Does all small bowel intussusception need exploration?

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ABSTRACT

Small bowel intussusception (SBI) in infants and children are ususally associated with a lead point. With increased use of radiological investigations, more idiopathic SBIs are identified. As reduction by hydrostatic or air enema are less successful in these cases, most of them require surgical exploration in children. However, now many cases of SBI have been found to reduce spontaneously. We report two cases of SBI with spontaneous reduction and review the literature for the management guidelines.

Key words: Intussusception, small bowel intussusception, infants, children

DOI: 10.4103/0189-6725.59358

INTRODUCTION

Intussusception is one of the most common causes of acute abdomen in the early childhood. Ileocolic type accounts for most of the bowel invagination cases.[1] Small bowel intussusception (SBI) is much less frequently diagnosed, and it is usually associated with a lead point[2,3] or it occurs postoperatively.[4] An unreduced intussusception can potentially cause bowel obstruction and mesenteric vascular compromise leading to bowel ischaemia/necrosis. An early diagnosis and treatment of this condition is very important. However, careful interpretation of ultrasound (US) with or without CT scan has disclosed many SBIs that were transient and were reduced spontaneously without any intervention.[5–9] We report two cases of SBIs which got reduced spontaneously and highlight the indications of watchful waiting in SBI.

CASE REPORTS

Case 1

A 40-day-old girl child was brought to the paediatric emergency with history of nonbilious vomiting for five days and irritability and refusal to feeds for two days. There was no history of fever, altered sensorium, or bleeding per rectum on presentation. At the time of presentation she was dehydrated and her abdominal examination did not reveal any lump or tenderness on palpation. She was investigated with serum electolytes and blood gases which showed metabolic acidosis. The child was resuscitated with intravenous fluids and intravenous antibiotics. Further investigation with plain abdominal x-ray showed normal abdominal gas pattern. An abdominal US revealed a characteristic target sign in left upper abdomen involving proximal most small bowel [Figure 1] suggestive of jejunojejunal intussusception. No definitive lead point was seen. It appeared to partially reduce *de novo*, even during scanning. Hence, she was rescanned after 45 minutes, which showed real time reduction of the intussusception and the diagnosis of transient SBI without any evident lead point. Child was kept nil orally for 24 hours and a repeat scan was done the next day. Repeat scan after 24 hours of initial diagnosis again showed no evidence of any persistent intussusception. As her abdomen was soft and she was passing stools normally, she was allowed feeds. She was further observed for 24 hours and was discharged on full feeds. On follow-up after one month, she had no signs of recurrence.



Figure 1: Abdominal US in the transverse plane demonstrates a ædonut signæ,with alternating rings of hyper-and hypoechogenicity, characteristic for intussusception

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Case 2

A five-month-old female child was referred to our paediatric emergency department from a private practicing doctor with the diagnosis of ileoileal intussusception. She initially presented to the treating doctor with abdominal colic, irritability and blood in stools for two days. Her initial US revealed the diagnosis of SBI. She was given a trial of conservative management. But as the bleeding per rectum presisted, she was referred to us. At presentation, she was crying excessively. She was hemodynamically stable and on palpation was noticed to have a palpable lump in the subumbilical region. She was reinvestigated with repeat US at our hospital, which revealed the diagnosis of persistent ileoileal intussusception. Her blood investigations revealed the total WBC counts of 11000/cmm, platelet counts of 1,68,000/cmm and her PTI was 88%. She was taken for exploratory laparotomy after fluid resucitation. Intraoperatively she was found to have dilated and odematous terminal ileum, but intussusception was not present, and the rest of the bowel was normal. The intussusception was presumed to have reduced spontaneously. There was no pathological lead point. Postoperatively, child had no bleeding per rectum and was discharged on third day of hospitalisation after allowing her full feeds. At three-month follow-up, she was asymptomatic and had no recurrence of the intussusception.

DISCUSSION

Intussusception is one of the most common emergencies in infants and children. In more than 80% of the cases ileocecal region is involved. SBI is found in less than 10% of cases.[1] SBI is generally found in patients with age ranging between 2−20 years, with a median age of 10 years.[1−3] Strouse *et al*.[5] found SBI involving jejunum in 54% cases, mid small bowel in 18% cases, and ileum in 29% cases.

Pathological entities which can lead to SBI are: infections, polyps, lymphomas, malabsorption syndrome, Meckel's diverticulum, duplication cyst, cystic fibrosis, intraluminal hematoma, and adhesions.[2,3,5] It is also found to occur in postoperative period.[4] However, now idiopathic SBIs are increasingly found. Factors predisposing to idiopathic SBI are: 1) swelling of the small bowel wall, 2) abnormal gastrointestinal motility, and 3) scar or adhesions of the bowel from previous insult i.e., surgery, chemotherapy, or radiotherapy.[6,7] The common association of mesenteric lymphadenopathy and ileocolic intussusception supports the above spectulation.

