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A rare case of acute appendicitis in a 21-year-old male with midsternal chest pain

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Introduction:

Acute appendicitis is inflammation of the vestigial vermiform appendix. It is one of the leading causes of emergency department visits due to abdominal pain [1]. The vermiform appendix is located at the base of cecum. The attachment does not change; however the tip may migrate to the retrocecal, subcecal, preileal, postileal and pelvic positions. Considering these normal anatomical positions, the pain presentation may vary in patients [2].

Case Presentation:

A 21-year-old African American male presented with his parents at 3 am to the emergency department complaining of midsternal, non-exertional, non-radiating chest pain. Patient stated the pain started approximately 2 hours prior to arrival. Patient stated it awoke him from his sleep. Patient described the pain as burning sensation in the midsternal region with radiation to the esophageal region. Patient declined a history of GERD. Patient stated pain worsening with laying flat. On further questioning, patient also endorsed having constipation. Patient stated after the pain started when he attempted to have a bowel movement, however "only gas was expelling per rectum" and he was unable to have a bowel movement. Patient declined any surgical history. Patient declined associated abdominal pain, fevers, chills, shortness of breath. Patient declined other family members having similar symptoms. Patient declined taking any medications daily. Patient declined taking medications prior to coming to ED.

Family history was negative for any cardiac disease.

Social history was negative for tobacco use, alcohol use or recreational use.

Vitals were a blood pressure of 145/66, HR 57, Temp 36.5, Resp 18, SpO2 98%, BMI 33.

Physical exam demonstrated a well-appearing male with a muscular build in no acute distress. The patient did not exhibit any chest wall tenderness. There was no obvious bony abnormality on rib and sternal palpation. There was no murmur, heart rate was regular, rhythm normal sinus with normal heart sounds. Lungs were clear to auscultation bilaterally. On abdominal examination patient was very tender to palpation in the RLQ. Patient had involuntary guarding when pressing at the McBurney's point. Patient had a positive Psoas sign. Remainder of exam was unremarkable.

An ECG was performed immediately upon arrival which demonstrated Sinus Bradycardia at 58bpm, normal axis, intervals were within normal limits with QTC 422. There were no acute ST changes that would indicate any acute STEMI. Patient did not have any leukocytosis; however, he did have an elevated CRP, indicating an elevated acute inflammatory marker. Patient's troponin was also negative. At this point further imaging was obtained to assess for underlying intraabdominal infection. A CT abdomen pelvis with contrast was obtained which showed acute appendicitis without evidence of appendiceal perforation or abscess. The appendix measured 9mm. Patient was immediately started on antibiotics. General surgery was consulted who scheduled the patient for an emergent appendectomy. Patient's hospital stay was not complicated; he was discharged approximately 2 days after.



Figure 1: variations in the position of the appendix



Figure 2: coronal view of appendix measuring 9mm



Figure 3: Computed tomography abdomen pelvis showing an appendix measuring 9mm

Discussion:

It is reported that the incidence of acute appendicitis is in an overall decline, as 100 per 100,000 person-years. However, the incidence of perforated appendicitis is rising despite the overall decline in new cases. The incidence of perforation is 29 per 100,000 person-years [3].

The most common cause of acute appendicitis is appendiceal obstruction by a fecalith. This causes local luminal obstruction and bacterial overgrowth. As the luminal and intramural pressures increase it causes occlusion of the vessels supplying the appendix leading to local necrosis. This can lead to further complications such as perforation, abscess formation, or diffuse peritonitis [4].

In the emergency department, diagnosis can be made by computer tomography (CT) of the abdomen and pelvis with contrast, Ultrasound (US) of the abdomen, or MRI abdomen and pelvis without IV contrast. The criteria to assess patient with imaging are right upper quadrant abdominal pain, nausea/vomiting, and McBurney's point tenderness. Common described physical signs are Rovsing's sign, psoas sign, or the obturator sign. Acute appendicitis is diagnosed when the appendix is greater than 6mm. Other findings seen on CT would be wall thickening greater than 3mm, surrounding fat stranding, appendiceal wall enhancement, or appendicolith [5]. In comparison to CT, US is more appropriate for children and US or MRI for pregnant females as per the ACR appropriateness criteria [6].

The management for acute appendicitis remains antibiotics or laparoscopic possible open appendectomy in the operating room. There have been numerous randomized trials showing nonoperative management with antibiotics. However, approximately 40% of patient with antibiotic management required rescue appendectomy within a year. There is no reliable way of predicting who will or will not respond to antibiotics [7]. Therefore, surgical management was determined superior to antibiotics alone.

Conclusions:

Acute appendicitis is a surgical emergency with a high incidence of emergency department visits. If not diagnosed at an early stage it can become gangrenous, form an abscess, perforate or even lead to death. Even though this patient presented with midsternal chest pain which was suspicious for GERD, it was crucial to perform a thorough head-to-toe exam to discover incidental findings that the patient did not report. In this case the right lower quadrant abdominal pain was not reported, and the chest pain was most likely secondary to referred pain due to different anatomical position of the appendix. As seen as in the coronal view of the CT on figure 2, the appendix appears in a retrocecal position. This could explain the atypical presentation in this patient.

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