

Total Jejunioleal Intussusception: A Case Report and Literature review

Ros Smyth, William A McCallion[§] Anne Paterson

Accepted 1 September 2008

ABSTRACT

Small bowel intussusceptions are much less common than the ileocolic type, with jejunioleal intussusceptions being amongst the most rare¹. We review the literature on small bowel intussusception, using a case of an 11-year-old girl with a jejunioleal intussusception involving the whole of the small bowel, from the level of the duodenojejunal flexure to the ileocaecal valve, as an illustrative history. The typical CT features of an intussusception and value of CT with regard to identification of complications are highlighted.

Key Words: Small bowel intussusception, Polyp, CT scan.

INTRODUCTION

Small bowel intussusceptions (SBI) are much less common than the ileocolic variety, with jejunioleal and duodenojejunal intussusceptions being the rarest types of all¹. SBI may

be difficult to diagnose preoperatively, with a consequent increase in ischaemic complications, secondary to delayed surgery.

ILLUSTRATIVE CASE REPORT

An 11-year-old girl was admitted with an 8-hour history of acute abdominal pain. On physical examination, she was clinically anaemic, shocked and had a palpable central abdominal mass. A past history of iron deficiency anaemia had been attributed to a poor dietary intake.

A plain abdominal radiograph (Fig.1) confirmed the presence of the mass, and showed gaseous distension of the stomach and (displaced) duodenum. Following fluid resuscitation, the duty surgeon requested an emergency CT scan of the abdomen and pelvis, both to determine the cause of the mass, and to aid in his decision as to the timing of an exploratory laparotomy. The CT images (Fig.2) demonstrated an enormous small bowel intussusception, which extended from the duodenojejunal flexure (DJF) to the ileocaecal valve. The colon was clearly seen to be separate from the mass. Fluid was trapped between the layers of bowel, and lying freely in the pelvis. The bowel loops caught up in the mass enhanced poorly, indicative of ischaemia. Axial source images at the level of the superior mesenteric vessels showed them to be dragged over to the left side and entangled in the intussuscepted loops, reminiscent of a small bowel volvulus.

Surgery performed later on that same evening, confirmed the CT findings. The intussusception was successfully reduced, and a proximal jejunal polyp was found to have acted as a pathological lead point. Mesenteric venous thrombosis and consequent bowel wall ischaemia necessitated a total of four further laparotomies, for resection of non-viable bowel and an ischaemic stricture. Four months following her emergency admission, the patient was finally discharged from hospital. She has been left with 200cm of small bowel, and an intact ileocaecal valve and colon. The surgical team remain optimistic about her future, and she was progressing well when seen at her first outpatient visit. It remains speculative, but it is possible that the jejunal polyp removed at surgery may have been responsible for her chronic iron deficiency anaemia.

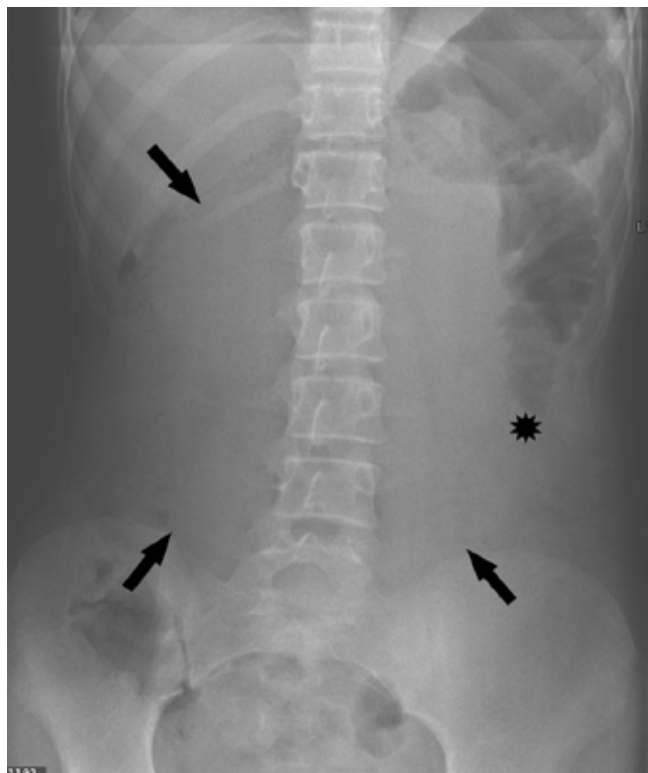


Fig 1. Abdominal radiograph demonstrating a large, central abdominal mass (arrows) and an associated high small bowel obstruction (asterisk).

