Medicolegal pitfalls of appendicitis

Thorough histories and examinations and radiologic imaging could have kept the lawyers away.

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Abdominal pain is a common chief complaint. It represents 5% to 10% of all emergency department (ED) visits. Only a few of these patients will have appendicitis, but it is still one of the most common causes of abdominal pain requiring surgery.[1,2]

The diagnostic dilemmas of abdominal pain are protean. Emergency physicians should always ask: "What is the worst possible diagnosis for my patient?" Lackadaisical attitudes and wishful thinking about abdominal pain can be disastrous.

Misdiagnosis of appendicitis is one of the 5 most frequently successful malpractice claims against emergency physicians. It accounts for 5%–10% of the total dollars emergency physician insurers pay.[1,2] These cases illustrate the pitfalls of appendicitis.

Case 1

3 weeks of pain

A 33-year-old woman presented to an emergency clinic with a 3-week history of abdominal pain. Her body temperature was 99.4°F. She had chills and right lower quadrant pain without rebound.

The examining physician did not perform a rectal or vaginal examination, "deferred" complete blood count (CBC) and urinalysis, and did not order radiographic tests. A urinary tract infection was diagnosed and ciprofloxacin was prescribed. Later that day, the patient's fever spiked to 102°F, but she was not reexamined.

Her pain worsened. Surgery 3 days later revealed a perforated appendix and abscess requiring a larger than normal incision. She was hospitalized for 4 days, and developed a postoperative wound infection.

Malpractice claim

The patient's lawsuit cited the physician's failure to diagnose acute appendicitis, claiming that the physician neglected to perform an adequate physical examination and order appropriate laboratory and radiographic tests. The plaintiff argued that the 72-hour delay resulted in perforation and significant postoperative complication.

The physician countered that the patient refused laboratory examinations, and that his work-up was appropriate for the patient's atypical presentation. The defense also claimed the patient's appendix was already perforated at the initial presentation and the delay to surgery did not cause further morbidity.

VERDICT This case is currently under litigation.

KEY POINT

The classic presentation of appendicitis parallels the pathophysiology of the disease.

TABLE

Six patient characteristics of missed diagnosis of appendicitis[1]

1.	No "classic" signs and/or symptoms of acute appendicitis.
2.	Pain but no nausea or vomiting.
3.	No rectal examination performed or documented.
4.	Administration of IM narcotic pain medication followed by discharge.
5.	Diagnosis of gastroenteritis despite lack of documentation of typical signs and symptoms.
6.	No chart documentation that patient should return for follow-up in 12–24 hours.

KEY POINT

Although pain is usually localized in the RLQ, it can occur anywhere in the abdomen or pelvis.

Case 2

Onset of nausea, vomiting

A 56-year-old man went to the ED with a 4-hour history of nausea, vomiting, and abdominal pain. He was diagnosed with gastritis, discharged with instructions to return if his vomiting resumed, and told to visit his primary care doctor in 2–3 days if he did not improve.

The patient continued to vomit and saw his own physician 36 hours later. The physician referred him to a surgeon, who found a gangrenous, perforated appendix.

The patient developed a small-bowel obstruction, and required 3 surgeries, including an ileostomy. He was hospitalized for 36 days. He was also hospitalized for another 16 days after surgery for reversal of the ileostomy due to further bowel obstruction. The patient retired early from his job, claiming he could not perform his duties.

The patient sued the ED physician, claiming the physician fell below standard of care by discharging him with a diagnosis of gastritis, and failing to diagnose acute appendicitis, order an abdominal computed tomography, refer him to a general surgeon, and give sufficient discharge instructions. The plaintiff claimed that earlier diagnosis would have led to an uncomplicated appendectomy.

The defendant physician claimed the patient had no signs and symptoms of appendicitis, and that in the ED the patient said that he felt better and wanted to go home. The defendant also claimed that the patient failed to comply with discharge instructions by not returning to the emergency department when he continued to vomit.

VERDICT Plaintiff and defendant entered into a confidential agreement.

Pathophysiology

In the early stages of appendicitis, the appendiceal lumen becomes occluded and the appendix distends with secretions. Visceral nerve fibers that enter the spinal cord at T8-10 are stimulated, causing referred epigastric and periumbilical pain represented by these dermatomes.

As appendiceal distention increases, the appendix becomes ischemic and luminal bacteria invade the appendiceal wall. Transmural inflammation with local peritonitis follows, associated with a shifting of maximal pain into the right lower quadrant. As the disease progresses, infarction occurs with perforation, usually in 24–36 hours.[2]

The classic presentation of appendicitis parallels the pathophysiology of the disease process. It begins with a poorly localized, usually periumbilical, constant pain associated with anorexia. As appendiceal distention continues, nausea and vomiting result.

Local irritation occurs next. The pain shifts to the right lower quadrant and becomes more acute and sharp. Although the pain usually localizes to the right lower quadrant, it can occur anywhere in the abdomen or pelvis. Next, patients become progressively more toxic and develop fever and chills.[1–3]

Author's commentary

Atypical presentations of acute appendicitis are not uncommon. About 2% of patients with appendicitis have abdominal pain for 2 weeks or more.[4] About 55% of nonpregnant patients with pathologically confirmed appendicitis show the typical signs and symptoms.

A careful and complete history and physical examination can increase the diagnostic accuracy to 80%. Careless history and physical examination are common causes of misdiagnoses.[1]

Men 18–50 provide the most typical presentation and are the easiest to diagnose, with diagnostic accuracy as high as 90%. Other subgroups, such as ovulating or pregnant women, children, elderly and the immunocompromised pose a greater diagnostic challenge.[2,3]

A complete history includes reading the previous chart. This is especially true with suspected appendicitis, as about 30% of patients diagnosed with appendicitis were initially seen by another physician. Previous charts provide objective serial information on temperature, abdominal examination, and WBC.[5,6]

Preventative measures

Be extremely cautious with the group of patients who present with signs and symptoms only minimally suggestive of appendicitis or in whom appendicitis is not considered in the differential. Studies have shown that physician false-negative decisions correlate with a greater risk of complications such as perforation and abscess formation.[7]

Rusnak et al developed a profile of the patient most likely to have a missed diagnosis of acute appendicitis on the initial emergency department visit (**TABLE**).[1]

Use WBC cautiously

No definitive test exists for diagnosing appendicitis. Physicians typically place much emphasis on the WBC, which shows elevated counts in up to 90% of patients with acute appendicitis but is normal in the other 10%.[3,5] However, too much emphasis on WBC can cause delays in surgery and lead to perforation.[8]

Serial WBC may aid in diagnosis if the second test is performed 4–8 hours after the first.[9] A combination of elevated WBC and neutrophilia greater than 75% seems to be more sensitive than WBC alone.[10]

When to obtain imaging

Radiologic evaluation can help if the diagnosis is still uncertain after history, and physical and laboratory examinations. Abdominal CT is the most accurate technique,[6,11] with sensitivity and specificity up to 98%.[12] In patients in whom the diagnosis is unclear, abdominal CT has reduced the rate of negative laparotomies and perforation.[11]

In any diagnosis of appendicitis, surgical consultation is critical. In difficult cases, the surgeon then has the option of admitting the patient for serial examinations. In-hospital observation for difficult cases is effective because it does not adversely affect the morbidity and mortality of acute appendicitis and reduces the incidence of negative laparotomy.[5,13] ■

KEY POINT

Use of abdominal CT scans has reduced the rate of negative laparotomies and perforation.

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