussusception cases usually reported late therefore high likelihood of surgical management. The patients who underwent resection have longer duration of hospital stay.

Keywords - Childhood, Intussusception, Timely Pneumatic Reduction, Surgical Risk

Introduction

Untreated Intussusception is a life threatening event that commonly affects infants and children. The primary treatment of intussusception in developing countries is operative management including laparotomy with manual reduction and if needed resection and anastomosis. In the developed countries, because of early diagnosis and treatment with less invasive procedure, children with intussusception have experience favorable outcome. Contrast enema reductions decrease the length of hospitalization, increased recovery, and reduce the complications which are usually associated with major abdominal surgery.^[2,3] The success rate of enema reduction is 91 %.^[4] In various studies, several risk factors have been found to be associated with the need for surgical intervention. Longer duration of symptoms, peritonitis, presence of shock, presence of pathological lead point, bowel thickening and ascites on ultrasound, initial failure of reduction all result in a increased likelihood of operative intervention^[5] and risk of complications.

The aim of the study was to increase awareness in pediatrician and general practitioner in the peripheral hospitals about early diagnosis and timely transfer for the improved clinical outcomes of the childhood intussusception.

Methods

We retrospectively reviewed the hospital records of all patients presenting with the diagnosis of intussusception during the time period from October of 2015 to December of 2017. Demographics, symptoms, duration, month of admission, diagnostic imaging, radiologic management and surgical care were recorded. Graphs and tables were generated using excel. The diagnosis was made on the basis of clinical features, radiological investigation, and operative findings. All the patients had intravenous fluid to correct fluid and electrolyte imbalance. Ryle's tube suction and broad spectrum antibiotic coverage was given to all of them.

Results

Three hundred patients were included in the study. Male to female ratio was 2.6:1.74.6% of children was below one year of age.20.34% between 1-5 years of age. (Table 1)

Table 1: Distribution of the patients by age (N=300)

Age groups (years)	Number of patients	Percentage
<1	224	74.6
1-5	61	20.34
5-10	15	5
10-15	4	1.3

Patients presented with series of symptoms (table 2) abdominal pain, vomiting, abdominal mass, red currant jelly stools were common symptoms.

Table 2: Mode of presentation of patients (N=300)

Clinical features	Percentage
Distension of abdomen	52.3
Vomiting(245)	81.67
Pain abdomen(230)	76.67
Red currant jelly stool(154)	51.34
Diarrhea(63)	21
Fever(62)	20.67
Abdominal mass(179)	59.67

Ileo-colic intussusception (82.3%) was the commonest type of intussusception in our study. Other types were ileoileo-colic, ceco-colic ileo-ileal, and jejuno-jejunal. Out of 300 patients 272 patients were undergo exploratory laparotomy. The cause of intussusception was unknown in 76%. Other common causes were Meckel's diverticulum, enlarged mesenteric lymph nodes, appendix, duplication cyst, and non-Hodgkin's lymphoma in our study. The cases of intussusception were coming throughout the year. In our series there was increased number of cases in April, May, July and December. It was also noticed that the average age of the cases in these months were 6 to 12 months, which indicate effect of seasonality on occurrence of intussusception. In our study a total of 67.34% of patients underwent manual reduction, 20% underwent resection and anastomosis and 10 cases required diversion. In 28 cases we tried USG guided pneumatic reduction, with 85% success, 4 patients were explored out of which 2 were manually reduced and 2 underwent resection and anastomosis.

Operative intervention requiring resection anastomosis and ileostomy was higher in patients who had symptoms of more than 24 h. The subsequent length of hospital stay was averaged between 1 -10 days with longer for resection anastomosis and ileostomy.

Table 3: Management of the patients with intussusception (N=300)

Pneumatic reduction	24	8%
Reduction with appendectomy	202	67.34%
Resection anastomosis	60/	20%
Ileostomy	10	3%

Discussion

Intussusception is potentially lethal condition in the pediatric patients if diagnosis and further intervention delayed.^[6] The operative intervention can be avoided and the patient can be fully recovered when treated timely and in presence of skilled pediatric surgeons. Those who were admitted 24 hours symptoms, had a failed radiologic reduction, presence of lead point needed surgical intervention, had increased morbidity and mortality.^[7] The contrast enema has been very successful for non-operative management of early intussusception.^[6] So search should be made to identify the factors responsible for failure of enema reduction so as to improve outcome. Some studies showed that longer duration of symptoms, presence of red currant jelly stool, more distal extension of the intussusception were more likely to require operation.^[8] As compare to liquid contrast enema, pneumatic reduction is far superior.^[9-15] Air enema results in increase in abdominal pressure that will help in reduction of intussusception^[16] in our study we treated 24 cases out of 28 successfully with pneumatic reduction. The studies have shown that hospital with facilities of experienced pediatric surgeon and radiologists have better results as compared to less experience peripheral hospitals.^[17] Because of more expertise at tertiary care children hospitals operative intervention are less required 55% as compared to non-children hospitals 68 %.^[5] Those patients who were transferred from peripheral hospitals were septic and acidotic and require an operation as compared to those who directly admitted.^[18] These patients were already delayed for timely management. There are studies that could give reason for the association of delayed transfer and diagnosis and requiring operative intervention. Higher degree of suspicion and skilled pediatrician at periphery could make a difference.^[19,20]

