

## Appendicolithiasis causing diagnostic dilemma: a rare cause of acute appendicitis (report of a case)

Tanısal ikileme neden olan apandikolitiyazis:  
Akut apandisit nadir görülen bir sebebi (Olgu sunumu)

Zafer TEKE,<sup>1</sup> Burhan KABAY,<sup>1</sup> Halil ERBİŞ,<sup>1</sup> Ömer Levent TUNCAY<sup>2</sup>

Appendicolithiasis is a condition characterized by a concretion in the vermiform appendix. Appendicoliths are found in 10% of patients with acute appendicitis, but they are seen more frequently in perforated appendicitis and in abscess formation. We here-in report a case of acute appendicitis due to appendicolithiasis, which mimics acute disorders of the genitourinary tract and causes diagnostic confusion. A 38-year-old man presented to our emergency department with a history of intense, acute, recurrent, crampy right lower quadrant pain radiating to the right groin region, accompanied by nausea. Physical examination revealed muscular defense and rebound tenderness in the right lower quadrant, tenderness in the line of the right ureter and right costovertebral angle tenderness. On X-ray examination, a right kidney stone was identified as was an incidental 3-cm density in the right lower quadrant. The patient underwent appendectomy. The diagnosis was made by operation and also X-ray examination of the appendectomy material showing appendicolithiasis. Acute appendicitis may manifest as a variety of genitourinary disorders. The possibility of an appendicolith with or without acute appendicitis must always be considered in the differential diagnosis of acute lower abdominal and pelvic disorders, and in the consideration of common acute urological disorders.

**Key Words:** Acute appendicitis; appendicolith; appendicolithiasis; urolithiasis.

Apandikolitiyazis, apandis içerisinde taşlaşma meydana gelmesi şeklinde tanımlanan bir durumdur. Apandis taşları, akut apandisitli hastalarda %10 oranında bulunur, fakat daha sıklıkla perfore apandisit ve apse oluşumunda görülür. Biz burada genitoüriner sistemin akut hastalıklarını taklit eden ve tanısal karışıklığa neden olan apandikolitiyazise bağlı bir akut apandisit olgusu sunuyoruz. Otuz sekiz yaşındaki bir erkek hasta şiddetli, ani başlangıçlı, tekrarlayan, sağ kasık bölgesine doğru yayılan, bulantının eşlik ettiği kramp tarzı karın sağ alt kadranda ağrısı ile acil servise başvurdu. Fiziksel incelemede karın sağ alt kadranda defans muskuler ve ribaund hassasiyeti, sağ üreter trasesinde hassasiyet ve sağ kostovertebral açı hassasiyeti saptandı. Direkt grafide, sağ böbrek taşı ve karın sağ alt kadranda 3 cm çapında insidental opasite olduğu görüldü. Hastaya apandektomi yapıldı. Tam operasyonla ve apandikolitiyazisi gösteren apandektomi materyalinin direkt grafisiyle konuldu. Akut apandisit, çeşitli genitoüriner hastalıklar şeklinde ortaya çıkabilir. Akut apandisit ile birlikte veya birlikte olmadan bir apandis taşı olasılığı, akut alt karın ve pelvik hastalıkların ayırıcı tanısında ve sık görülen akut ürolojik hastalıklardan dolayı her zaman düşünülmelidir.

**Anahtar Sözcükler:** Akut apandisit; apandis taşı; apandikolitiyazis; ürolitiyazis.

Appendicolithiasis is a condition characterized by a concretion in the vermiform appendix. Most appendicoliths are fecaliths, stones composed of tightly packed stool. A small minority are actual calculi, stones containing mineral deposits. It is believed that by causing obstruction of the appendiceal lumen and subsequent accumulation of mucus, appendicolithiasis may favor the development of appendicitis.

Appendicoliths are found in 10% of patients with acute appendicitis, but they are seen more frequently in perforated appendicitis and in abscess formation. The appendix contains all the elements capable of reproducing a colicky pain. Clinically, it has been noted that pathological states that commonly affect this organ do not present as an acute intensive colicky pain as may occur in urolithiasis.

Departments of <sup>1</sup>General Surgery and <sup>2</sup>Urology,  
Medicine Faculty of Pamukkale University, Denizli, Turkey.

Pamukkale Üniversitesi Tıp Fakültesi, <sup>1</sup>Genel Cerrahi Anabilim Dalı,  
<sup>2</sup>Üroloji Anabilim Dalı, Denizli.