Typical presentation of cyclical abdominal pain, abdominal mass, and blood in stools is not found in patients with SBI.[2,3,5−7] In the present case series, case 1 had atypical presentation, while case 2 presented with typical signs and symptoms. Diagnosis is generally based on clinical suspicion and radiological evaluation. SBIs are also found incidentally in asymptomatic patients or symptomatic patients evaluated for other reasons.[5−7] The radiological diagnosis of SBI is based on its typical finding of target sign or pseudokidney sign on left upper quadrant of the abdomen on ultrasonography (USG).

With increasing use of CT scans and MRI, increased number of asymptomatic or idiopathic SBI has been identified, which are transient and does not require surgical intervention. Doi *et al*.[8] described this phenomenon as benign SBI. According to them, SBI reduces naturally in many cases (benign SBI), but may be associated with intestinal ischaemia (SBI disease) or progresses to large bowel intussusception (ileo-ileo-colic). Typical findings of benign SBI associated with spontaneous reduction on US are: a) small outer diameter (<2.5 cm), b) short segmental invagination (<3 cm), c) peristaltic wall motion, and d) absence of any visible pathological lead point.[5,7,9] The incidence of pathological lead point in patients with SBI is low according to Kornecki *et al*.[6] However, Ko *et al*[2] found lead point in 56% of the patients with SBI requiring surgical exploration. There are reports of spontaneous reduction of SBI even in presence of lead points, i.e., in patients with polyp, perpura. In the case 1, the repeat scan revealed real time reduction of the intussusception and so the child was successfully managed conservatively. However, case 2 had peristent intussusception on US and was operated, though intraoperatively, it was found to have reduced spontaneously. Laparoscopy techniques might have been a useful option to avoid laparotomy in this situation. Radiological findings of free fluid in the abdomen, bowel obstruction and trapped fluid between the intussuscepted bowels are associated with reduced chances of spontaneous reduction.[7] The criterion for successful reduction is mainly based on the symptomatic improvement of the patient. The repeat US findings will corroborate with the clinical improvement in the patient.

Kornecki *et al*.[6] recommend that if the US findings are typical for benign SBI and child is stable or asymptomatic, the patient can be managed conservatively and should be monitored by subsequent imaging at 45 minutes interval to confirm the spontaneous reduction. The authors further recommend that even if the reduction does not occur and the child remains asymptomatic, it is reasonable to follow these children with appropriate

clinical monitoring without necessarily doing repeat US scans. This period will be double edged sword and has to be balanced by the surgeon and is largely subjective. We believe that by the mentioned criteria the surgeon can achieve this balance on timing of intervention. Optimal timing will achieve favourable results. However, patients with recurrent or multiple intussusceptions and those with persistent symptoms should undergo surgical exploration.[7-9] Ko *et al.*[2] has reported three patients with idiopathic ileoileal intussusception developing delayed peforation after 6, 32, and 99 days. So it is important to closely follow-up the patients with SBI for several months.

Knowledge of transient SBI is well known in adults, but its knowledge is not widespread in children. As a consequence, the significance of SBI may be clinically exagerated. By virtue of this case series, we intend to bring the entity of spontaneous reduction of SBI to the attention of the physicians dealing with this commonly encountered emergency. We also wish to highlight the characteristic US findings associated with spontaneous reduction of SBI, so that it would be useful in decision making for the concerned physicians.

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Source of Support: Nil, **Conflict of Interest:** None.

ANNOUNCEMENTS

1. WHAT IS NEW?

We are glad to inform our esteemed audience/readers that African Journal of Paediatric Surgery (AJPS) is now fully indexed and abstracted on PubMed/MEDLINE; this is in addition to the already existing numerous indexing agencies [see homepage @ www.afrjpaedsurg.org]! Secondly, AJPS now publishes 3 issues per year, with effect from 2010.

The schedules are as follows:

a. First issue: January-April
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c. Third issue: September-December

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2. OBITUARY

The members of Association of Paediatric Surgeons of Nigeria (APSON) announces with a heavy heart, the passing away to the great beyond of one of her dedicated members, Dr Mark Anthony Anumah, in September 2009. Until his demise, he was a Consultant Paediatric Surgeon and Senior Lecturer in Paediatric Surgery at the Ahmadu Bello University Teaching Hospital (ABUTH) and Ahmadu Bello University, Zaria, Nigeria. May his gentle soul rest in perfect peace with the Lord. Amen