

Available online at www.sciencedirect.com

ScienceDirect

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

Case Report

Wandering spleen with torsion and infarction: A case report ^{☆,☆☆}

Elias Lugo-Fagundo, BS^{1,*}, Elliot K. Fishman, MD¹

Johns Hopkins Medicine, The Russell H. Morgan Department of Radiology and Radiological Science, 601 North Caroline Street, Baltimore, MD 21287, USA

ARTICLE INFO

Article history:

Received 9 June 2022

Revised 15 June 2022

Accepted 21 June 2022

Keywords:

Spleen

Wandering spleen

Ectopic spleen

Torsion

Infarction

ABSTRACT

Wandering spleen, also known as ectopic spleen, is a rare condition in which the spleen's anatomical location is other than its fixed position in the abdomen's left upper quadrant. The cause of such an abnormality could be due to congenital or acquired factors, which could ultimately lead to torsion and splenic infarct. Given the nonspecific clinical symptoms and the potential complications associated with wandering spleen, computed tomography scans provide a crucial means for proper diagnosis. In this article, we report the case of a 16-year-old female with a diagnosis of wandering spleen with torsion and splenic infarct.

© 2022 The Authors. Published by Elsevier Inc. on behalf of University of Washington.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Introduction

The spleen is an intraperitoneal organ usually situated in the left upper quadrant of the abdomen; however, in the instance that it is not found in its typical location or orientation, it is referred to as a wandering or ectopic spleen [1]. The cause of this condition is associated with ligamentous hyperlaxity or absence, which can often be acquired through pregnancy, splenomegaly, or through congenital factors [2]. Due to the ligament's laxity, the vascular pedicle is elongated, often leading to splenic torsion and infarction, which can ultimately lead to necrosis, ischemia, and even splenic rupture [3]. Given the nonspecific clinical symptoms related to wandering spleen,

computed tomography (CT) imaging is critical for an accurate diagnosis [4].

Case report

A 16-year-old female presented to her local hospital with severe periumbilical abdominal pain. A CT scan revealed that the spleen was located in an inverted position in the right lower quadrant, with swirling of the mesenteric vessels leading to the splenic pedicle, as well as the splenic artery towards the splenic hilum in the right lower quadrant before a sudden cut-off (Fig. 1). Subsequently, a diagnostic laparoscopy con-

[☆] Competing Interests: All authors declare no conflict of interest.

^{☆☆} Funding: There was no funding associated with this work.

* Corresponding author.

E-mail address: elugofa1@jhmi.edu (E. Lugo-Fagundo).

¹ The authors contributed equally to the writing of this manuscript.

<https://doi.org/10.1016/j.radcr.2022.06.073>

1930-0433/© 2022 The Authors. Published by Elsevier Inc. on behalf of University of Washington. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

