



CLINICAL ASPECTS OF INTUSSUSCEPTION TREATMENT & MANAGEMENT IN CHILDREN: A REVIEW

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ABSTRACT Intussusception is one of the most common causes of acute abdomen in infancy. Intussusception occurs when a portion of the digestive tract becomes telescoped into the adjacent bowel segment. This condition usually occurs in children between six months and two years of age. The vast majority of childhood cases of intussusception are ileocolic; that is, the ileum becomes telescoped into the colon. In the past, intussusception was a severe condition with high morbidity and mortality rates. Currently, prompt diagnosis and effective treatment lead to a favorable outcome in most cases. There are two options of treatment surgical and nonsurgical reduction of intussusceptions under USG guided saline reduction. In expert hands the nonsurgical treatment is successful about 85-90% cases.

KEYWORDS : Intussusception, Ultrasound (US)

Introduction:

Intussusception is common cause of acute intestinal obstruction in infants. Patients with intussusception typically develop the sudden onset of intermittent, severe, crampy, progressive abdominal pain, accompanied by inconsolable crying and drawing up of the legs toward the abdomen. The episodes usually occur at 15 to 20 minute intervals. They become more frequent and more severe over time. Vomiting may follow episodes of abdominal pain. Initially emesis is nonbilious, but it may become bilious as the obstruction progresses. Between the painful episodes, the child may behave relatively normally and be free of pain. As a result, initial symptoms can be confused with gastroenteritis¹. As symptoms progress, increasing lethargy develops. In up to 70 % of cases, the stool contains gross or occult blood². The stool may be a mixture of blood and mucous, giving it the appearance of red currant jelly. A sausage-shaped abdominal mass may be felt in the right side of abdomen. However, the classically described triad of pain, a palpable sausage shaped abdominal mass, and currant-jelly stool is seen in less than 15 percent of patients at the time of presentation³ as many as 20% of young infants had no obvious pain. Approximately one-third of patients does not pass blood or mucus or develop an abdominal mass. Occasionally, the initial presenting sign may be lethargy or altered consciousness alone, without pain, rectal bleeding, or other symptoms that suggest an intra-abdominal process⁴. In most cases, this clinical presentation occurred in infants, and was often confused with sepsis. Thus, intussusception should be considered in the evaluation of lethargy or altered consciousness, especially in infants.

Diagnosis and Examination

USG abdomen and X-ray abdomen examination has been the standard of reference for the diagnosis of intussusception for many years. Barium enema or air enema examination is the principal diagnostic tool at many institutions. The classic signs of intussusception at enema examination are the meniscus sign and coiled spring sign. The meniscus sign at enema examination is analogous to the meniscus sign at plain radiography and is produced by the rounded apex of the intussusceptum protruding into the column of contrast material. The coiled spring sign is produced when the edematous mucosal folds of the returning limb of the intussusceptum are outlined by contrast material in the lumen of the colon.

The superior performance of US in the diagnosis of intussusception, the high level of patient comfort and safety allowed by US, and the ability to arrive at alternative diagnoses with US has led us and other investigators to reserve enemas for therapeutic purposes.



Fig. 1 and 2. Ultrasound image of an intussusception showing concentric rings of intestine and typical transverse appearance of a target sign.

Material & Methods:

In our case study from June 2015 to December 2016 there were 42 case of ileocolic intussusceptions. Here patients were diagnosed with history, x ray abdomen erect and ultrasonography, Patients included in the study are clinically stable patients means no sign of peritonitis, perforation of bowel and hemodynamically stable patient.

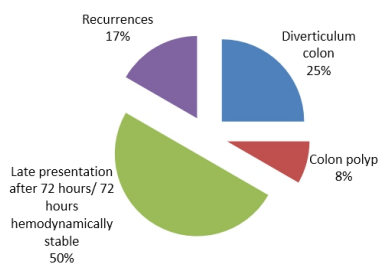
Once patient was diagnosed for the intussusceptions, he/she was kept nil by mouth, started with intravenous fluid, intravenous antibiotic, corrected dehydration and after doing routine blood investigation, x ray abdomen erect the patient was subjected to ultrasonographic saline reduction of intussusceptions.

We put Foleys catheter HD 18/20 prerectally and inflate balloon and hitch the catheter and allow normal saline to flow through the catheter, the normal saline bottle was kept to three feet high to create pressure about 60 to 120 mmHg and as saline flow through the colon pronormally and due to the pressure start reducing intussusceptions. It doesn't reduce we can create more pressure by rising the height of NS bottle. Once intussusception is reduced there is free flow of normal saline in ileum.

In spite of increasing pressure or there is no reduction of intussusceptions we abandon the procedure and shift the patient for surgery. Once intussusceptions reduced by USG, we keep the patient nil by mouth for 24 hours and repeat ultrasonography. Once we confirm that there is no intussusception we start feeding the child with clear liquids.

