Original Article

How Effective is Non-surgical Management in Pediatric Intussusception?

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Abstract

Introduction: Intussusception is common in infant and young children. Healthy babies are prone to this problem. Severe intermittent pain, vomiting, pallor and sweating are suspicious to this problem. Early diagnosis helps to prevent surgical intervention. Late presentation may lead to intestinal perforation and serious complications.

Methods: Diagnosed cases of intussusception within a year at TUTH studied prospectively. Patients initially evaluated with ultra sonogram. Patients without complications and contra indications were taken to radiology department for reduction by non-surgical method (Barium enema). Complicated and contra indicated cases managed surgically.

Results: Total 21 cases admitted within a year. Male : Female ratio was 2:1. Mean age at presentation was 20.05 months (5 - 48 months). The average symptoms duration was 36.11 (6-72) hours. Abdominal pain & cry, vomiting and blood in stool were common presenting symptoms.

Among 21 cases, 18 underwent non-surgical procedure; two were contra indicated for it and one self reduced. In non-surgically managed group 13 had successful reduction and five failed. Failed cases were managed surgically.

In our series, two recurrences noticed. One in surgically managed group, presented after five months of surgery and managed successfully with non-surgical method. Second case was in non-surgical group, presented after three months of first reduction. This was also managed successfully by non-surgical technique.

Conclusion: Early detection and complete diagnosis of pediatric intussusception is desirable for non-surgical management. Surgical intervention is considered only in contra indications, unsuccessful and perforation during non-surgical procedures. Ultrasonography is diagnostic choice but operator`s variation should consider.

Key Words: Pediatric intussusception, non-surgical management.

Introduction

Intussusception is one of the common abdominal problem among the healthy, well feed children from six months to three years of age. This condition draws severe attention of parents and brought in hospital. Parent may express the exact time of pain and typical characteristics of pain as intermittent cramp and sweating. About 40 % cases occur at 3 – 9 months age group in western population. However in our part it has shown from five months to 4

years of age.[1-5] 75% cases occur <2 yrs. Mortality rate from intussusception in children is less than 1%. If left untreated, however, this condition is uniformly fatal in 2-5 days[2, 6, 8-12].

Incidence is 1.5 – 4 in 1000 live births. Male/Female=2:1.[9-14] Four types of intussusceptions are noted, most frequently seen are Ileo-colic (75-95%), colo-colic (10-15 %), Ileo-ileal (5-10 %) and multiple intussusceptions (2-5%) respectively. Mortality is about 1 % with treatment and fatal if untreated. Where as post reduction recurrence is 5% and post surgical is about 1-4 %.

Pathologically, telescoping of one part of intestine to other part is found in this condition. Mostly antigrade telescoping is frequent but retrograde is also possible. Intussusception has mention long back since 16th centuries. The definitive cause of intussusception in children is not yet clearly known. However hydrostatic management was mentioned first time by Herald Hirschprung in 1876.[5, 7,11, 13] The possible factors suspected to develop intussusceptions are, weaning period, common cold infection, seasonal variation, excessive diarrhea and intestinal pathologies as stricture, polyps, lipoma, growths etc.[8,12,15-16] About 95% intussusceptions is due to idiopathic causes.

Intussusception is one of earliest known problem since Hippocrates age. However there are still two modalities of management existing for this condition. Surgical management as open or laparoscopic procedures. Where as in non-surgical procedures are as Barium enema reduction (BER), Saline enema reduction, Pneumo reduction or combination of these methods are used to reduce intussusceptions.

Hirschsprung was the first to publish a series of reports on successful hydrostatic reduction in 1876, Barium and air contrast enemas have been the initial diagnostic and therapeutic investigation of choice, there after radiologists took the procedures as their part of job. Recently USG is the choice of investigation. Where donut or Bull`s eyes or double lumen signs are diagnostic.

The objective of this study is to evaluate the efficacy of non-surgical management of pediatric intussusception presented within one year in Tribhuvan University Teaching Hospital.

Methods

All diagnosed pediatric intussusception cases admitted in paediatric surgical unit at Tribhuvan University Teaching Hospital over a period of one year (Kartik 2068 to Aswin 2069) were studied prospectively. All cases were scanned initially by ultra sonogram and diagnosis was confirmed before admission. During ultra sonogram (USG), if no free fluid is seen in peritoneal cavity or unless contraindicated then those cases were managed by non-surgical technique. These cases were brought to radiology department and under fluoroscopy or USG guided Barium enema was given slowly and observed reduction of intussusception. All patients were planned for barium enema reduction unless contra indicated. Data obtained were analyzed.