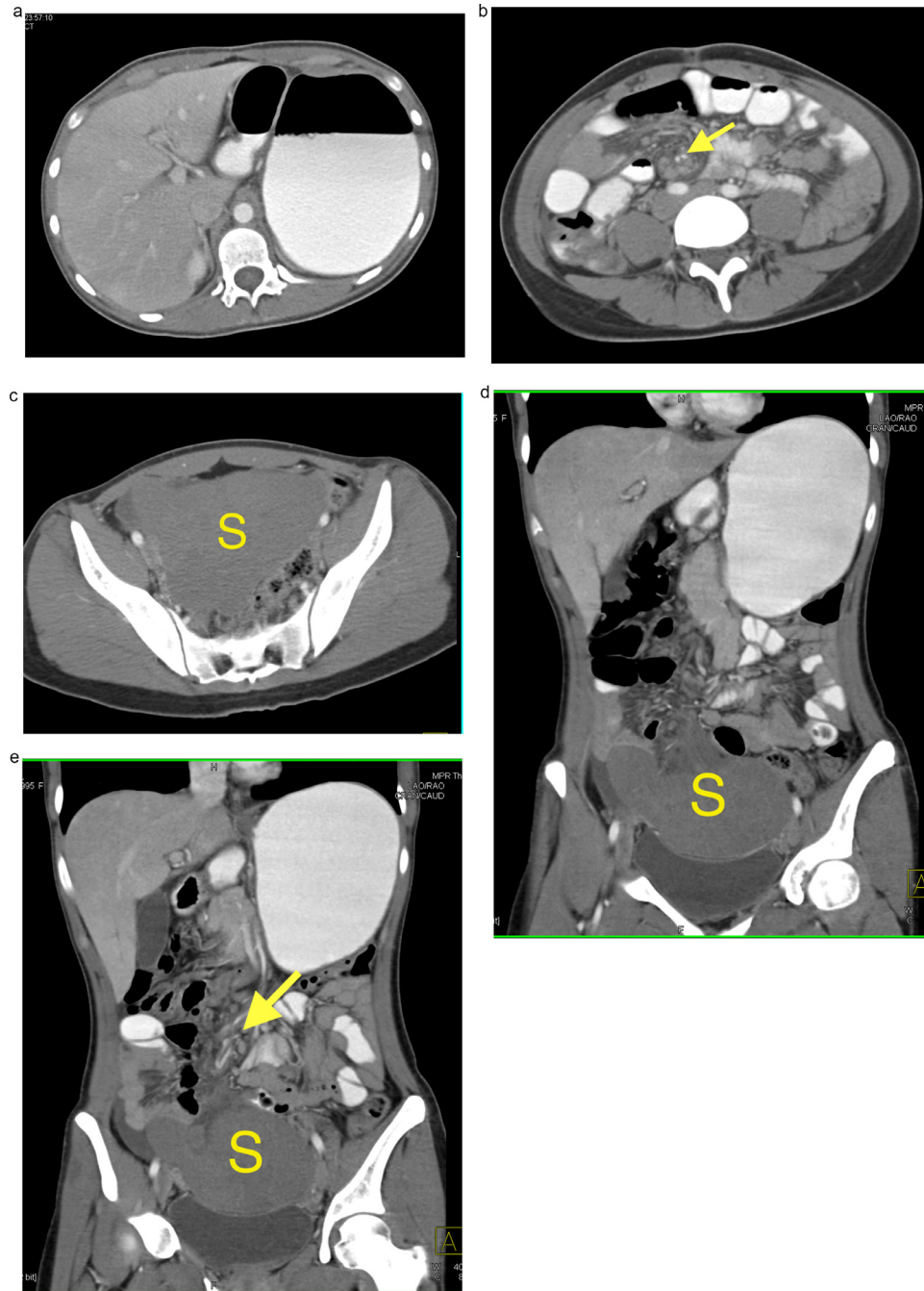


Fig. 1 – (A-E) A 16-year-old female presented to her local hospital with severe periumbilical abdominal pain and a CT was done to better define the cause of the patient's symptoms. The CT scan demonstrated a torsed spleen situated in the pelvis with swirling of the mesenteric vessels leading to infarction of the wandering spleen. (A) CT scan through the upper abdomen shows a normal liver and a distended stomach with no evidence of the spleen. (B) CT scans through the mid-abdomen demonstrate the swirling of the mesenteric vessels (arrow) consistent with low flow to the spleen. (C) CT scans through the pelvis demonstrate a low-density mass in the pelvis (S) which was an infarcted ectopic spleen. (D, E) CT scans in coronal plane nicely define the infarcted wandering spleen in the pelvis (S) with haziness by splenic hilum due to twisting of the mesenteric arcade (arrow).

firmed the diagnosis of a torsed wandering spleen. As a result, the patient was brought into the operating room where the spleen was found to be torsed upon itself 720 degrees around an abnormal vascular pedicle. Following complete detorsion,

there were no sign of perfusion; therefore, a splenectomy was performed. Postoperatively, the patient was well with no reports of abdominal pain, and with her incisions healing adequately.

Discussion

This article reviews a case of wandering spleen, an extremely rare condition in which the spleen, normally found in the left upper quadrant, is found in an abnormal anatomical position. The spleen is fixed into position by the splenorenal, splenocolic, and gastrosplenic ligaments; however, the hyperlaxity or absence of the peritoneal ligaments, due to either acquired or congenital factors, can cause the spleen to shift to a more caudal location [1,5]. As a result of the ligament's hyperlaxity, the vascular pedicle is abnormally elongated leading to torsion, which can range from mild (90°) to severe (2160°) [6], and splenic infarction. Correlated with a strong female predominance, especially in women of reproductive age [7], the diagnosis of ectopic spleen presents a challenge due to its nonspecific symptoms.

We report a 16-year-old female who presented with severe abdominal pain and an abdomen that was firm and tender to palpation, especially in the right lower quadrant, as well as reflexive or voluntary guarding. A subsequent CT scan and diagnostic laparoscopy showed a 720° torsed, ischemic, and completely necrotic spleen. Consequently, the patient underwent a laparoscopic splenectomy, the treatment of choice in cases with splenic infarction, necrosis, or unreducible torsion [5].

Due to the broad symptoms and potential complications associated with wandering spleen, including sepsis, splenic rupture, and acute pancreatitis [3], CT is considered the preferred diagnostic tool for this condition. Typically, the combination of the absence of the spleen in the left upper quadrant and a mass in the abdomen indicates an ectopic spleen [2,8].

Patient consent

The patient reported in the manuscript signed the informed consent/authorization for participation in research which in-

cludes the permission to use data collected in future research projects including presented case details and images used in this manuscript.

Acknowledgments

The authors thank senior science writer Edmund Weisberg, MS, MBE, who helped us to review and edit this article.

REFERENCES

- [1] Ben Ely A, Zissin R, Copel L, Vasseran M, Hertz M, Gottlieb P, et al. The wandering spleen: CT findings and possible pitfalls in diagnosis. *Clin Radiol* 2006;61(11):954–8.
- [2] Priyadarshi RN, Anand U, Kumar B, Prakash V. Torsion in wandering spleen: CT demonstration of whirl sign. *Abdom Imaging* 2013;38(4):835–8.
- [3] Viana C, Cristino H, Veiga C, Leão P. Splenic torsion, a challenging diagnosis: case report and review of literature. *Int J Surg Case Rep* 2018;44:212–16.
- [4] Reisner DC, Burgan CM. Wandering spleen: an overview. *Curr Probl Diagn Radiol* 2018;47(10):68–70.
- [5] Blouhos K, Boulas KA, Salpigktidis I, Baretas N, Hatzigeorgiadis A. Ectopic spleen: an easily identifiable but commonly undiagnosed entity until manifestation of complications. *Int J Surg Case Rep* 2014;5(8):45–454.
- [6] Chawla S, Boal DK, Dillon PW, Grenko RT. Splenic torsion. *Radiographics* 2003;23(2):305–8.
- [7] Safioleas MC, Stamatakos MC, Diab A, Safioleas PM. Wandering spleen with torsion of the pedicle. *Saudi Med J* 2007;28(1):135–6.
- [8] Parada Blázquez MJ, Rodríguez Vargas D, García Ferrer M, Tinoco González J, Vargas Serrano B. Torsion of wandering spleen: radiological findings. *Emerg Radiol* 2020;27(5):555–60.