USG guided reduction	30
Needs laparotomy	12
Total	42
Mekel's Diverticulum	3
Colon polyp	1
Late presentation after 72 hours/ 72 hours hemodynamically stable	6
Recurrences	2

Intussusception case for laparotomy



Discussion:

Samuel Mitchell reported nonsurgical reduction of an intussusceptions

in 1836. Two years later, John Gorham reported five cases treated by means of rectal insufflation of air. In 1876, Harald Hirschsprung reported reduction of an intussusception by means of a hydrostatic enema with transabdominal manipulation.

After the discovery of x rays, it became possible to monitor the reduction process in real time by using positive contrast agents. Fluoro-scopically guided enema therapy was per-formed in the 1920s but was not scientifically tested and standardized until the studies of Ravitch and McCune⁵ in the 1940s⁶. Since then, contrast enema therapy has been increasingly accepted as the treatment of choice for the reduction of intussusception.

There is continuing discussion without wide agreement about which type of enema is the best for this purpose. The few randomized studies that have been performed did not show statistically significant differences in reduction and perforation rates between air and liquid enemas⁷. It is likely that the reported differences in reduction and perforation rates were related not to the type of enema used but to complications that occurred before enema therapy, the technique used, the intracolonic pressures⁸, and the patient selection criteria⁹. These factors vary among the re-ported series. In some reports, it is difficult to ascertain many of these factors.

The most important studies of Ultrasonography (US) guidance of intussusception reduction have been performed globally, where there is extensive experience with the technique. The procedure may be performed with water, saline solution, or Hartmann solution. Studies have shown a high reduction rate with few complications, results similar to those of other hydrostatic methods¹⁰.

The principal advantage of this technique is the lack of radiation exposure. As a result, there is no limit to the procedure time, a fact that may improve the success rate. Because of the widespread support for use of US to diagnose intussusception¹¹, this requirement is probably not a real disadvantage. As with any new technique, an alternative method to fall back on may be needed until the learning curve is stabilized. To easily visualize the reduction process, the pressure can be progressively in-creased from 60 to 120 mm Hg by raising the saline bag.

Surgery is indicated when nonoperative reduction is incomplete or when a persistent filling defect, indicating a mass lesion, is noted¹². As noted above, a residual filling defect may be seen because of edema of the ileocecal valve. Thus, when a filling defect appears to be associated with edema in the area, an ultrasonographic or repeat contrast study should be performed provided that symptoms have resolved.

Broad-spectrum intravenous antibiotics should be given before surgery. Manual reduction at operation is attempted in most cases, but resection with primary anastomosis needs to be performed if manual reduction is not possible or if a lead point is seen.



Fig.3 and 4. Intussusception
Fig. 5. Mekel's Diverticulum

Management Aspect

Surgical treatment of an intussusception is indicated if there is shock that cannot be corrected; if lead points, necrosis, or perforation is present; or if the intussusception is irreducible. The presence of these features must be determined as far as is possible to minimize unnecessary surgical procedures. Patients who require surgical treatment have a longer hospital stay than those in whom enema therapy is successful¹⁵.

Traditionally, the first imaging study per-formed when there is clinical suspicion of intussusception is plain radiography. In the set-ting of vague abdominal symptoms, plain radiography remains the simplest screening test. However, plain radiography does not al-low one to confidently rule out intussusception or detect perforation. Therefore,

several authors do not recommend plain radiography if there is high clinical suspicion of intussusception¹⁴, especially when the symptoms are of short duration. In such cases, US should be the initial imaging procedure¹⁵. US allow one to confidently diagnose or rule out intussusception, make alternative diagnoses, and characterize lead points. If US are not available, a contrast enema study must be performed to exclude intussusception.

Formerly, determination of the presence of ischemia or irreducibility was based primarily on clinical criteria. However, US can help identify these high-risk features by demonstrating fluid trapped within the intussusception¹⁶ or absence of blood flow at Doppler imaging¹⁷. Identification of these features indicates a need to adopt a more cautious and gentle approach.

This has been so far successful reducing drastically the number of children to the operation theater for intussusceptions reduction.

Conclusions

Plain radiography is of limited value in the diagnosis of intussusception. US have permitted a more comprehensive understanding of the anatomy and pathophysiology of intussusception. An accurate and safe modality, US may also allow one to detect lead points and identify alternative diagnoses. Thorough knowledge of the US features characteristic of intussusception (eg, the crescent-in-doughnut, multiple concentric ring, sandwich, and hayfork signs and variants of these signs) is a prerequisite for accurate diagnosis. Indicators of ischemia and irreducibility at US are fluid trapped within the intussusception and absence of blood flow at Doppler imaging.

Nonsurgical treatment of intussusception is possible in most cases, especially at institutions with pediatric surgery facilities and personnel for use as a backup. There is a trend toward performing enema therapy with agents other than barium such as water-soluble agents, air and saline solution because other agents will not persist in the peritoneal cavity if perforation occurs. And it has a high success rate when patient are carefully selected. It is therefore prudent of consider it as primary modality of treatment in intussusceptions management.

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