Correspondence (İletişim): Zafer Teke, M.D. Kuşpınar Mah., Emek Cad., Öykü Sitesi A-Blok No: 121, K: 4 D: 10, 20020 Denizli, Turkey.  
Tel: +90 - 258 - 264 89 91 Fax (Faks): +90 - 258 - 213 49 22 e-mail (e-posta): zteke\_md@yahoo.com

## CASE REPORT

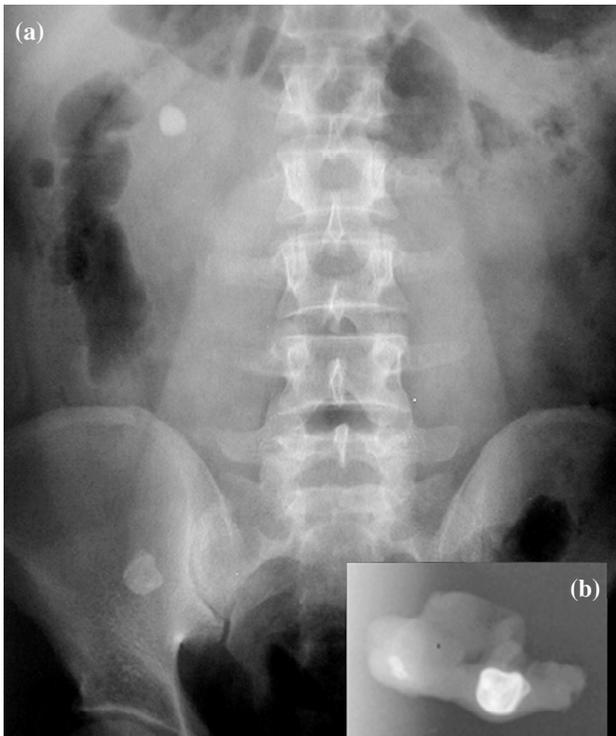
A 38-year-old man presented unaccompanied to our emergency department with a history of intense, acute, recurrent, crampy right lower quadrant pain radiating to the right groin region, accompanied by nausea. The patient denied any anorexia, vomiting, fever, or urinary tract symptoms. The patient's medical history revealed that he had a right kidney stone about 1.5 cm in diameter and dysuria due to nephrolithiasis 10 years before. Physical examination of the abdomen revealed muscular defense and rebound tenderness in the right lower quadrant and tenderness in the line of the right ureter. Examination of the right flank revealed right costovertebral angle tenderness. There was no palpable mass in the abdomen. Bowel sounds were hypoactive. Digital rectal examination did not elicit any pain or tenderness. The patient's temperature was 38 °C and rectal temperature was 39.3 °C. Laboratory tests included a white blood count of 22.800 cells per mm<sup>3</sup> with 93.6% neu-

trophils, and urinalysis revealed minimal numbers of red cells and white cells. Ultrasonography showed a stone of 13.9 mm in diameter in the right upper renal pole and loops of distended small intestine in the right lower quadrant. On X-ray examination, a right kidney stone was identified as was an incidental 3-cm density in the right lower quadrant (Fig. 1a). The patient underwent appendectomy, and at the time of surgery, a proximal perforated appendiceal mass was identified. The distal appendix was firm and mildly edematous. The diagnosis of appendicolithiasis was also confirmed by X-ray examination of the appendectomy material (Fig. 1b). The patient was discharged home in good condition on the first postoperative day and was doing well when seen at the follow-up 2 weeks postoperatively. Pathologic assessment revealed a 2.4 cm x 1.7 cm appendicolith as well as acute appendicitis and localized peritonitis (Fig. 2a, b). The chemical analysis of the appendicolith revealed that it was composed of phosphate, magnesium and ammoniac.

## DISCUSSION

We herein report a case of acute appendicitis due to appendicolithiasis, which mimics acute disorders of the genitourinary tract and causes diagnostic confusion. Acute appendicitis is one of the most common causes of an abdominal emergency and accounts for approximately 1% of all surgical operations. The most commonly accepted theory of the pathogenesis of appendicitis is that it results from obstruction followed by infection. The lumen of the appendix becomes obstructed by hyperplasia of lymphoid follicles, a fecalith, stricture, tumor, or an appendicolith. Fecal debris becomes entrapped in the appendiceal lumen and may precipitate with organic salts to form an appendicolith. Once an appendicolith reaches a critical diameter, it obstructs the appendiceal lumen, which causes luminal stasis, increasing intraluminal pressure, and eventually, vascular thrombosis, transmural necrosis, and perforation.

