

Transient small bowel intussusception: CT findings in adults

O CATALANO, MD

Department of Radiological Sciences, University "Federico II", Via Pansini n.5, I-80131 Naples, Italy

Abstract. Transient non-obstructing intussusception is known to occur in adults. While the CT findings in small bowel intussusception have been described in detail, few reports concerning transient cases have been published. We evaluated five patients with non-obstructive jejuno-jejunal invagination. All CT studies showed a target pattern with an intraluminal soft tissue mass, an eccentric mesentery, and a slightly dilated intussusciptens. Transient intussusception has typical CT features and should be distinguished from more severe forms requiring prompt surgical treatment.

Adult intussusception is rare and accounts for up to 16% of all cases [1]. The clinical findings are variable; acute intestinal obstruction is not common and most patients present with subacute, chronic or intermittent symptoms [2].

The CT findings in intestinal intussusception have been extensively reported. However, there are only a few published cases illustrating the CT features of transient non-obstructing forms. Merine et al [3] described an ileal invagination secondary to coeliac disease while Knowles et al [4] demonstrated an ileal invagination in two subjects with Crohn's disease.

We report the CT appearance of non-obstructive, symptomless, small bowel intussusception in five adults. All studies were performed after oral and intravenous contrast agent administration.

Case reports

Case 1

A 56-year-old male underwent abdominal CT in order to evaluate an aortic aneurysm. A round structure was noted at the level of various proximal jejunal loops. This lesion had an internal eccentric fat density and resulted in localized intestinal dilation without obstruction or evidence of a leading mass. The intussusception was not present when the same level was scanned 4 min later (Figure 1).

Case 2

A 60-year-old female underwent CT examination in order to assess an hepatic cyst. A round

Received 8 November 1996 and in revised form 10 March 1997, accepted 25 April 1997.

Address correspondence to Dr O Catalano, via F. Crispi n.92, I-80121 Naples, Italy.

structure with eccentric mesenteric density was evident within a proximal jejunal loop. The lesion was not visible when the region was examined again 5 min later (Figure 2). No evidence of intestinal discomfort developed during a 3 month clinical follow-up.

Case 3

A 65-year-old male had a CT study 6 months after pulmonary lobectomy for carcinoma. Multiple cerebral metastases were demonstrated. A round, well defined image with an internal, eccentric fat density was present within a proximal jejunal loop. The subject did not develop any clinical evidence of abdominal disturbance during a 1 year follow-up after cerebral radiotherapy.

Case 4

An 18-year-old male was admitted with a 4 month history of fever, weight loss, and night sweats. No peripheral lymphadenopathy and no significant laboratory abnormality was present. The patient underwent thoracic and abdominal CT to rule out lymphoma. On pre-contrast scans, several retroperitoneal and mesenteric nodes were found. An extended soft tissue structure was identified within the lumen of several jejunal loops. The intussusception was still evident on contrast enhanced scans and was not associated with intestinal dilation or mass. No abnormality was demonstrated on a small bowel follow-through performed the next day (Figure 3).

Case 5

A 44-year-old man underwent CT staging of a sigmoid cancer. An intraluminal round structure

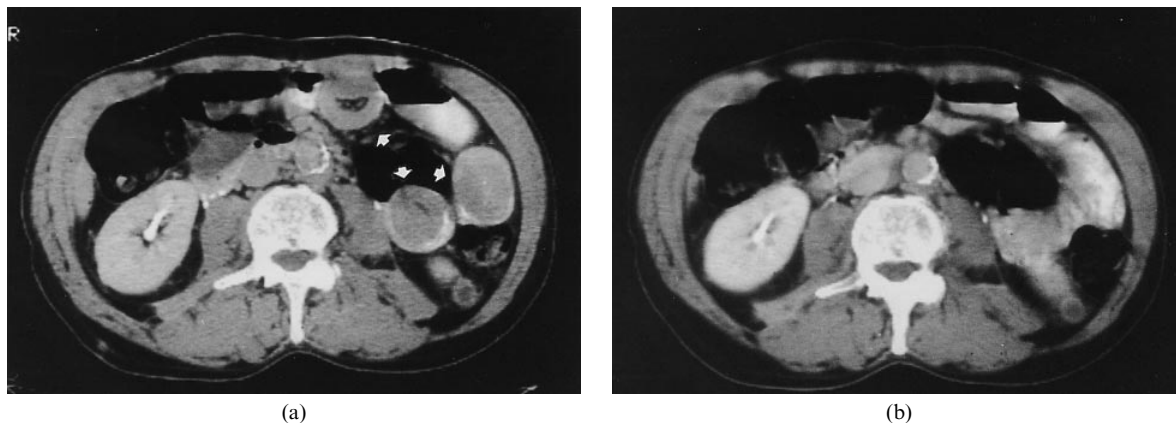


Figure 1. (a) A round structure with an internal eccentric fat density is evident within several jejunal loops (arrows); focal intestinal dilation is present, but there is no sign of obstruction or evidence of a leading mass. No intussusception is present a few minutes later (b).

