



A Rare Cause of Left Lower Quadrant Abdominal Pain: Atypically Located Acute Appendicitis Due to Malrotation: Case Report

Sol Alt Kadran Ağrısının Nadir Bir Sebebi: Malrotasyona Bağlı Atipik Yerleşimli Akut Apandisit: Olgu Sunumu

Bartu Badak

Eskişehir Osmangazi University Faculty of Medicine, Department of General Surgery, Eskişehir, Turkey

ABSTRACT

Malrotation is an anomaly that occurs when the embryological middle bowel, or 'midgut', rotates around the superior mesenteric artery and ends with opposite fixation to the peritoneum. There are many causes of left lower quadrant abdominal pain, the main reasons being diverticulitis, hernias, neoplasms, sigmoid colon perforations, testicular torsions, urinary pathologies, and gynecological pathologies. Although left lower quadrant abdominal pain is associated with the diagnosis of acute appendicitis in patients with malrotation, a known history of malrotation is helpful for diagnosis. In this case report, a patient who admitted with left lower quadrant abdominal pain and was diagnosed as malrotation and acute appendicitis is presented.

Keywords: Malrotation, peritoneum, appendicitis

ÖZ

Malrotasyon, orta barsağın embriyolojik kökeni olan 'midgut'un superior mezenterik arter etrafında dönerken oluşan ve periton duvarına ters fiksasyonu ile sonlanan anomalidir. Karın sol alt kadran ağrısı için birçok değişik neden bulunmaktadır. Bu sebepler arasında başlıca; divertikülitler, herniler, neoplazmlar, sigmoid kolon perforasyonları, testis torsiyonları, idrar yolu patolojileri, jinekolojik patolojiler yer almaktadır. Malrotasyonlu hastalarda sol alt kadran ağrısının akut apandisit ile ilişkili olmasına karşın, malrotasyon varlığının önceden bilinmesi tanıyı kolaylaştırmaktadır. Bu olgu sunumunda, sol alt kadran ağrısıyla başvuran ve incelemeler sonunda malrotasyon ile birlikte akut apandisit tanısı konulan hasta sunuldu.

Anahtar Kelimeler: Malrotasyon, periton, apandisit

Introduction

Acute appendicitis is one of the leading causes of abdominal pain in patients presenting to emergency services, and appendectomy is the most common emergency surgery.¹ Intestinal malrotation is an anomaly in which the midgut is unable to complete its necessary rotation around the superior mesenteric artery and is fixated to the peritoneum in reverse orientation. In addition to preventing the cecum from assuming its normal position in the right lower quadrant, the condition also results in the superior mesenteric artery and vein being located to the right of midline.² In patients with malrotation, the appendix is generally located in the

left lower abdominal quadrant.³ Acute appendicitis may immediately come to mind for patients with malrotation and situs inversus presenting with left lower quadrant pain, and prior knowledge of these conditions greatly facilitates diagnosis.⁴

Case Report

A 33-year-old male patient presented to emergency services with abdominal pain. He stated that his pain had started within the last 24 hours and had become localized to the left lower quadrant. The patient had no history of previous abdominal surgery or drug use and had no coexisting internal



Address for Correspondence/Yazışma Adresi: Bartu Badak MD
Eskişehir Osmangazi University Faculty of Medicine, Department of General Surgery, Eskişehir, Turkey
Phone: +90 506 672 53 03 E-mail: drbartu@gmail.com
Received/Geliş Tarihi: 27.08.2016 Accepted/Kabul Tarihi: 31.10.2016

problems. He reported having no systemic conditions that he was aware of. Upon physical examination, there was extreme sensitivity in all quadrants, with signs of defense and rebound in the left lower quadrant. The patient's white blood cell count was 21,700 103/UL and C-reactive protein value was 102 mg/dL; other laboratory values were normal. Anteroposterior chest X-ray revealed no abnormalities. With heavy suspicion of sigmoid diverticulitis and colon perforation as possible prediagnoses, computed tomography of the abdomen was requested instead of ultrasonography to determine the etiology. According to the imaging report, the patient's cecum was located in the left lower quadrant and there were signs of acute appendicitis; his liver was situated on the right and spleen on the left (Figures 1, 2). The report indicated that the patient had intestinal malrotation and he was admitted to general surgery for presumed acute appendicitis. After being prepared for surgery, a left McBurney incision was made. On exploration, the appendix was found to be extremely hydroptic, edematous and fragile. Based on the situation, an appendectomy was performed. The patient was cleared for oral intake on the first postoperative day and was discharged the following day.