Most appendiceal fecaliths and calculi are found in the pediatric and young adult age groups; few are found after the age of 35. Appendicoliths are also identified more frequently in men than in women.<sup>[1]</sup> Most patients with appendicoliths become symptomatic and present in a fashion typical for acute appendicitis. Occasionally, a colicky pain may be part of the presentation but it is rarely seen as the

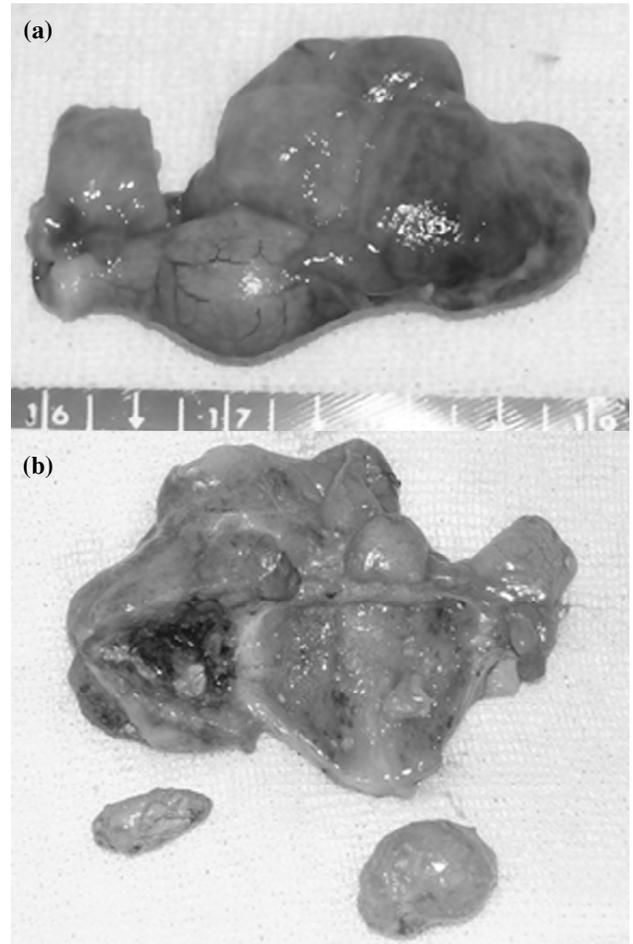


**Fig. 1.** (a) Plain film of the abdomen showing a stone in the upper pole of the right kidney and a radiopaque density, projected on the right iliac bone. (b) X-ray examination of the appendectomy material revealing an oval radiopaque structure with multilayered pattern of calcification.

main presenting complaint.<sup>[2,3]</sup> What was impressive in the present case was the presence of the colicky pain caused by appendicolithiasis. The occurrence of the appendiceal colic can be seen as arising from the contraction of an involuntary muscular tube that is normally painless. The violence of the contraction is usually produced in an effort to overcome some obstacles that prevent the passage of normal excretion or secretion. The pain is due to the stretching or distention of the tube such as typically seen in cases of urolithiasis, which may present with or without microscopic or gross hematuria. Renal or ureteral colic in males does not always radiate to the testis, and appendicitis can sometimes be felt in the testicle and present as acute scrotum.<sup>[4]</sup>

There are some radiographic characteristics of appendicoliths. Appendiceal calculi are solitary and laminated. Although they are typically located in the right lower quadrant, the location can vary with the anatomy of the appendix. These characteristics help to differentiate them from other possible diagnoses, including ureteral stones, calcified pelvic phleboliths, and calcified mesenteric lymph nodes.<sup>[2,5,6]</sup> Stones must be sufficiently calcified to appear on plain films. In the present case, X-ray examination of the abdomen revealed a right kidney stone and an incidental 3-cm density in the right lower quadrant. On ultrasound, appendicoliths are visible as bright echogenic foci with distal acoustic shadowing, but in this case, the appendicolith could not be seen due to loops of the distended small intestine in the right lower quadrant.

Acute appendicitis may manifest as a variety of genitourinary disorders, including gross hematuria, acute prostatitis and ureteral obstruction. The above-presented case revealed more urological than appendiceal characteristics clinically. This case of appendicitis presented with a colicky pain suggesting a renal or ureteral stone, without microscopic hematuria but with clinical evidence supportive of a calculus and with his medical history. The possibility of an appendicolith with or without acute appendicitis must always be considered in the differential diagnosis of acute lower abdominal and pelvic disorders, and in the consideration of common acute urological disorders. As a result, we recommend appendectomy for all patients with a radiographically confirmed appendicolith regardless of the symptomatology.



**Fig. 2.** (a) Appendix delivered onto the surgical field at the time of appendectomy demonstrates the proximal appendiceal mass. (b) Appendicolith and edematous distal appendix.

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