

Childhood Intussusception: A 7 Years Prospective Analysis of Data in a Single Center

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ABSTRACT

Background: Intussusception remains a common cause of bowel obstruction in children and results in significant morbidity and mortality if not promptly treated. There is a paucity of prospective studies regarding childhood intussusception in India and particularly the study area. This study describes the pattern, clinical presentations and management outcomes of childhood intussusception in our setting.

Methods: This is a prospective study carried out at the department of Neonatal and Pediatric surgery in SDM hospital Sattur, Dharwad, Karnataka, over a period of 7 years between July 2009 and June 2016. The study was approved by the institutional review board.

Results: One hundred and fifty paediatric patients aged less than 14yrs with diagnosis of intussusception were included in this study. 150 cases of intussusception accounted for 25% of the gastrointestinal obstruction in our setup. Highest number of patients were within 1 year of age (80%), male to female ratio was 2:1, the exact aetiology of intussusception could not be identified in majority of the cases. Abdominal pain (80%), vomiting (60%) and per rectal bleeding (40%) were common presentations. Only 20% of patients managed with ultrasound guided saline reduction were as 80% patients were managed surgically. Ileocolic type was commonest type of intussusception (90%). Postoperative complications were noted in 16% cases. The overall mortality rate was 2% (3 out of 150) and delayed referrals were the significant contributing factors for mortality.

Conclusion: Intussusception in our setting is characterized by late presentation, high index of suspicion and proper evaluation of patients is essential for an early diagnosis and timely definitive treatment, in order to decrease the morbidity and mortality associated with this disease.

Key words: Intussusception, Intestinal obstruction, abdominal pain.

INTRODUCTION

Intussusception is the most common cause of acute intestinal obstruction in children, which involves an invagination of a proximal segment of the intestine into a distal segment. The classic triad of intussusception symptoms (abdominal pain, abdominal mass, bloody stools) was present in 29-33% of patients according to the medical literature reviewed. ^[1,2] The

condition is diagnosed by ultrasonography, radiology or surgery and is usually treated by using air or hydrostatic reduction enema under radiologic or ultrasound guidance. However, surgery may be required in some cases and approximately 10% of patients with intussusception undergo an intestinal resection due to a vascular injury to the intestine. ^[1,2] Intussusception primarily affects children, with the peak incidence

reported in between 4 to 10 months of age. [2,3] Case-fatality rates also vary widely by region and deaths from intussusceptions are more common in developing settings than in industrialized countries [3] Although the full etiology of intussusception remains unclear. [4,5] An early diagnosis and timely intervention are extremely helpful in improving the outcome in intussusception. The outcome also depends upon the associated co-morbidities. Many parents do not bring their children to hospital for early management; rather they are taken to the quacks where inappropriate treatment is provided. As many of these patients do not present with typical features of intestinal obstruction, their diagnosis is delayed; in the meantime, a good number of cases become complicated and may be fatal.

In the developed countries, there are many studies and statistical data for intussusception, but in our country, where the children constitute almost half of the total population we do not have sufficient information about the different aspects of this common paediatric surgical problem. Keeping these facts in mind, the present study was undertaken to gather information about intussusception in paediatric patients to find out the incidence, to diagnose the case early, mode of presentation, to improve the management with our limited available resources and to form a basis for future study.

MATERIALS AND METHODS

This is a prospective study consisted of 150 consecutive patients children <14 years of age, who were diagnosed as intussusception in Neonatal and Pediatric surgery department between July 2009 and June 2016 in SDM hospital Sattur Dharwad, Karnataka

The detailed history was recorded and clinical examination performed. Routine hematological and biochemical investigations along with the relevant imaging studies were performed in all the patients. The general resuscitative measures were instituted and the appropriate

intervention was performed as per the standard procedure described. Clinical diagnoses of all cases were confirmed by ultrasound abdomen. Early cases of intussusceptions, who presented before 24 hours of onset of symptoms, no features of peritonitis, hemodynamic stable patients treated with ultrasound guided hydrostatic reduction and late presentation underwent laparotomy. At the time of discharge all the patients were advised to report to the outpatient for follow-up after one week of discharge. The study was approved by the institutional review board and had informed consent of all the parents.

RESULTS

Total 150 patients were diagnosed as intussusception and that was 1.17% of total admission in the pediatrics surgery department of SDM Hospital during study period.

Intussusceptions are the commonest for gastrointestinal obstruction in our study and accounted for 25 % of the cases. The age of the patients in the overall groups ranged from 3 months to 14yrs. Highest number of patients were within 1 year of age (80%) Below 1 yr highest incidence was in the 6-9 months group (80%)(Table 1). Out of 150 patients, 102 were male and 48 were female. Male to female ratio was 2:1. In this study the most frequent symptoms were abdominal pain (80%), vomiting (60%), per rectal red currant-jelly (40%), abdominal distension (30%) and palpable intestinal mass (30%) (Table 2) A rectal mass was detected in 6 cases (4%). The classic triad of vomiting, passage of blood through the rectum and abdominal pain was documented in 45 (30%) of 50 children. The clinical presentation at admission also included symptoms of concurrent gastroenteritis in 30% of children and concurrent respiratory symptoms in 50% of cases.

