Introduction

Intussusception is one of the common causes of intestinal obstruction in children. It is invagination of a proximal bowel segment (intussusceptum) into an adjacent distal segment of intestine (intussuscipiens) **(Krishnakumar, et al., 2006)**.

The entity of intussusception was first clearly detailed by John Hunter (**Palmer, 1837**).

Several types are described such as ileo colic, ileo ileal, colo colic, ileo ileo-colic, multiple and retrograde. Ileo-colic variety is the commonest **(Marc, 2000)**.

The incidence of intussusception ranges from 0.5 to 2.24 cases per 1000 live births **(Fischer, et al., 2004)**.

It typically occurs in infants and young children between the ages 4 months and 2 years with a peak incidence between 6 and 9 months of age, making it the most common cause of intestinal obstruction in young children **(Vestergaard, et al., 2008)**.

In 90% of cases, no intrinsic abnormality is found (idiopathic intussusception). But there are anatomical predisposing factors in the form of mobile caecum and ascending colon, bloodless band of treves; that is stretched between the terminal ileum and the caecum, bulky ileocecal valve in the first year of life and the presence of lymphoid nodules in the terminal ileum, which probably be hypertrophied, secondary to viral infections, usually upper respiratory tract infection or gastroenteritis during weaning and teething, and behave as a lead point and become drawn into the lumen of the terminal ileum. Edema formation and inflammation follow, finally culminating in bowel obstruction. Complications such as incarceration, strangulation, and

perforation of the intussusceptum can occur and can be fatal **(Sorantin and Lindbichler, 2004)**.

Clinically, there are periodic episodes of irritability and crying with the infant drawing up both legs onto the abdomen every 20-30 minutes. Between bouts of colic, the young child may initially appear to be comfortable and even playful; but, if the intussusception is not reduced, he will become progressively more ill-appearing, demonstrating lethargy, weakness, and exhaustion **(Hacham, et al., 2010)**.

A classic triad is often described, consisting of abdominal pain, vomiting, and currant jelly stool, but this classic triad was present in only 46% of the cases (**Blanch, et al., 2007)**.

There is a pathognomonic physical finding in intussusception known as Dance's sign; it is the finding of a sausage shape mass felt anywhere in the abdomen except in the right iliac fossa. A rectal examination is of utmost importance as, in a small percentage of cases, there is actually a palpable intussusceptum that has progressed to the rectum and, the detection of occult blood furthers the clinician's suspicion of the diagnosis **(Hacham, et al., 2010)**.

The abdominal radiograph, although a popular test, it correctly identifies intussusception in only 45% of cases. Nevertheless, it is a helpful test to exclude perforation in a child with abdominal pain and vomiting. Enemas (both barium and air) are diagnostic with close to 100% accuracy. Enemas also have the added benefit therapeutic reduction. They are, however, contraindicated in cases involving clinical findings of peritonitis, shock, or signs of perforation on abdominal radiograph **(Daneman, 1996)**.

Ultrasonography is used more frequently to diagnose intussusception as it offers several diagnostic advantages as compared to enema, as; there is no radiation exposure, lower cost, repeatable and safe.

In addition, it can sometimes identify other potential etiologists for the patient's symptoms including appendicitis, ovarian and urinary tract causes. More recently, color Doppler sonography has been used in an attempt to determine whether a particular intussusception is likely to be reducible or not; as it indicates the presence of ischemia and necrosis and that attempts at enema reduction in such patients should be avoided to obviate the potential risk of perforation **(Pendergast and Wilson, 2003)**.

Once the diagnosis of an intussusception is established, non-surgical reduction (NSR) is used, after careful preoperative preparation. Depending on the choice of guiding imaging technique, different contrast media are used for NSR. Barium suspension or air with fluoroscopic guidance, or saline only or mixed with water-soluble contrast under sonographic guidance, has to be used. Regardless of the used contrast medium, NSR is an effective technique, being successfully employed in more than 90% of cases **(Sorantin and Lindbichler, 2004)**.

Surgery is not recommended as the primary treatment. Operative reduction is necessary, however, for those patients in whom radiologic reduction is unsuccessful, for those where a pathological lead point is suspected, and for those with multiple recurrences. A laparotomy is performed with manual reduction of the intussusception followed by resection of nonviable bowel segments and/or lead points **(Spitz and Sugerman, 2006)**.

Recurrent intussusception is a frequent sequel with intussusception and commonly an underlying structural anomaly in the ileo-cecal region is present; however most first recurrences are not due to a pathological lead point. Aiming to prevent recurrence, many attempts have been made to stabilize the ileocecal region by appendectomy or various plication procedures; however no scientific evidence has supported these procedures **(Koh, et al., 2006)**.