Conclusion

This study provides important insights and base line data to facilitate surveillance into the epidemiology of intussusception among northwestern part of the Indian Subcontinent. According to our experience, Intussusception that presents with in 24 hour of onset of symptoms can be managed by non-operative reduction. There is increased rate of operative intervention if patients presented late. More suspicion on the diagnosis and timely management of

intussusception in pediatric population is needed to help improve rates of successful outcomes.

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References

- [1] 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.
- [2] Johnson B, Gargiullo P, Murphy TV, Parashar UD, and Patel MM: Factors associated with bowel resection among infants with intussusception in the United States. *Pediatr Emerg Care.* 2012; 28: 529-532.
- [3] Abbas, T.O., et al. Retrospective Surveillance over 11 Years for Intussusception in Children Younger than 14 Years in the State of Qatar. *Open Journal of Pediatrics.* 2014; 4, 1-11.
- [4] Lochhead A, Jamjoom R, Ratnapalan S (2013) Intussusception in Children presenting to the emergency department. *Clin Pediatr (Phila).* 52: 1029-1033.
- [5] Fallon SC, Lopez ME, Zhang W, Brandt ML, Wesson DE, et al. (2013) Risk factors for surgery in pediatric intussusception in the Era of pneumatic reduction. *J Pediatr Surg* 48: 1032-1036.
- [6] Bruce J, Huh YS, Cooney DR, Karp MP, Allen JE, et al. (1987) Intussusception: Evolution of current management. *J Pediatr Gastroenterology Nutr* 6: 663-674.
- [7] Kaiser AD, Applegate KE, Ladd AP: Current success in the treatment of intussusception in children. *Surgery* 2007, 142:469-477.
- [8] Frankie Fike BVEM, George Holcomb W, Shawn Peter D (2012) Predictors of failed enema reduction in childhood intussusception. *J Pediatr Surg* 47: 925-927.
- [9] Hadidi AT, El Shal N (1999) Childhood intussusception: A comparative study of nonsurgical management. *J Pediatr Surg* 34: 304-307.
- [10] Kaiser AD, Applegate KE, Ladd AP (2007) Current success in the treatment of intussusception in children. *Surgery* 142: 469-475; discussion P: 75-77.
- [11] Meyer JS, Dangman BC, Buonomo C, Berlin JA (1993) Air and liquid contrast agents in the management of intussusception: a controlled, randomized trial. *Radiology* 188: 507-511.
- [12] Meyer JS (1992) The current radiologic management of intussusception: a survey and review. *Pediatr Radiol* 22:323-325.
- [13] Schmit P, Rohrschneider WK, Christmann D (1999) Intestinal intussusception survey about diagnostic and nonsurgical therapeutic procedures. *Pediatr Radiol* 29: 752-761.
- [14] Eshel G, Barr J, Heyman E, Tauber T, Klin B, Vinograd I, et al. (1997) Intussusception: a 9-year survey (1986-1995). *J Pediatr Gastroenterol Nutr* 24: 253-256.
- [15] Shiels WE 2nd, Maves CK, Hedlund GL, Kirks DR (1991) Air enema for diagnosis and reduction of intussusception: clinical experience and pressure correlates. *Radiology* 181: 169-172.
- [16] Zambuto D, Bramson RT, Blickman JG (1995) Intracolonic pressure measurements during hydrostatic and air contrast Barium enema studies in children. *Radiology* 196: 55-58.
- [17] Susan L, Bratton CMH, John HT Waldhausen, Robert S Sawin, Janice W Allison (2001) Intussusception: Hospital Size and risk of Surgery. *Pediatrics* 102: 299-303.
- [18] Howard C, Jen SBS (2009) The impact of hospital type and experience on the operative utilization in pediatric intussusception: a nationwide study. *J Pediatr Surg* 44: 241-246.
- [19] Fike FB, Mortellaro VE, Holcomb GW, 3rd, St Peter SD (2012) Predictors of failed enema reduction in childhood Intussusception. *J Pediatr Surg* 47: 925-927.
- [20] Karadag CA, Abbasoglu L, Sever N, Kalyoncu MK, Yildiz A, et al. (2015) Ultrasound-guided hydrostatic reduction of Intussusception with saline: Safe and effective. *J Pediatr Surg* 47: 928-929.