Unusual Presentation of Perforated Acute Appendicitis: A Case Report

Patient: Male, 45-year-old
Final Diagnosis: Perforated appendicitis
Symptoms: Abdominal pain
Medication: —
Clinical Procedure: —
Specialty: Forensic Medicine • Surgery

Objective: Unusual clinical course
Background: Acute appendicitis is by far the most common surgical emergency encountered in the United States and with this in mind, unusual presentations are also frequent, thus improper diagnosis, which roughly occurs in 20-40% of cases, can lead to a delayed treatment and bad outcomes. We present this unusual case of abdominal pain secondary to extraperitoneal compartmentalized abscess following perforated appendicitis, diagnosed and managed as ascites secondary to alcoholic liver cirrhosis with subsequent delay in the treatment of the underlying cause, which was appendicitis.

Case Report: A 45-year-old man presented to the Emergency Department with pain and distention for 1 week duration, who was treated with frequent paracentesis, with worsening pain following the latest drainage, raising suspicion of perforated viscus. Initial abdominal X-ray and computed tomography (CT) scan revealed free air and large tubular fluid sac collection along the right, left, and lower abdominal wall. Surgical drainage of the abscess was performed. A subsequent follow-up CT with oral contrast of the abdomen revealed perforated right lower abdominal viscus, possible perforated appendicitis with pre-peritoneal and retroperitoneal space occupying the abscess cavity compartmentalized along the right, left, and lower abdominal wall and creating a separate space where the inflammatory purulent material was collected. This was followed by a second procedure for ileocecectomy and ileostomy with excision of the extra-preperitoneal compartment space.

Conclusions: Abdominal pain secondary to acute appendicitis is by far the commonest surgical condition; therefore, it should be considered high in the differential diagnosis of any patients presenting with unusual abdominal complaints.

Keywords: Appendicitis • Gastrointestinal Diseases

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/935405
Background

Appendicitis remains the most common abdominal surgical emergency encountered in the United States, with a lifetime risk of approximately 8.6% in men and 6.7% in women [1]. Acute appendicitis classically presents with nausea, fever, and right lower quadrant (RLQ) pain (Table 1). However, improper diagnosis occurs in roughly 20% to 40% of cases [2]. An inaccurate or delayed diagnosis can progress to complications such as appendiceal perforation, abscess development, intra-abdominal adhesions, sepsis, and even death [2]. Herein, we report the case of a 45-year-old man who presented with an extensive, tubular-like fluid collection spanning the width of the abdomen, with an encapsulated compartmentalized abscess within the preperitoneal space.

Case Report

A 45-year-old man was referred to the Emergency Department (ED) from a nearby community hospital with concerns of bowel perforation following abdominal paracentesis after purulent/feculent liquid was drained from the abdomen, and a computed axial tomography (CT) scan showed concerns for free air in the abdomen. In the ED, the patient reported abdominal pain with distension for approximately 1 week prior to the paracentesis, with intermittent nausea but he denied any fever or chills. His past medical history was significant for newly diagnosed liver cirrhosis with a MELD score of 30 and Child-Pugh class B, type II diabetes, end-stage renal disease with hemodialysis, and a history of deep vein thrombosis. He was on an anticoagulant (acetylsalicylic acid and apixaban), Flomax, Amiodarone, ASA 81, Tamsulosin, Insulin Detemir and Aspart, Protamine, Sucroferric oxyhydroxide, and vitamin D3.

On presentation, the patient had stable vital signs (BP 145/95 mmHg, pulse 99 bpm, temperature 38.1°C). Physical examination revealed an obese male in no acute distress. His abdomen was soft and distended and mildly tender to palpation in the right upper and lower quadrants. There was no rebound tenderness, no rigidity, and no abdominal guarding on palpation. The rest of the physical exam was unremarkable. The patient’s lactic acid was high-normal level at 1.83 mmol/L (normal 0.50-1.90 mmol/L). White blood cell count was normal at 5.4 K/cmm, platelet 217 K/cmm, PT 46 seconds (normal 26-39 seconds), PT 27.3 seconds (normal 10.1-12.5 seconds), and INR 2.46 (normal 0.80-1.20).

A CT scan with i.v. contrast of the abdomen was performed, which showed free air and a large, tube-like fluid collection with air-fluid level extending over the entire width of the abdomen from left to right, crossing the midline anteriorly, and abutting the inferior tip of the right hepatic lobe (Figure 1). It was uncertain if this represented a markedly distended closed-loop obstruction or a large abscess.

At that time there was concern for perforated viscus from the previous abdominal paracentesis versus a bowel obstruction leading to perforation. The patient was started on i.v. third-generation Cephalosporin 1 g and Metronidazole 500 mg and was taken to the operating room (OR) within 2 hours of arriving to the ED for exploratory laparotomy for drainage of the large abdominal abscess and identifying the source of perforation.