In this procedure a large Folley`s catheter (>18F) was introduced in to the rectum and 115% w/v Barium sulphate solution was connected keeping the Barium kit at 3 feet above the table top. Then under fluoroscopy Barium flow was continued through the rectally connected Folley`s catheter. Success defined as reflux of barium (“flooding”) into the distal ileum. This was confirmed by USG. If the reduction is failed then they were planned for surgical reduction under anaesthesia.

Results

Total patients: 21 cases were admitted in pediatric surgery unit at TUTH. Mean age was 20.05 months (5 - 48 months). Where as Male: Female ratio was 2:1. Duration of symptom before non-surgical management was 36.11 hours (6 – 72 hrs) after the problem initiated.

Table 1: Clinical features presented with frequency and percentage of intussusception.

Features	Frequency	Percentage
Pain and excessive cry	21 / 21	100
Vomiting	13 / 21	61
Blood in stool	14 / 21	66
Duration of symptoms	**Mean 36.11 (6-72 hours).**	

Surgical Intervention

Two patients contra indicated for Barium reduction, under went laparotomy and manual reduction of Ileo-Colic intussusception was done. In five patients reduction was unsuccessful, they were also managed with laparotomy. In 3 out of above 5 patients, there was no intussusception found on laparotomy. In these cases there were found large mesenteric lymph nodes near Ileo-Colic junction. It confused as intussusception in USG due to bulky masses. Other 2 cases with Ileo-Colic intussusception reduced manually. None of our patients required resection & anastomosis after reduction of intussusception, whole intestine were viable.

Regarding the follow up results, two cases showed recurrence (One in surgical reduction group and one

in non-surgical technique groups). In open surgical reduction group recurrence developed after 5 months of first reduction. This was reduced by Barium enema successfully. Where as in non-surgical reduction groups, one case developed recurrence after 3 months of initial Barium enema reduction. This case was also managed successfully even in second time by Barium enema.

Table 2: Shows about after management results of Intussusceptions.

Procedure	No of patients	% of success
Non-surgical management	13 / 18	72.22.
Open surgical management for failed non-surgical management	5 / 21	23.80.
Open surgical procedure contra indication for non-surgical management cases	2 / 21	9.52
Self reduction	1 / 21	4.76.

Bowel perforations was not existed in barium reduction cases.

Discussion

Intussusception was mentioned since 16th centuries but its reduction by hydrostatic technique have been mentioned in the literatures since 1876.[1-5] Herald Hirschprung first reported the technique of hydrostatic reduction, after monitoring a series of 107 cases. In our study, we used Barium enema reduction as first treatment modality.

Ultrasound is a fast, non-invasive and simple reproducible test. It's sensitivity (98-100%) and specificity (88-100%) is high. However it is clearly operator dependant .[14-18] In three of our patients, large mesenteric lymph nodes were confused with intussusception mass and surgical exploration was done.

Reduction of an acute intussusception is an emergency procedure. It needs to reduce immediately after diagnosis is confirmed either by Barium or hydrostatic or by Pneumatic reduction. Preparation for surgical management and back up preparation is always needed before Barium enema reduction is initiated. In long standing cases chances of necrosis and perforation at the apex of intussusceptum is very common.[9, 12, 14-18] Once if Barium spelt in peritoneum then it is disaster to the patient. Therefore pressure control of Barium flow and positioning of the patients is most critical during the procedure. Long and steady pressure at protruded part of intussusception need to maintain by Barium through enema. This will help to reduce the intussusception gradually, though patience is needed during the procedure.

In long standing condition and ages advances non-surgical management procedures are less effective.[10,11] Recently laparoscopic reduction has also tried and the results are almost similar with open reduction.[12] There are various methods of non-surgical management of intussusceptions as Barium enema, Hydrostatic reduction, pneumatic reduction and mixed hydro pneumatic reduction are tried. According the expertise developed all techniques are claimed as equally effective.[5] However in developing nations non-surgical management for intussusception is desired but there should always preparation of surgical intervention immediately.

Contra indication of non surgical management are said as Prolonged intussusception with signs of shock, fluid collection in intussusception mass, Peritoneal irritation, Intestinal perforation, and Pneumatosis intestinalis .[4, 10,17]

Success rate of hydrostatic reduction under fluoroscopic or ultrasonic guidance is approximately 100 percent if the patient is diagnosed within few hours (specially before six hours). If symptoms persists for longer than 48 hours then chances of non-surgical reduction is dramatically reduces. Non-surgical reduction is done within first 48 hours after evaluation with USG. [7, 10,18]

Conclusion

Management of intussusception in pediatric population is directed according to USG diagnosis and time of prsentation. Early presentation and diagnosis is worth for non surgical management. However USG is operator dependent, occasionally it may mis lead as intussusception due to abdominal lymphadenopathy.

Surgical intervention is only indicated in those cases who decided as contra indication for non surgical management (Barium enema) and if non surgical procedures fails or perforation develops during the procedures. Early hospital visit decreases the chance of complications.

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