Appendicitis in an Elderly Woman: CT diagnosis

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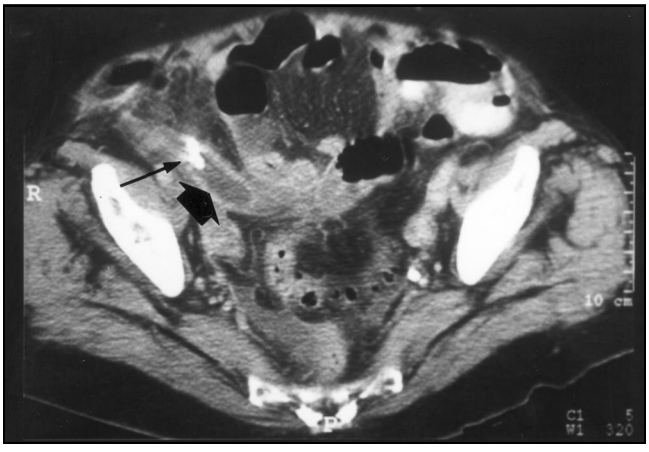
An 81 year old woman presented to the emergency room with diffuse abdominal pain and constipation of one week duration. There was diffuse abdominal tenderness particularly in the lower abdomen, without signs of peritonitis. She had no fever and the white blood cell count was normal. An abdominal radiograph demonstrated distension of small bowel loops. The patient was referred for computed tomography from the emergency room with a possible diagnosis of perforated diverticulitis or a perforated duodenal ulcer.

The CT scan showed the appendix as a 5 cm long tubular fluid-filled structure with a diameter of 10 mm and a hyperdense wall. In its proximal part a calcified oval mass was seen [Figure 1]. The surrounding mesenteric fat was infiltrated, a small amount of free fluid was observed in the pelvis, and small bowel loops were distended. There were several diverticula in the sigmoid colon but without signs of diverticulitis or extraluminal free air. The findings were interpreted as acute appendicitis with an obstructing fecalith surrounded by a phlegmonous process, probably due to appendiceal perforation. At surgery several hours later, a gangrenous perforated appendix was found with purulent fluid adjacent to it. Appendectomy was performed. The postoperative course was characterized by fever and abdominal pain. A repeat CT on the sixth postoperative day showed formation of three fluid collections, two in the pelvis and one in the right abdominal wall in the area of the surgical incision. These collections were thought to be too small for drainage and they indeed resolved with antibiotic treatment as confirmed on a follow up CT on the 14th postoperative day.

Acute appendicitis is a common clinical problem. Clinically, patients present with several days of acute abdominal pain, initially generalized but later localized to the right lower quadrant. Nausea, vomiting, anorexia and fever are frequently associated complaints. Right lower quadrant tenderness to palpation, rebound tenderness, and involuntary guarding may be noted on physical examination. An elevated white blood cell count is usually present [1]. While the clinical diagnosis may be straightforward in patients with classical signs and symptoms, an atypical presentation may result in diagnostic uncertainty and delay in treatment [2]. Such confusion may arise in an elderly patient with appendidcitis.

Although appendicitis is believed to be a disease of the young and middle aged, the incidence of appendicitis in the growing elderly population seems to be increasing [2–4]. Even though it is estimated currently that only 10% of appendicitis patients are elderly, this age group accounts for more than 50% of the deaths associated with appendicitis and for a higher proportion of the postoperative morbidity. Some studies have suggested that the clinical presentation of appendicitis is similar to that in younger patients. However, a higher percentage of elderly patients have appendiceal perforation at the time of operation, as was the case in the patient described here. This has been attributed to at least two possible causes: delay in diagnosis, and a more rapid progression of the disease resulting in earlier perforation. The most commonly cited reasons for delay in diagnosis include delayed patient presentation to the physician for initial evaluation, systemic diseases masking the symptoms of acute appendicitis, milder and less specific symptoms



Classic findings of acute appendicitis in an 81 year old woman who presented with diffuse abdominal pain, without fever or leukocytosis. Axial CT scan obtained with intravenous and oral contrast material reveals an obstructing appendicolith (thin arrow) within the distended, thick-walled appendix (thick arrow). Periappendiceal inflammation infiltrates the adjacent mesenteric fat. Surgical exploration revealed perforated appendicitis.

noted by patients, lack of leukocytosis, and failing to include acute appendicitis in the differential diagnosis of the patient's abdominal pain [3,4]. Most of these factors were noted in our patient who presented with diffuse rather than localized abdominal pain, without signs of peritonitis and no fever or leukocytosis. The diagnosis of appendicitis was not considered prior to the CT scan.

A definitive diagnosis of acute appendicitis can be made on CT if an abnormal appendix is identified and/or if a calcified appendicolith is seen in association with pericecal inflammation [2,5,6]. The inflamed appendix is distended, ususally measuring 7–15 mm in diameter (normal width up to 6 mm though it may reach up to 10 mm) [1]. Circumferential and symmetric wall thickening is nearly always present and is best demonstrated on images obtained with intravenous contrast material enhancement [2,5,6]. Peri-appendiceal inflammation is nearly always present in acute appendicitis and appears as subtle clouding of the mesentery, linear fat stranding and local fascial thickening. These findings are characteristically seen in non-perforated appendicitis, though they may be seen with microperforation. In case of perforated appendicitis, there is usually a pericecal phlegmon or abscess. Associated findings include extraluminal air, marked ileocecal thickening, localized lymphadenopathy, peritonitis, and small bowel obstruction. If inflammation in the right lower quadrant is extensive, it may be difficult to differentiate primary appendicitis with secondary inflammation of the cecum, from ileocolitis with secondary inflammation of the appendix [2]. If acute appendicitis is suspected, early surgical intervention is crucial to minimize the risk of perforation with its increased postoperative morbidity and mortality [3].

To conclude, a high index of suspicion must be maintained in elderly patients presenting with pain in the lower abdomen, particularly in the right lower quadrant. Accurate and prompt diagnosis is essential to minimize morbidity. Confirmation or exclusion of appendicitis as well as identification of many other abdominal conditions can be accomplished accurately and quickly with CT.

References

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