Department of Radiology and [§]Paediatric Surgery, Royal Belfast Hospital for Sick Children, 180 Falls Road, Belfast BT12 6BE

Correspondence to Dr Anne Paterson,

annie.paterson@belfasttrust.hscni.net

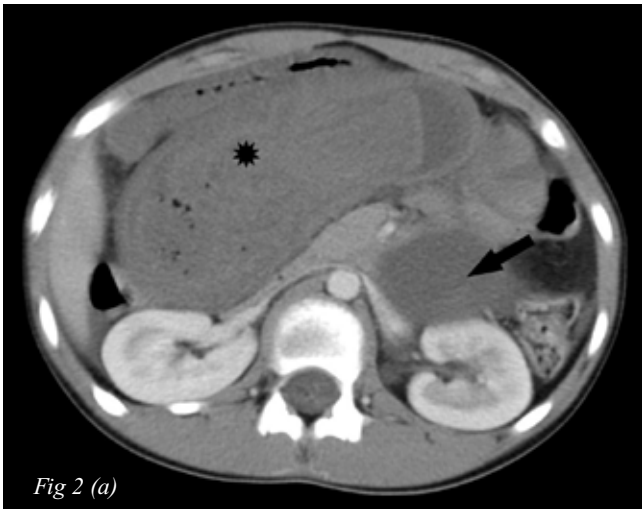


Fig 2 (a)

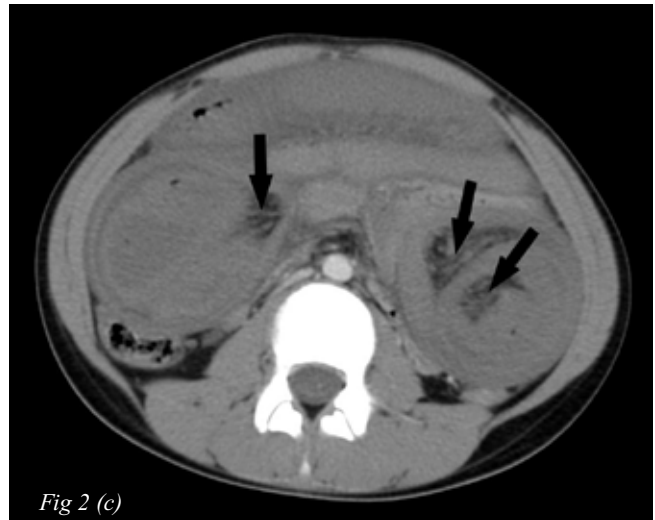


Fig 2 (c)

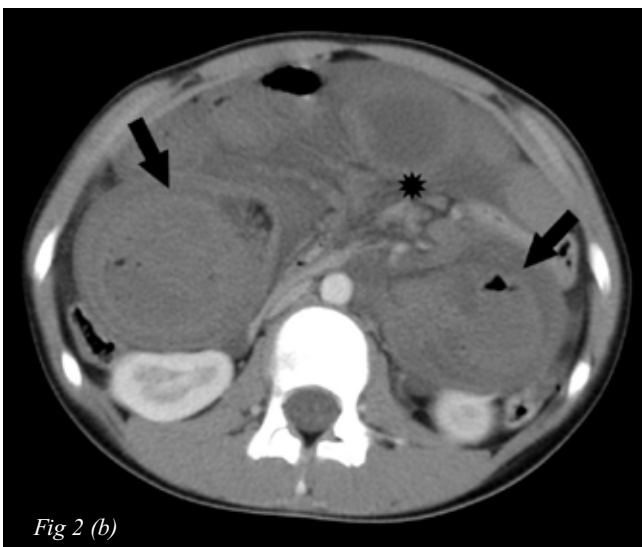


Fig 2 (b)

DISCUSSION

Ileocolic intussusception is one of the most common causes of an acute abdomen in children and has a characteristic clinical picture of vomiting, red 'currant jelly' stools, severe colicky abdominal pain and mass. The incidence of acute intussusception in Europe is reported to range from 0.66 to 2.24 cases per 1000 children². 70% of cases occur in the first year of life with the incidence declining rapidly thereafter to less than 2% of cases in 10-15 year olds. SBI is unusual, representing 1-10% of all intussusceptions but up to 50% of cases in older children. Ileoileal, jejunojejunal, jejunioleal and duodenojejunal intussusceptions are described in descending order of frequency. Subacute presentation of SBI is typical and therefore difficult to diagnose preoperatively, leading to an increased risk of ischaemic complications^{3,4}.