Discussion

Many possible causes may come to mind in the differential diagnosis of patients presenting with left lower quadrant abdominal pain, including sigmoid diverticulitis, neoplasms, colon perforation, urinary tract pathologies, gynecologic pathologies, enteritis, and ileus. Acute appendicitis is among the leading causes of abdominal pain

in patients presenting to emergency services, and according to the literature, appendectomy is the most commonly performed emergency surgery.¹ Acute appendicitis may not be an initial consideration in patients with left lower abdominal pain, but there are four different conditions in which the appendix is located in the left lower quadrant. In order of frequency, these are situs inversus, intestinal malrotation, mobile cecum syndrome, and an appendix long enough to cross the midline. Situs inversus and malrotation are anomalies, whereas mobile cecum and long appendix are variations in anatomic position.⁴ While the appendix is always located in the left lower quadrant in situs inversus patients, it may be located anywhere in the abdomen in cases of mobile cecum and malrotation. Collins⁵ reported the prevalence of left-side appendix as 0.04% and that of left-side appendix with situs inversus as 0.016%.

Left-side appendicitis is diagnosed by basic physical examination. As with patients showing normal acute appendicitis laterality, laboratory findings provide valuable data regarding infection. Although anteroposterior chest X-ray can facilitate the identification of patients with situs inversus, the most definitive diagnostic method is computed tomography.⁶ Ultrasonography is the first choice for evaluation of acute appendicitis, both in patients with normal anatomic positioning and patients with malrotation or situs inversus.

In conclusion, despite its rarity in the long differential diagnosis list, the coexistence of malrotation and acute appendicitis must be considered and full utilization of available radiologic imaging methods is imperative for patients presenting with left lower quadrant pain.

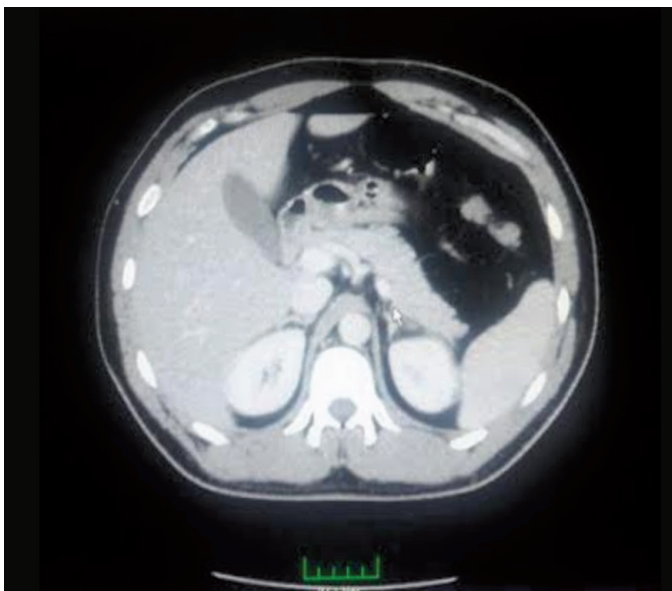


Figure 1. Computed tomography image showing the positions of the liver, spleen and pancreas



Figure 2. Computed tomography image of the cecum and ascending colon (arrow indicates left side)

Ethics

Informed Consent: Consent form was filled out by all participants.

Peer-review: Internally peer-reviewed.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Powers RD, Guertler AT. Abdominal pain in the ED: stability and change over 20 years. *Am J Emerg Med* 1995;13:301-303.
2. Zaidi E, Daly B. CT and clinical features of acute diverticulitis in an urban U.S. population: rising frequency in young, obese adults. *AJR Am J Roentgenol* 2006;187:689-694.
3. Nelson MJ, Pesola GR. Left lower quadrant pain of unusual cause. *J Emerg Med* 2001;20:241-245.
4. Karagülle E, Türk E, Yıldırım E, Moray G. Karın sol alt kadran ağrısının nadir bir sebebi: Situs inversus totalisli hastada akut apandisit. *Ulusal Travma Acil Cerrahi Derg* 2010;16:268-270.
5. Collins DC. 71,000 human appendix specimens. A final report, summarizing forty years study. *Am J Protocol* 1963;14:265-281.
6. Kamiyama T, Fujiyoshi F, Hamada H, Nakajo M, Harada O, Haraguchi Y. Left-sided acute appendicitis with intestinal malrotation. *Radiat Med* 2005;23:125-127.