Radiology Case Reports 14 (2019) 52–54

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/radcr

Case Report

Aneurysmal dilation of bowel mimicking an abscess in pediatric primary gastrointestinal lymphoma

*Elliot (Sean) Rinzler, MD, Grace S. Phillips, MD**

Department of Radiology, Seattle Children's Hospital, University of Washington, 4800 Sand Point Way NE, Seattle, WA 98105, USA

ARTICLE INFO

Article history:
Received 15 September 2018
Accepted 17 September 2018
Available online 11 October 2018

Keywords:
Pediatric
Primary gastrointestinal lymphoma
Aneurysmal bowel dilation

ABSTRACT

Primary gastrointestinal lymphoma, though rare, is the most common gastrointestinal malignancy in children. Signs and symptoms are nonspecific, and include abdominal pain, nausea, emesis, and a palpable abdominal mass. Imaging is therefore typically required to differentiate gastrointestinal lymphoma from other abdominal conditions. We present a pediatric case of primary gastrointestinal lymphoma involving the distal bowel that was initially misdiagnosed as an intra-abdominal abscess. This case highlights the imaging findings of primary gastrointestinal lymphoma, potential pitfalls in imaging diagnosis, and the role of accurate imaging diagnosis in expediting patient management to reduce associated morbidity and mortality.

Introduction

The differential diagnosis for a child that presents with abdominal pain is broad, and includes diverse conditions that range from primary gastrointestinal (GI) lymphoma to abdominal abscess. While clinical information may help to narrow the differential diagnosis, imaging is often necessary for definitive diagnosis. We present the case of an eleven year-old boy with abdominal pain caused by pediatric primary GI lymphoma that was initially misdiagnosed as an intra-abdominal abscess on computed tomography (CT). The CT imaging features of bowel lymphoma and abscess normally allow differentiation. However, in our case, there were several ambiguous imaging features on the patient's initial CT that ultimately constituted imaging pitfalls in diagnosis. We therefore review the typical imaging features of these 2 entities with insight to avoid a similar diagnostic conundrum.

Case report

An 11-year-old previously healthy boy presented with a 1-month history of abdominal pain that acutely worsened in the 3 days immediately prior to presentation. He also complained of a 1-month history of nausea, anorexia, and a 10-pound

Declaration of interests: None.

* Corresponding author.
E-mail address: grace.phillips@seattlechildrens.org (G.S. Phillips).

https://doi.org/10.1016/j.radcr.2018.09.014

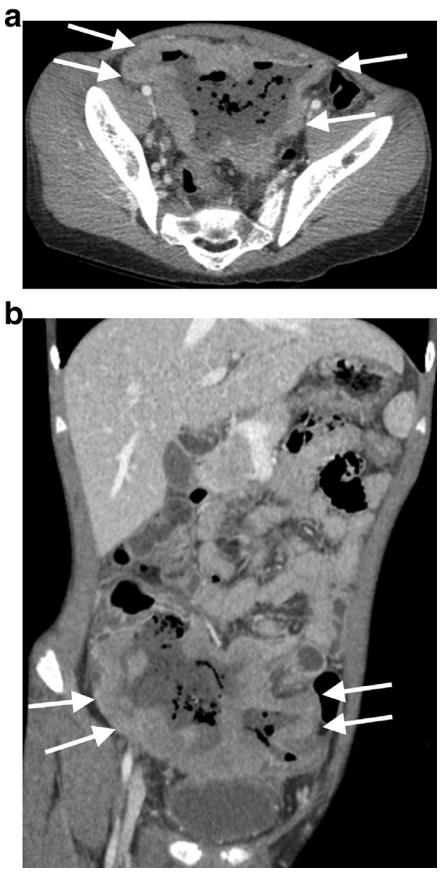

Fig. 1 – Axial (A) and coronal (B) intravenous contrast-enhanced computed tomography images of the abdomen and pelvis demonstrate a collection of mixed gas and fluid density, surrounded by a thick, enhancing rim (white arrows). The absence of enteric contrast confounds the relationship of this structure to adjacent bowel loops.

