

A Rare Diagnostic Challenge in Acute Appendicitis: a case report

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ABSTRACT

Although rare, acute appendicitis presenting as a remote abscess with cellulitis in the gluteal region, retroperitoneal region, groin, or thigh does occur and may present a diagnostic challenge. We report a case of a 78-year-old woman presenting with an extensive gas-forming abscess in the right gluteal region secondary to perforated appendicitis without significant gastrointestinal symptoms. Computed tomography (CT) demonstrated a retroperitoneal abscess extending along the sacropelvic surface of the ilium to the subcutaneous tissue. Subsequently, laparotomy revealed retrocecal appendicitis perforated at the base of the cecum, and contained in the retroperitoneum without any signs of peritonitis. This case not only represents an unusual manifestation of acute appendicitis, but also alerts us to the importance of anatomical considerations when interpreting disease extent with imaging. In the differential diagnosis of gluteal or upper thigh abscesses, the rare possibility of perforated acute appendicitis should be considered.

Key words: *Appendicitis, Gluteal abscess, Perforation, Computed tomography*

Acute appendicitis is the most common cause of an acute abdomen with the need for urgent surgical intervention^{5,6}. Although the diagnosis of appendicitis is usually straightforward, advanced age or female sex confounds the clinical presentation, and patients with atypical presentations often pose a diagnostic challenge⁵. The variety of locations in which an inflamed appendix arises can lead to a wide range of clinical situations and potentially delay the correct diagnosis and appropriate treatment⁴. Soft tissue abscesses and cellulitis in the gluteal or thigh region are well-known entities in the field of orthopedic surgery, but are rarely the result of gastrointestinal process¹⁻³. Since delayed diagnosis and treatment of acute appendicitis are associated with an increased rate of perforation, with resultant increases in morbidity and mortality rates, timely intervention is crucial. We present a case of a patient with perforated retrocecal appendicitis who presented with an extensive gas-forming abscess in the right gluteal region without showing significant gastrointestinal symptoms, and highlight the features of computed tomography (CT) in diagnosing this

condition.

CASE REPORT

A 78-year old woman was initially referred to an outside hospital with a 3-week history of worsening swelling and pain in her right gluteal region extending to her right thigh such that it had decreased her functional status from ambulatory to requiring an assist device for ambulation. The patient was admitted to the hospital under the orthopedic medicine service with a tentative diagnosis of necrotizing fasciitis resulting from gas gangrene. The patient was taken emergently to the operating room for drainage and debridement of extensive areas of gangrenous subcutaneous tissue affecting the right gluteal region. Exploration of the subcutaneous fat and fascia yielded a substantial amount of purulent and feculent material. There was no apparent tract that communicated with the pelvis. Post-operatively the patient gradually became septic, and 7 days after her initial debridement she was transferred to our hospital. On physical examination in our emergency

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department, she was in acute distress and her vital signs were significant for a temperature of 38.7 degrees Celsius and a pulse rate of 110 beats per minute. She had mild tenderness on deep palpation in the right lower quadrant without peritoneal signs. Her right gluteal region and lateral aspect of her upper-right thigh were widely debrided (12 cm, 4 cm) with tenderness and extensive erythema of the surrounding skin (Fig. 1). Laboratory findings were notable for a neutrophil leukocytosis (white blood count of $15.3 \times 10^3/\mu\text{l}$) and an elevated C reactive protein of 15.9 mg/dl. A multidetector-row CT scan demonstrated a retroperitoneal abscess associated with a thickened and inflamed appendix, with the abscess extending along the sacropelvic surface of the ilium to the subcutaneous tissue in the right



Fig. 1. Photograph of the right hip taken during the first clinical examination at our hospital showing debridement at the lateral side of the gluteal region (12 cm, 4 cm) associated with erythema extending to the thigh. Initial debridement of the subcutaneous fat and fascia yielded a purulent and feculent material.

