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Right Lower Quadrant Pain as the First Manifestation of Appendiceal Diverticulosis in a 66-Year-Old Male

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Abstract

Appendiceal diverticulosis is a rare condition that can lead to diverticulitis, which imitates the clinical findings of acute appendicitis. Preoperative diagnosis is difficult, and identification is usually made postoperatively, on the basis of the histological examination of the resected appendix. The case is reported here of a 66-year-old male, who presented with the symptoms and signs of acute appendicitis, which proved on surgery to be due to rupture of an appendiceal diverticulum, with no underlying neoplasm.

Key words: *Appendiceal diverticulum; appendiceal diverticulitis; rupture; right lower quadrant pain*

Introduction

Appendiceal diverticulosis is a rare clinical condition, which can be congenital in origin (herniation of mucosa, submucosa, muscle layer and serosa) or acquired (herniation of all except muscle layers), of which the acquired form is the most common [1]. It affects middle-aged men more frequently [2], and is usually asymptomatic until it progresses to diverticulitis. Diverticulitis of the vermiform appendix is a potentially dangerous condition due to its high rate of perforation [3]. It often presents with right lower quadrant pain or lower abdominal pain, mimicking appendicitis. High resonance ultrasonography (US) or computed tomography (CT) scan of the abdomen can be used for imaging. In most cases, however, the diagnosis is made postoperatively, based on the histological examination of the resected specimen. Appendectomy is the treatment of choice.

Case Report

A 66-year-old otherwise healthy man presented at the hospital emergency department with right lower quadrant pain, accompanied by nausea and lack of appetite. Abdominal palpation revealed positive McBurney's sign and rebound tenderness. Blood tests revealed leucocytosis (13,200/μL) with neutrophilia (87%) and raised C-reactive protein (CRP: 4.5mg/dl). With a possible diagnosis of acute appendicitis, laparotomy was performed with a McBurney's incision. Inflammation of the appendix was detected and appendectomy was performed. The postoperative course was uneventful and the patient was discharged from the hospital on the 2nd postoperative day in good general condition.

The histopathological examination of the resected specimen revealed diverticulitis of the appendix with adenomatous hyperplasia and perforation of the appendiceal wall, and with no epithelial neoplasia of the mucosa (Figures 1A, 1B).

Discussion

Diverticular disease of the appendix is a rare condition, found in approximately 1% of resected appendices [4,5]. Kelynack was the first to describe this clinical entity in 1893 [6]. Many theories have been put forward to explain the pathogenesis of appendiceal diverticulosis. In many cases its presence has been associated with the pre-existence of an appendiceal neoplasm. Lamps and co-workers calculated as up to 42% the probability of occurrence of mucinous neoplasm with diverticulosis [7]. According to their theory, the dysplastic epithelium produces mucus, which increases the intraluminal pressure in the appendix, resulting in mucosal herniation. A similar report was presented by Dupre and co-workers (i.e., 48% co-existence of appendiceal diverticulosis and appendiceal neoplasm, such as mucinous and neuroendocrine tumors and adenocarcinoma) [8]. Co-existence of appendiceal diverticulitis with neurofibroma in a patient with type 1 neurofibromatosis has also been reported [9]. On the basis of this relatively common co-

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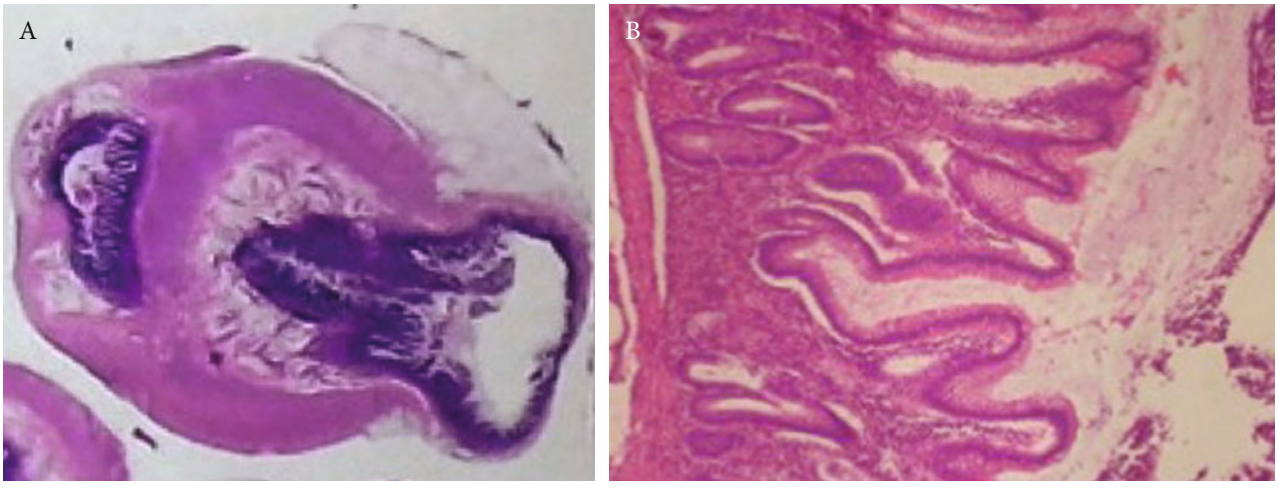