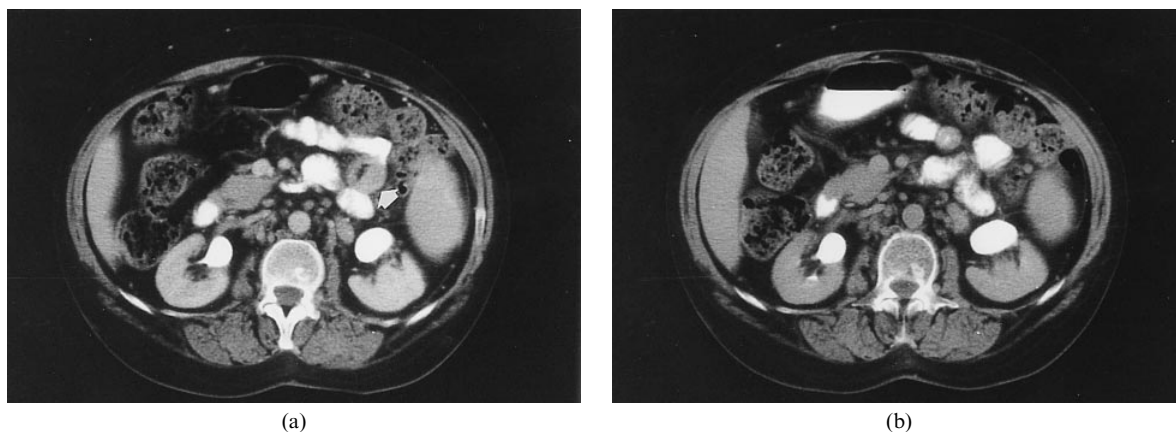


Figure 2. (a) A single round structure with eccentric mesentery is identified within a jejunal loop (arrow). The intussusception is not present a few minutes later (b).

with an eccentric triangular fat density and a peripheral rim of oral contrast material was recognizable within the mid-jejunum. The lesion was not present when the region was rescanned 5 min later and was also absent on a CT study performed 1 year later following left hemicolectomy.

Discussion

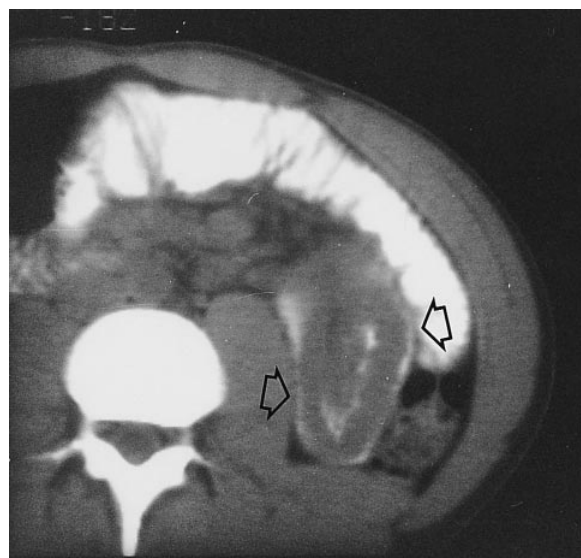
Intussusception is the prolapse of a bowel loop with its mesenteric fold (intussusceptum) into the lumen of a contiguous segment (intussusciens). Most cases involve the ileocecal area but, in adults, entero-enteric intussusception accounts for up to 40% of the cases [1, 5]. Proximal small bowel invagination, as seen in all of our cases, is considered uncommon [6]: only 18 cases were identified among 160 intussusceptions reviewed by Weilbaecher et al [2] and only one post-operative case was included among 25 intussusceptions reported by Agha [1].

It is generally believed that over 90% of adult intussusceptions have a demonstrable cause [1]. Since malignancy is assumed to be a common

cause of adult intussusception, surgical resection is considered to be the treatment of choice [2].

Any lesion within the intestinal lumen or wall which alters the peristalsis may start an invagination. When a local area does not contract normally, the unbalanced peristaltic forces may rotate the intestinal wall inwards and initiate the invagination [7, 8]. In malabsorption syndromes, for example, it is believed that dilated flaccid loops with increased secretions may disturb the peristalsis and result in intussusception [7, 9]. In all of our cases, the proximal small bowel was involved, where the peristaltic activity is normally greater [8] and where dysrhythmic contractions, even in absence of an organic lesion, may cause transient intussusceptions. None of our cases had a defined cause for the intussusception, such as a malabsorption syndrome, and the incidentally-detected phenomenon was probably functional.