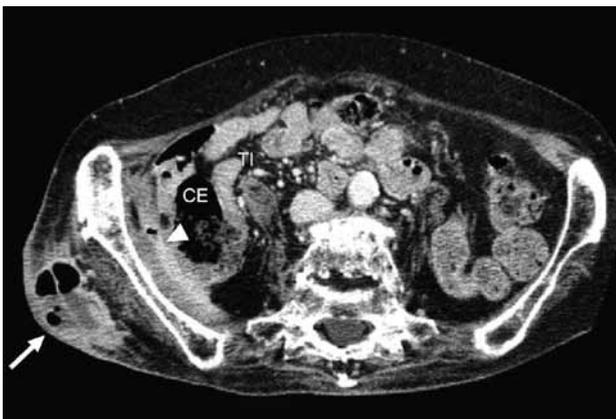


Fig. 2. Contrast-enhanced helical computed tomography (CT) scan at the level of the ileocecal valve showing the extensive gas-forming abscess in the right gluteal region (arrow). Of note, a thickened appendix (arrowhead) in the retrocecal region is well delineated with asymmetrical fascial thickening and associated abscess in the iliopsoas area. No fluid collection and no free air in the abdomen are seen. CE: cecum, TI: terminal ileum.



Fig. 3. On coronal reconstruction of the CT scan, there is a gas-forming abscess (arrow) in the right gluteal region that extended along the sacropelvic surface of the ilium to the subcutaneous tissue (arrowheads). Note inflammation in the subcutaneous tissue extending to the right thigh (small arrows).

gluteal region (Fig. 2, 3). No fluid collection and no free air were observed in the abdomen. The patient underwent exploratory laparotomy that revealed retrocecal appendicitis perforated at the base of the cecum and associated with the abscess in the retroperitoneal iliopsoas area. The purulent and necrotic process extended into the right gluteal region, right hip area, and thigh. An ileocecal resection and primary anastomosis were performed. The histological findings confirmed acute suppurative appendicitis with perforation, and the culture of the abscess was positive for *Klebsiella pneumoniae* and *Escherichia coli* bacteria. The patient went on to have an uncomplicated postoperative course and was discharged to a nursing facility on postoperative day 16.

DISCUSSION

Acute appendicitis is the most common acute surgical condition of the abdomen^{5,6}. Prompt diagnosis and surgical referral may reduce the risk of perforation and prevent complications⁵. Perforation results in considerably high rates of local infection and/or systemic sepsis and is the most lethal complication of acute appendicitis, with a five-fold greater operative mortality rate³. The diagnosis of appendicitis is often relatively straightforward. However, advanced age or female sex confounds the clinical situation, and, furthermore, patients with atypical presentations often pose a diagnostic challenge.

Gastrointestinal perforations may lead to subcutaneous abscess involving the abdominal wall, and/or the hip, and thigh^{1,3}. While abscesses in the setting of diverticulitis or recto-

sigmoid carcinoma have been reported upon¹⁾, acute appendiceal perforation with subsequent subcutaneous abscess formation is a very rare entity with few case reports published^{1,3)}. The inflammatory changes that result from an acutely inflamed appendix may extend to the perirenal and subhepatic regions, but rarely extend inferiorly along the psoas muscle into the thigh. The location and spread of inflammation from acute appendicitis seems to depend upon the location of the appendix. Kim et al⁴⁾ reported clinical and CT findings of 33 patients with retrocecal appendicitis and showed that more than half of these patients presented with an atypical clinical presentation, with a high incidence of retroperitoneal inflammatory changes seen in the retroperitoneum, as well as high incidence of appendiceal perforation. In the present case, operative findings revealed that the appendix was indeed retrocecal and had perforated at the base of the cecum into the retroperitoneal space, possibly leading to the atypical presentation and delayed diagnosis in this patient.

The patient was initially placed under the care of the orthopedic medicine service with a tentative diagnosis of necrotizing fasciitis resulting from gas gangrene, and underwent an emergency debridement operation. However, the primary diagnosis of acute appendicitis was not obtained until after the patient failed to improve clinically, with the development of a worsening septic condition and the growth of coliform organisms from the pus. This emphasizes the importance of considering the possibility of perforated retrocecal appendicitis in cases in which the signs and symptoms are referred to areas along the possible location of a retrocecal appendix, especially when initial investigations do not support other causes. A high index of suspicion, as well as CT imaging, is important for establishing a timely diagnosis and treatment and possibly helps in preventing perforations.

In conclusion, we report a case of a patient presenting with an extensive gas-forming abscess in the right gluteal region secondary to perforated retrocecal appendicitis without significant gastrointestinal symptoms. This case not only represents an unusual extraperitoneal manifestation of acute appendicitis, but also alerts us to the importance of anatomical considerations when trying to make determinations regarding disease extent with images. Although extremely rare, acute appendicitis should be considered in the differential diagnosis of gluteal or upper thigh abscess in order not to overlook the need for an abdominal operation.

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