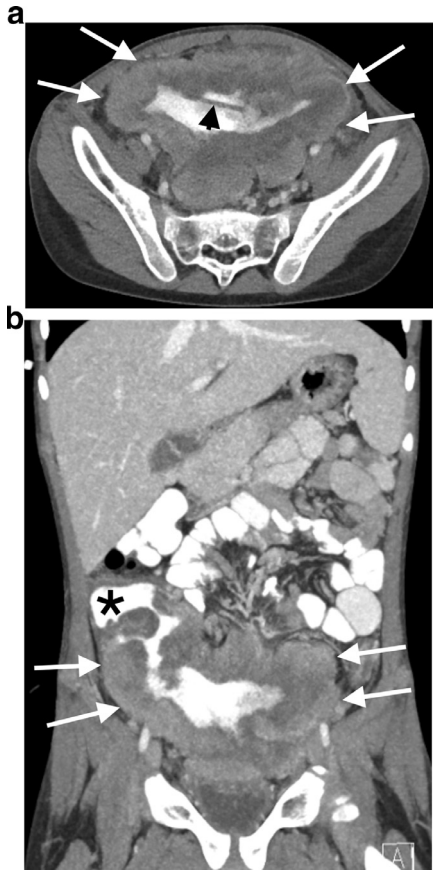

Fig. 2 – Axial (A) and coronal (B) contrast-enhanced computed tomography images of the abdomen and pelvis with both intravenous and enteric contrast redemonstrate the thick-walled, rim enhancing structure (white arrows), which now contains enteric contrast as well as a percutaneous drain (black arrowhead, A), and is more clearly shown to be an abnormally thickened, "aneurysmal dilated" terminal ileum, in continuity with the cecum (*, B).

weight loss. On physical examination, the child was afebrile, with a diffusely tender abdomen, and a positive "psoas sign," defined as abdominal pain with passive right leg extension. Laboratory blood tests were remarkable for leukocytosis (15.9 K/mm^3, ref 5-11) with neutrophilia, and an elevated C-reactive protein (19.8 mg/dL, ref <0.8). Initial contrast-enhanced CT examination of the abdomen and pelvis (Fig. 1) was interpreted as a "thick walled, 10 cm right lower quadrant/pelvis abscess," that was presumed secondary to a perforated appendicitis.

After starting empiric antibiotic coverage, the patient underwent ultrasound-guided placement of transabdominal and transrectal drains. Cultures taken from the drain fluid at the time of drain placement were nondiagnostic, growing mixed flora. The transrectal drain was subsequently removed as output decreased. However, because of continued high volume feculent output, the right lower quadrant drain was left in place. Four weeks after initial presentation, a CT of the abdomen and pelvis with both enteric and intravenous contrast (Fig. 2) revealed a thick walled, dilated irregular loop of distal ileum, with surrounding inflammatory change. The percutaneous drain terminated within this loop of abnormal bowel. These findings were concerning for lymphomatous involvement of small bowel, and suggested that similar findings on the initial CT were misinterpreted as an abscess, with resultant enteral drain placement.

The patient underwent exploratory laparotomy. His operation included segmental small bowel resection, ileocecectomy, mucous fistula, and ileostomy creation. The operation was complicated by tumor involvement of the urinary bladder requiring partial cystectomy. Pathologic specimen confirmed malignant non-Hodgkin lymphoma, diffuse large B-cell type. Staging positron emission tomography confirmed that malignant involvement was limited to the abdomen and pelvis. Although his course was further complicated by formation of a vesicocutaneous fistula, the patient had a favorable response to monoclonal antibody and chemotherapy treatments.

Discussion

Primary tumors of the GI tract, of which primary GI lymphoma is the most common, represent less than 5% of all pediatric

neoplasms [1]. In the pediatric population, GI lymphoma occurs predominantly in the small and large intestines, whereas in adults the stomach is the most common site of involvement [1]. Histologically, non-Hodgkin's lymphoma is the most common type of pediatric GI lymphoma, predominantly Burkitt's subtype [1]. Primary lymphoma of the GI system usually only involves one site, but may become widely disseminated if left untreated. There is a male predilection seen in both children and adults, with incidence peaks in the first and sixth decades of life [2]. Clinical presentation of GI lymphoma is quite variable, ranging from an acute abdomen or intestinal obstruction to an occult abdominal mass [3]. Signs and symptoms are often relatable to the site of involvement, and include abdominal pain, emesis, and a palpable abdominal mass [4]. Treatment often involves multimodality therapy, including surgery, chemotherapy, radiation, and more recently, immunotherapy [5].

