

Epiploic Appendagitis as a Rare Cause of Acute Abdomen in the Pediatric Population: Report of Three Cases

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ABSTRACT

Epiploic appendagitis, caused by inflammation of small adipose tissue on the colon wall, is a rare cause of acute abdominal pain in the pediatric population. It is nearly impossible to establish a specific diagnosis merely on the basis of clinical findings; thus, radiological evaluation is always necessary. In this report, we present the cases of three children with abdominal pain who were diagnosed with epiploic appendagitis. All cases were successfully treated with conservative management.

Keywords: Epiploic appendagitis, children, acute abdominal pain, computed tomography, appendicitis

Introduction

Epiploic appendages are small fat tissues located on the antimesenteric side of the colon wall. Torsion of these fat tissues causes ischemic and inflammatory changes resulting in epiploic appendagitis. It is mostly seen in the adult age group but has been reported very rarely in the pediatric population [1-4]. In this report, we presented the cases of three children with abdominal pain who were diagnosed with epiploic appendagitis.

Case Reports

We obtained informed consent from the parents of the patients whose cases are discussed in this report.

Case 1

A previously healthy 15-year-old boy was admitted to our pediatric emergency department with a 3-week history of periumbilical pain. His pain was intermittent until 1 week ago, but he declared that the pain was now constant and aching in character. His medical history was unremarkable. On physical examination, he was afebrile with normal vitals, and no associated nausea, vomiting, fever, or diarrhea was present. He had localized tenderness on the lower periumbilical region. His laboratory studies indicated that his white blood cell count (WBC) and levels of hemoglobin (Hb), C-reactive protein (CRP), sodium (Na), potassium (K), chloride (Cl), blood urea nitrogen (BUN), creatinine, amylase, lipase, alanine aminotransferase (ALT), aspartate aminotransferase (AST), and glucose in blood were within the normal limits. X-ray scan of the abdomen was non-diagnostic. An abdominal ultrasound (US) revealed a hyperechoic mass, measuring 10 mm in diameter, adjacent to a colon segment at the point of tenderness (Figure 1A). Because of the inconclusive diagnosis with US, a computed tomography (CT) scan was requested as the pain was suspected to have been caused by an infection. CT examination demonstrated an ovoid, well-circumscribed fat-attenuated mass with hyperattenuating ring adjacent to the transverse colon on the antimesenteric side (Figure 1B, 1C). The appearance was characteristic for epiploic appendagitis. The patient was hospitalized and he was treated conservatively with intravenous fluid therapy and a non-steroidal anti-inflammatory drug. His pain was relieved and he was discharged.

Case 2

A 17-year-old girl presented to our pediatric emergency department with a 1-week history of worsening right lower quadrant pain. She described the pain as having occurred intermittently a few times in a day previously but was now persistent and localized to the right lower quadrant.