Figure 1. A: Microscopic image of resected appendix (A&E, x 1.6), showing a large diverticulum protruding from the wall of the appendix on the mesenteric side. B: Microscopic image of appendiceal diverticulum (A&E, x 10), showing adenomatous hyperplasia of the diverticular mucosa.

existence of appendiceal neoplasm and diverticulosis, it is recommended that when an appendiceal diverticulum is identified, a thorough histopathological examination of the resected appendix should be performed, to exclude malignancy [10], although some authors consider that the finding of a neoplasm might be a false positive result as a consequence of overdiagnosis [2]. In particular, a perforated appendiceal diverticulum could be falsely diagnosed as a low-grade appendiceal mucinous neoplasm [11]. Conversely, there are also reports of appendiceal masses that were considered neoplastic intraoperatively, but which turned out to be appendiceal diverticulitis [12]. All relevant information must be taken into account in order to arrive at the correct diagnosis and avoid wrong therapeutic choices.

According to Trollope and Lindenauer, non-neoplastic etiology of diverticular disease of the appendix involves weakness of the bowel wall after an episode of inflammation of the appendix (the inflammatory theory), or luminal obstruction and consequent active muscular contraction, which increases the intraluminal pressure and forms diverticula (the non-inflammatory theory) [13].

The definitive diagnosis of diverticular appendiceal disease is often made by the pathologist after an appendectomy, which has most commonly been performed because of symptoms of acute appendicitis. Interest in pre-operative diagnosis has currently been increased. Clinical examination and imaging play an important role, because the possibility of perforation is higher for appendiceal diverticulitis than for acute appendicitis (33.3-65.8% vs. 9.8-31%) [3,14,15]. This is probably because the acquired diverticulum, which is the most common form of appendiceal diverticular disease, contains only mucosa and submucosa, and is thus more susceptible to perforation.

Male patients of middle age with pain arising in the right lower abdominal quadrant should trigger clinical suspicion of the correct diagnosis. The inflammation tends to persist longer in appendiceal diverticulitis, and the pain tends to be milder than that of simple acute appendicitis [3,14].

High-resolution US and CT imaging are important tools in the diagnosis of diverticular disease of the appendix. In appendiceal diverticulitis, the CT usually reveals a periappendiceal abscess, with neither fluid level, nor appendicolith [14], and the inflamed diverticulum itself may even be visualized [16]. The preoperative differential diagnosis between appendicitis and appendiceal diverticulitis difficult, however, because most of the CT signs are not pathognomonic.

Appendectomy is almost always the treatment of choice, because of the high risk of perforation of the diverticulum (66%), even in the absence of severe symptoms [3]. In a few cases, and specifically in the event of obvious neoplasm, right colectomy should be performed.

The histopathological assessment may reveal the following; acute diverticulitis without inflammation of the appendix, acute diverticulitis with acute appendicitis, acute appendicitis without inflammation of the diverticulum or diverticulosis with no inflammation [2,17].

In conclusion, appendiceal diverticulosis is a rare disease affecting mainly older adult males. The pathogenesis of the disease may have a neoplastic, inflammatory or non-inflammatory explanation. Clinicians and radiologists should be aware of this condition so that they can make a possible diagnosis before surgery. Appendectomy is the treatment of choice in the vast majority of cases, because of the high incidence of perforation. More extended procedures are indicated for cases with histologically confirmed co-existence of malignant neoplasm.

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