On CT, GI lymphoma involving the small bowel often shows a variable length of pronounced circumferential bowel wall thickening [6]. Additionally, aneurysmal dilation of the involved segment may occur as the muscularis propria and autonomic nerve plexus are destroyed [2]. A less common radiological pattern is a focal polypoid intraluminal mass [2]. Tumor may extend into the mesentery and regional lymph nodes. On ultrasonography, involved segments appear as hypoechoic regions of abnormal bowel wall thickening [2]. Involved segments may act as lead points and present as an intussusception. Positron emission tomography is useful for both diagnosis and staging of disease.

Intraabdominal abscesses typically present as complex fluid collections with a rim of peripheral enhancement. The right lower quadrant of the abdomen is a relatively common site for abscesses in the pediatric population due to the high prevalence of acute appendicitis and inflammatory bowel disease in this age group [7,8]. In our experience, the typically low volume of intraabdominal fat in this population can also present a challenge to distinguishing pathology such as abscess from surrounding abnormal bowel. A hallmark of intraperitoneal abscess is its lack of continuity with the bowel, unless a fistula is present. Two factors confounded our case at initial presentation. First, the aneurysmal shape of the abnormal bowel segment simulated a round, complex fluid collection. Second, there was difficulty in establishing continuity of the abnormal bowel segment with adjacent, uninvolved loops in the absence of enteric contrast. Our patient's second CT demonstrates the value of enteric contrast in establishing the continuity of various bowel loops, and thus, allowing the distinction between an aneurysmally dilated, thickened terminal ileum and a purported peritoneal fluid collection. Also, recognition that the enhancing pseudocapsule seen in cases of intra-abdominal abscess is typically thinner could have aided in diagnosis.

This case of primary GI lymphoma in a child, initially misdiagnosed as an intra-abdominal abscess, is an example of a rare but classic appearing malignancy being misinterpreted as a more common benign pathology. The symptoms of primary GI lymphoma are often vague and nonspecific; maintaining a high index of suspicion is essential to avoid misdiagnosis. At our institution, the use of enteric contrast is routine for abdominal CT, and facilitated identification of the abnormal bowel loops that had initially been misinterpreted as an abscess. For this particular patient, prompt diagnosis of primary GI lymphoma could have precluded inadvertent enteral drain placement, allowed for earlier initiation of appropriate oncologic therapy, and potentially decreased the severity of related complications.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2018.09.014.

REFERENCES

[1] Kassira N, Pedroso FE, Cheung MC, Koniaris LG, Sola JE. Primary gastrointestinal tract lymphoma in the pediatric patient: review of 265 patients from the SEER registry. J Pediatr Surg 2011;46(10):1956–64.
[2] Ghai S, Pattison J, Ghai S, O'Malley ME, Khalili K, Stephens M. Primary gastrointestinal lymphoma: spectrum of imaging findings with pathologic correlation. Radiographics 2007;27(5):1371–88.
[3] Ladd AP, Grosfeld JL. Gastrointestinal tumors in children and adolescents. Semin Pediatr Surg 2006;15(1):37–47.
[4] Bandyopadhyay R, Sinha SK, Chatterjee U, Nag D, Mukhopadhyay S, Chowdhury SR, et al. Primary pediatric gastrointestinal lymphoma. Indian J Med Paediatr Oncol 2011;32(2):92–5.
[5] Nakamura S, Matsumoto T. Gastrointestinal lymphoma: recent advances in diagnosis and treatment. Digestion 2013;87(3):182–8.
[6] Balthazar EJ, Noordhoorn M, Megibow AJ, Gordon RB. CT of small-bowel lymphoma in immunocompetent patients and patients with AIDS: comparison of findings. AJR American journal of roentgenology 1997;168(3):675–80.
[7] Ng SC, Shi HY, Hamidi N, Underwood FE, Tang W, Benchimol EI, et al. Worldwide incidence and prevalence of inflammatory bowel disease in the 21st century: a systematic review of population-based studies. Lancet 2018;390(10114):2769–78.
[8] Rentea RM, St Peter SD. Pediatric appendicitis. Surg Clin N Am 2017;97(1):93–112.