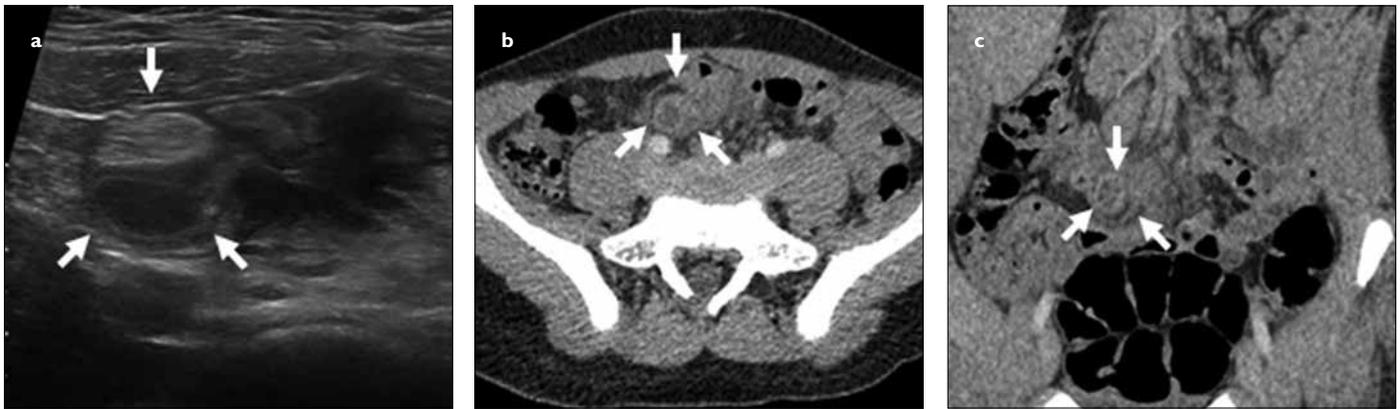


Figure 1. a-c. US image (a) shows a round hyperechoic mass (arrows) adjacent to the colon segment. Axial (b) and coronal (c) contrast-enhanced CT images show a fat-attenuated mass (arrows) with enhancing hyperdense rim adjacent to transverse colon

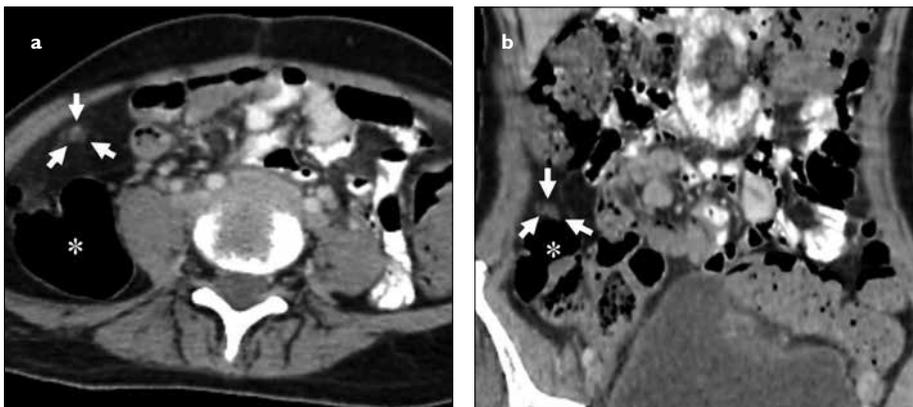


Figure 2. a, b. Oral and IV contrast-enhanced CT images of a 17-year-old girl with acute right lower quadrant pain. An oval fat-attenuated mass (arrows) anterior to cecum (asterisk) with adjacent fat stranding is shown: Axial (a) and coronal (b) views

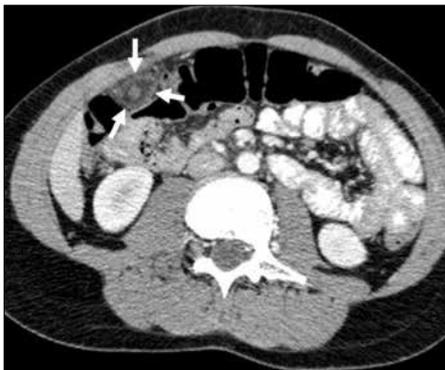


Figure 3. Axial abdominal CT image of a 10-year-old boy with right lower quadrant pain. An inflammatory fat-attenuated mass with hyperdense rim and central dot sign is demonstrated (arrows). The appearance is characteristic for epiploic appendagitis

No other symptoms were present. There was no family history of inflammatory bowel disease or celiac disease. She had urinary and fecal incontinence because of multiple pelvic bone and vertebral fractures from a car accident 2 years ago. Physical examination revealed that she was afebrile and her abdomen was soft, but there was mild-to-moderate tenderness at the right

lower quadrant without rebound or guarding. No hepatosplenomegaly was noted and bowel sounds were normal. Her vitals were within the normal limits. Laboratory work-up showed a mildly elevated WBC (11,570 U/L). Other blood tests and urinalysis did not help much in making a diagnosis. X-ray scan of the abdomen was non-diagnostic. US examination demonstrated increased echogenicity at the right lower quadrant mesenteric fat tissue but the appendix was not visible. The patient had a contrast-enhanced CT scan with a preliminary diagnosis of acute appendicitis. On CT images, a fat-attenuated nodular lesion, measuring 1 cm in diameter, was observed anterior to the cecum (Figure 2). The appendix was normal. Acute epiploic appendagitis was the final diagnosis. The patient was treated conservatively. After 3 days, her pain decreased and she was discharged from the hospital.