A hydrostatic reduction of intussusceptions under ultrasound guided was attempted in 36 patients, but was successful in 30(83%) children. one hundred

and twenty (80%) cases underwent surgery. These patients were admitted >24 hours after symptoms onset and had features of intestinal vascular compromise or venous congestion such as passage of blood per rectum or blood on rectal examination. 20% patients underwent resection and anastomosis and 80% required manual reduction of the intussusceptions. The type of intussusception varied in different patients with predominance of ileocolic type (90%). The exact aetiological factor of intussusceptions could not be identified in majority of the cases (90%). 80% patients with ileo-colic intussusception had marked polypoidal hyperplasia of lymphoid patch in the terminal ileum, which probably acted as the pathological lead point. Fifteen patients of ileocolic intussusception had Meckel's diverticulum as the pathological lead point. Among 150 cases only 3 patients were expired due to septicemia. This yielded a case-fatality rate of 1%. The mean length of hospital stay was 5 days, but patients undergoing surgery stayed in the hospital 3 times longer than patients with a successful reduction by hydrostatic method. It is known that the earlier a child arrives at the hospital after the onset of illness, the higher the frequency of successful conservative treatment.

Table 1: Age distribution of intussusceptions patients (n=150)

Age of patient in years	N (%)
0-1	120(80)
1-3	18(12)
3-9	6(4)
9-14	6(4)

Table 2: Symptoms of intussusceptions patients (n=150)

Presenting features	Number of patients	Percentage
Abdominal pain	120	80.0
Vomiting	90	60.0
Per rectal red current jelly	60	40.0
Abdominal distension	45	30.0
Palpable intestinal mass	45	30.0

DISCUSSION

Intussusception is the most common cause of intestinal obstruction among infants and young children. Intussusception is usually an acute emergency and in advanced cases, serious pathophysiological changes occur if not treated timely. The nature and seriousness of these changes

depend on the degree and duration of obstruction and type of intussusception. If intussusception is unrelieved, the blood supply at the obstructive point of intestine is impaired, and ultimately necrosis, gangrene, perforation and general peritonitis develop

Our study analysed 150 patients with intussusception found during the 84 months of study period, which constituted 1.17% of total paediatric surgical admission in SDM Hospital Dharwad. SDM Hospital is a tertiary referral centre in north Karnataka therefore receives paediatric referral cases from surrounding areas as well. These data from a 7-year period provide a reasonable baseline for occurrence of intussusception in this area. Though this does not represent the actual incidence of intussusception, it can be assumed to be representative of prevalence of this disease among children.

Among the 150 patients, 120 were under 1 yr of age (80%). The maximum patients (80%) within 3-12 months age group may be due to change in diet which causes change in intestinal flora and cause intussusception. [4] Previous reports specify that this condition is more frequent in males, with our study yielding a male to female ratio of 2:1. This ratio was reported to be varying widely across different regions, but all reports indicated predominance of males. [4-6] No clear seasonality trend was observed in our study, which is consistent with reports from other studies. [5,6] In this study in 90% cases exact aetiology was not found. This correlates with other studies. [7,8] The patient with intussusception in this series presented with a number of symptoms abdominal pain (80%), vomiting (70%), bleeding per rectum (40%) and abdominal distension (30%) were most frequently reported this study, In this study, the classic triad of abdominal pain, vomiting, and rectal bleeding was not the typical clinical manifestations in the intussusception cases. However, clinical signs and symptoms in our study population were similar to those reported previously in other studies. [9,10] The majority of children were hospitalized after 24 hours of onset of symptoms. Over

half of the subjects sought medical attention beyond two days after onset of the disease. The frequency of late presentation led to a relatively high rate of surgery, 80% requiring surgical intervention.

In this present study only 20% of the cases in our study were managed successfully by hydrostatic reduction. Between 55 to 95% intussusception are reducible by hydrostatic or pneumatic methods under fluoroscopic or ultrasonographic control [9,10] which is similar to our study. In our study 120 patients were managed surgically because of delayed presentation and which does not correlate with series of developed countries. [11,12] These patients needed surgical intervention, had a longer hospital stay, and a higher case-fatality rate. This is similar to reports from other countries that manage pediatric patients with a longer duration of symptoms. Two case of colocolic variety was found in our series, which is an uncommon type found which is similar to other reports. [13-15] Among the surgically treated patients, immediate postoperative complications were observed in 24 patients (16%). Superficial wound infection in 15 (10%), burst abdomen in 3 (2%), intestinal obstruction in 3 (2%) pneumonia in 3 (2%) and three (1%) expired due to septicaemia. Incidence of complications is high among the patients with delayed presentation and with gangrenous gut. No recurrence was observed in our study.

CONCLUSION

In conclusion, our study provides useful information on the incidence and epidemiology of childhood intussusception. More education on diagnosis and management of intussusception in pediatric population is needed in developing countries to help improve rates of successful outcomes. Intussusception in our setting is characterized by late presentation, high index of suspicion and proper evaluation of patients is essential for an early diagnosis and timely definitive treatment, in order to decrease the morbidity and mortality

associated with this disease. This study throws some light on the prevalence of this disease and outcome among admitted patients in a pediatric surgical ward of a leading hospital of north Karnataka, India.

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