



Target Sign—Intussusception

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Case Presentation

A boy aged two years and nine months presented to the emergency department with intermittent abdominal pain accompanied by nausea and vomiting for one day. He had no fever, diarrhea, or blood-tangled stool. The physical examination revealed hypoactive bowel sound. There was no abdominal mass or muscular rigidity. Plain abdominal radiography was arranged (Fig. 1), and point-of-care ultrasound (POCUS) confirmed intussusception. The patient received nonoperative hydrostatic reduction without complication after four days of hospitalization.

Discussion

Intussusception is one of the most common abdominal emergencies that occur at ages between six months and two years.¹ Most cases in children are idiopathic. The typical clinical triad features include intermittent crampy abdominal pain with inconsolable crying and vomiting, palpable abdominal mass, and currant-jelly stool. Early detection is important because delay diagnosis can lead to nonoperative reduction failure and increased morbidity. Although POCUS had a sensitivity and specificity of 98% in the diagnosis of intussusception, several classic signs on plain radiography, including crescent sign, sign of small bowel obstruction, soft tissue mass, and target sign may suggest the diagnosis.^{2,3} The target sign, as the presented case, consists of a round soft tissue mass that contains a radiolucent ring of fat within the intussusception. This indicates mesenteric fat around the head of the intussusception. Although some X-ray



Fig. 1. Plain abdominal radiograph shows the target sign in the right upper quadrant abdomen. Long arrow points to outer part of round soft-tissue mass, and short arrow pointed to inner ring.

findings may suggest the presence of an intussusception, they are not pathognomonic. Some diseases, including Burkitt's lymphoma, Henoch-Schönlein purpura, cecal duplication cyst, and edematous ileocecal valve should be kept in mind in the differential diagnosis.^{1,4} As plain abdominal radiography is frequently used in daily practice for patient with abdominal pain,

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emergency physicians should be familiar with the target sign on plain radiography that is suggestive of intussusception.

References

1. del-Pozo G, Albillos JC, Tejedor D, et al. Intussusception in children: current concepts in diagnosis and enema reduction. *Radiographics* 1999;19:299-319. doi:10.1148/radiographics.19.2.g99mr14299
2. Tsou PY, Wang YH, Ma YK, et al. Accuracy of point-of-care ultrasound and radiology-performed ultrasound for intussusception: a systematic review and meta-analysis. *Am J Emerg Med* 2019;37:1760-1769. doi:10.1016/j.ajem.2019.06.006
3. Ratcliffe JF, Fong S, Cheong I, O'Connell P. The plain abdominal film in intussusception: the accuracy and incidence of radiographic signs. *Pediatr Radiol* 1992;22:110-111. doi:10.1007/BF02011307
4. Karakus SC, Ozokutan BH, Ceylan H. Diseases mimicking intussusception: diagnostic dilemma. *Pediatr Int* 2014;56:768-771. doi:10.1111/ped.12334