A 2-3cm doughnut-like lesion found in the left abdomen or paraumbilical region with ultrasound is suspicious for SBI. An intussusception length >3.5cm has been reported as a sensitive and specific predictor of those SBIs that require surgical intervention, as compared to those that will resolve spontaneously^{5,6}. The diagnosis of SBI can confidently be made with CT, due to their virtual pathognomic appearance:

Fig 2 (a). Axial CT image at the level of the superior mesenteric artery origin, where the 3rd part of the duodenum crosses anterior to the spine. The start of the intussusception is seen as a fluid filled structure, to the left of the midline at the DJF (arrow). More anteriorly lie further components of the intussusception (asterisk) (shown to be one contiguous mass on consecutive images). *(b)* Axial CT image at the level of the lower poles of the kidneys. The layers of the intussusception are clearly visualised, with fluid trapped between them (arrows). The superior mesenteric vessels are displaced to the left side and appear twisted, reminiscent of a small bowel volvulus (asterisk). The bowel wall is thickened and enhances poorly, in keeping with ischaemia. The ascending and descending limbs of the colon are seen lying posteriorly adjacent to the kidneys, and separate from the intussusception *(c)* Axial CT image at a more caudal level. Layers of fat are seen trapped within the intussusception (arrows).

they are seen as a complex soft tissue mass, with a target, layered, sausage-shape or reniform configuration. An eccentric area of fat density within the mass represents intussuscepted mesenteric fat, and the mesenteric vessels themselves may be visible within this fat layer⁷. The superior anatomic detail of CT over ultrasound, mean that ensuing complications such as mesenteric thrombosis or small bowel volvulus may also be easily recognised. Whilst ultrasound remains the primary imaging modality used both to diagnose intussusception and for the evaluation of an abdominal mass lesion, the clinical condition of the patient (as in this case), may dictate that CT be sometimes used as a first-line investigation. It was additionally of value as the size of the intussusception may have led to an errant diagnosis of a large bowel intussusception, unnecessary therapeutic enema and delay of appropriate surgery.

CONCLUSION

Intussusception is an unusual but important differential in older children presenting with an acute abdomen. In this scenario CT may have a significant diagnostic advantage over ultrasound.

The authors have no conflict of interest

LEARNING POINTS.

<ul style="list-style-type: none"> ▪ Intussusception should be considered in the differential diagnosis of all children who present with an acute abdomen, regardless of age.
<ul style="list-style-type: none"> ▪ Small bowel intussusceptions cannot be reduced with air (or fluid) enema techniques.
<ul style="list-style-type: none"> ▪ Ultrasound remains the first line imaging investigation both in children who present with an abdominal mass and in those in whom intussusception is clinically suspected.
<ul style="list-style-type: none"> ▪ CT is of value in those children in whom complex intra-abdominal mass lesions are detected or when the presenting clinical picture is complicated.

REFERENCES

1. Koh EP, Chua JH, Chui CH, Jacobsen AS. A report of 6 children with small bowel intussusception that required surgical intervention. *J Pediatr Surg* 2006;**41(4)**:817-20.
2. Huppertz HI, Soriano-Gabarró M, Grimpel E, Franco E, Mezner Z, Desselberger U *et al.* Intussusception among young children in Europe. *Pediatr Infect Dis J* 2006;**25(1 Suppl)**:S22-9.
3. Reijnen JA, Joosten HJ, Festen C. Intussusception in children 5-15 years of age. *Br J Surg* 1987;**74(8)**:692-3
4. Schuh S, Wesson DE. Intussusception in children 2 years of age and older. *CMAJ* 1987;**136(3)**:269-272.
5. Munden MM, Bruzzi JF, Coley BD, Munden RF. Sonography of pediatric small-bowel intussusception: differentiating surgical from nonsurgical cases. *AJR Am J Roentgenol* 2007;**188(1)**:275-79.
6. Lvoff N, Breiman RS, Coakley FV, Lu Y, Warren RS. Distinguishing features of self-limiting adult small-bowel intussusception identified at CT. *Radiology* 2003;**227(1)**:68-72.
7. Gayer G, Zissin R, Apter S, Papa M, Hertz M. Pictorial review: adult intussusception – a CT diagnosis. *Br J Radiol* 2002;**75(890)**:185-90.