Most of the published cases of non-obstructing invagination were observed during enteroclysis or small bowel follow-through. Skucas and Spataro [6] described a jejunal invagination secondary to Crohn's disease. Intussusceptions have been



(a)



(b)

Figure 3. (a) An extended, intraluminal, soft-tissue structure is visible within the jejunal loops (arrow); the intussusception is not associated with intestinal dilation or leading masses. No abnormality is visible on a small bowel follow through performed the following day (b).

reported in adult coeliac disease: Cohen and Lintott reported six such cases [7], Isbell et al [10] noted three out of 33 patients, Bret et al [11] four out of 25, and Masterson and Sweeney [12] five out of 31. Several other cases have been identified in adult sprue [9, 13]. Non-obstructive, single or even multiple, small bowel invaginations were also described in tropical sprue [12, 14], giardiasis [10] and metastases [5].

The CT appearance of these transient forms has only rarely been reported, although the CT findings in classical intestinal intussusception have been well demonstrated [3, 5, 15–17], and some experimental studies have been also performed [15, 17].

Three CT patterns of intestinal intussusception have been identified [3]: intraluminal soft tissue mass with an eccentric fat density due to invaginated mesentery (target pattern); reniform or bilobed mass with peripheral high attenuation due to thickened bowel wall (reniform pattern); sausage-shaped mass with alternating areas of low and high attenuation due to bowel wall, mesentery, and intestinal fluid, gas or oral contrast agent (sausage-shaped pattern). These progressive patterns correlate well with the stages of small bowel intussusception. The target appearance, in

particular, corresponds to an initial intussusception with mild degree of obstruction [3].

All our cases of jejunal intussusception, as well as the three transient ileal cases reported in the literature [3, 4], share a similar CT appearance, which corresponds to the target pattern [3].

- (1) A short or sometimes long soft tissue density structure extending into the bowel lumen (in a central or eccentric position).
- (2) Triangular or crescent-shaped fat density due to the eccentrically placed mesentery (almost always detectable).
- (3) Normal calibre or only slight dilation of the involved loop.
- (4) Normal calibre of the loops proximal to the intussusception.

In conclusion, all our cases shared several important features: incidental demonstration, proximal small bowel location, absence of intestinal obstruction, absence of any apparent cause and a target-like CT appearance. These features are helpful in distinguishing transient intussusception from the classical obstructing invagination in

adults, which is usually associated with a leading mass and requires surgical management.

References

1. Agha FP. Intussusception in adults. *AJR* 1986;146:527–31.
2. Weilbaecher D, Bolin JA, Hearn D, Ogden W. Intussusception in adults: review of 160 cases. *Am J Surg* 1971;121:531–5.
3. Merine DS, Fishman EK, Jones B, Siegelman SS. Enterointeric intussusception: CT findings in nine patients. *AJR* 1987;148:1129–32.
4. Knowles MC, Fishman EK, Kuhlman JE, Bayless TM. Transient intussusception in Crohn disease: CT evaluation. *Radiology* 1989;170:814.
5. Gourtsoyiannis NC, Papakonstantinou O, Bays, D, Malamas M. Adults enteric intussusception: additional observations on enteroclysis. *Abdom Imaging* 1994;19:11–17.
6. Skucas J, Spataro RF. *Radiology of the acute abdomen*. New York: Churchill Livingstone, 1986: pp. 161–3.
7. Cohen MD, Lintott DJ. Transient small bowel intussusception in adult coeliac disease. *Clin Radiol* 1978;29:529–34.
8. Rohrmann CA. Functional disorders of the gastrointestinal tract. In: Gore RM, Levine MS, Laufer I, editors. *Textbook of Gastrointestinal Radiology*. Philadelphia: WB Saunders, 1994: pp. 2645–59.
9. Ruoff M, Linder AE, Marshak RH. Intussusception in sprue. *Am J Roentgenol Radium Ther Nucl Med* 1968;104:525–8.
10. Isbell RG, Carlson MC, Hoffman MN. Roentgenologic-pathologic correlation in malabsorption syndromes. *AJR* 1969;107:158–69.
11. Bret P, Francoz JB, Bret PA, et al. Images lacunaires et invaginations dans 25 cas de maladie coeliaque. *J Radiol* 1980;61:723–7.
12. Masterson JB, Dawson IMP. The role of small bowel follow-through examination in the diagnosis of coeliac disease. *Br J Radiol* 1976;49:660–4.
13. Bloch C, Peck HM. Case No. 238. Radiological notes: transient intussusception in sprue. *J Mt Sinai Hosp* 1964;31:236–41.
14. Cortell S, Rieber EE, Sheehy TW, Conrad ME. Tropical sprue intussusception: unusual association. *Am J Digest Dis* 1967;12:216–21.
15. Iko BO, Teal JS, Siram SM, et al. Computed tomography of adult colonic intussusception: clinical and experimental studies. *AJR* 1984;143:769–72.
16. Truber F. Entero-enterale Invagination: das Schnabel-Zeichen. *ROFO* 1990;152:225–6.
17. Curcio CM, Feinstein RS, Humphrey RL, et al. Computed tomography of entero-enteric intussusception. *JCAT* 1982;6:969–74.