Case 3

A 10-year-old previously healthy boy was presented to our emergency department with a 1-week history of right lower quadrant pain. He reported that his pain was constant, started at the right lower quadrant, and was non-radi-

ating. There were no accompanying symptoms, such as nausea, vomiting, diarrhea, or constipation. He did not have fever, and his vitals were normal. Physical examination revealed mild rebound and tenderness at the right lower quadrant. Laboratory studies indicated that his WBC and levels of CRP, Hb, Na, K, Cl, BUN, creatinine, bilirubin, amylase, lipase, ALT, AST, blood glucose level, and urinalysis were normal. The appendix was not visible on US examination, but there was trace amount of fluid in between the intestinal segments at the right lower quadrant. Because acute appendicitis was suspected, a CT examination was performed. On CT images, a fat-attenuated mass with a hyperdense rim measuring 20 mm in diameter was detected at the right quadrant (Figure 3). A central hyperdense dot sign was seen within the lesion. The appearance was characteristic for epiploic appendagitis. The patient was hospitalized and received intravenous fluid therapy and non-steroidal anti-inflammatory drugs. His symptoms resolved in 48 h, and he was discharged.

Discussion

Epiploic appendages are small fat tissues located on the antimesenteric surface of the colon. Their size ranges from 0.5 to 5 cm [5]. These adipose tissues are fed by small end arterioles. Torsion or thrombosis in these small vessels causes ischemia, and epiploic appendagitis occurs. It mostly affects patients in their fourth to fifth decade with a male predominance [6]. It tends to be more common in obese people, probably because of the presence of excessive fat tissue and larger epiploic appendages [1]. Pediatric cases are very rare and do not have sex predilection [4]. Patients present with acute onset; localized abdominal pain, which may be accompanied by nausea, vomiting, anorexia; or low-grade fever [4, 7]. Because the clinical findings are highly non-specific, it may be confused with appendicitis, acute cholecystitis, or divertic-

ulitis [6]. It is most frequently seen in the lower left quadrant (76%), followed by the right lower quadrant (20%), and rarely in the right upper quadrant [8]. The fact that more than half of the normal epiploic appendages are located in the rectosigmoid colon explains why epiploic appendagitis is more frequent in the left lower quadrant [5]. Two of our cases were epiploic appendagitis of the cecum, and one case was seen in the transverse colon.

Computed tomography, US, and magnetic resonance imaging (MRI) can be used in the diagnosis of epiploic appendagitis [2, 7, 9, 10]. On US examination, epiploic appendages are seen as non-compressible hyperechoic masses adjacent to the colon wall. Well-documented CT findings are as follows: antimesenteric fat-attenuated mass with hyperdense rim, adjacent fat stranding, thickening of the colon wall, and the specific central high-attenuation dot sign [6, 7]. Central dot sign is thought to represent the thrombotic vascular structures in the center of epiploic appendages [7]. On MRI, it is seen as a 1- to 4-cm mass on the colon wall. The central portion of the mass is seen as hyperintense on T1- and T2-weighted images, whereas the peripheral rim is hypointense on T1- and T2-weighted images. In fat-suppressed T1-weighted contrast-enhanced images, the peripheral rim is enhanced. The central dot sign appears hypointense on T2-weighted images [9]. Absence of a central dot sign does not eliminate the possibility of epiploic appendagitis, but the presence of the dot is a specific indicator of epiploic appendagitis. The differential diagnosis list includes omental infarction, mesenteric panniculitis, fat-containing tumors, and inflammatory conditions of the colon, in particular diverticulitis and appendicitis [6].

Epiploic appendagitis is a self-limiting disease. It heals conservatively with intravenous fluid and

non-steroidal anti-inflammatory treatment [6, 7]. Vriesman et al. [8] reported that non-operative management with non-steroid anti-inflammatory treatment was successful in all their 20 cases with epiploic appendagitis. However, epiploic appendagitis has a tendency for recurrence in some patients who are treated conservatively, and surgical intervention is necessary for cases of recurrence [11]. When surgery is required, laparoscopic approach is favored with a simple ligation and excision of the appendage [12].

In conclusion, although epiploic appendagitis is usually seen in the adult patient population, it is a rare cause of acute abdominal pain in the pediatric population. The CT findings are well-documented and characteristic. It heals with conservative management. In order to prevent unnecessary surgical interventions and related morbidity, it is very important to be familiar with the imaging features of this rare entity in pediatric populations to establish a definitive diagnosis.

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