Immediately upon entering the abdomen, approximately 1.8 liters of yellow purulent fluid was evacuated from a large cavity occupying the preperitoneal space. The omentum was found to be adhered to the small bowel and colon and was difficult to separate. There was a thick fibrous capsule encompassing the colon, small bowel, and omentum, which prohibited us from separating and identifying the structures. It appeared that the perforation had originated from the lower or mid-abdomen, given the location of the abscess. Due to the extensive inflammatory process, it was decided to thoroughly

Table 1. Comparison of common presentation of classic acute appendicitis and patient.

|                  | Acute appendicitis | Patient |
|------------------|--------------------|---------|
| Periumbilical pain | Yes                | No      |
| Right lower abdominal tenderness | Yes            | No      |
| Rebound tenderness  | Yes                | Yes     |
| Fever              | Yes                | No      |
| Nausea & vomiting  | Yes                | No      |
| Anorexia           | Yes                | No      |
| Constipation       | Yes                | No      |
| Leukocytosis       | Yes                | No      |
| Computed tomography of abdomen | Inflamed appendix | None    |
irrigate the abscess cavity and abdomen and place an ABThera wound vacuum dressing to allow for further work-up and plan for further surgery. Abscess wall specimens and fluid cultures were collected.

Repeat CT with i.v. and oral contrast on postoperative day 1 showed extraluminal oral contrast filling the decompressed abscess cavity, compatible with an active gastrointestinal tract leak (Figure 2). There was opacification of a fistulous tract connecting the cecum and the abscess cavity. The patient was taken back to the OR on that same day.

Intraoperatively, the ABThera and wound vacuum were removed and the abdominal cavity was irrigated. The omentum was lifted and lysis of adhesions was performed with manual dissection. Once the fibrinous abscess capsule was broken down, a healthy-looking small bowel was identified. Tracing the small bowel down to the ileocecal junction exposed the perforation site at the cecum. The appendix appeared to be perforated and had left a draining fistula tract, which was actively draining stool into the abscess cavity. An ileocecectomy and ileostomy was performed with 2 Jackson-Pratt drains placed along with bilateral colic gutters and into the pelvis. The specimen was sent to Pathology, which confirmed the presence of perforated appendicitis (a photo of the pathology slide was not available). Subsequently, the patient had an uneventful postoperative recovery and was discharged on the 10th postoperative day for outpatient follow-up.

Discussion

While most cases of acute appendicitis present with typical history and physical examinations (Table 1), some have an unusual presentation, in particular where a few days have passed the start of the acute process and complications appear with subsequent overlapping of signs and symptoms, resulting in unusual radiological findings [3]. ED physicians and surgeons must consider that appendicitis can have various presentations – left abdominal pain [4], thigh pain or epididymitis [5,6], right upper abdominal pain [7], left upper abdominal pain [8], or even vaginal pain or discomfort [9] – and the wide range of laboratory findings, from normal to high white cell count, add to the confusion. The radiological findings of appendicitis are now being considered by physicians as the ultimate diagnostic tool [3]. The radiologist should document the following features of appendicitis – thick, fat stranding, mesenteric, lymph nodes, inflammatory changes, and so on) – and they must visualize the appendix before diagnosing appendicitis. The radiologist must recognize the false-positive and potential false-negative findings, if any, of acute appendicitis, and finally address the differential diagnoses [3].

An intra-abdominal abscess is the most prevalent complication following a perforated appendicitis, with an incidence rate of 14-18% [3]. An abscess significantly influences patient outcomes and increases hospital length of stay and costs [10]. Therefore, making an early diagnosis is critical, and although appendicitis is a common condition, diagnosis can be challenging.

Although abscess formation is a common complication, the medical literature does not cite cases of such a sizable, preperitoneal encapsulated abscess surrounding the entire length of the abdominal cavity from perforated retroperitoneal appendicitis. Therefore, this case demonstrates a rare presentation of a common disease. The CT scan displayed a tube-shaped fluid
collection that spanned the width of the abdomen anteriorly and extended upwards to the level of the inferior border of the right hepatic lobe, and crossed the midline to the left lower abdomen. This unusual appearance and presentation made it unclear if it was an enlarged, closed-loop bowel obstruction or an intraperitoneal abscess. During the exploratory laparotomy, it was evident that the tube-shaped structure was a compartmentalized and retroperitoneal space with a fibrinous capsule containing 1.8 liters of purulent material. After removing the purulent fluid, the origin of the perforation could not be initially identified because during the subsequent surgical procedure the capsule was punctured, and the perforation site was identified at the location of the appendix at the ileocecal region.

We believe that the perforation started retroperitoneally and progressed to form a separate compartment in front of the parietal peritoneum, separating it from the intra-abdominal cavity proper. Although CT is a reliable imaging modality for detecting appendicitis, it was initially ineffective in this case and only through operative exploration of the site were we able to properly visualize the site of the perforation.

**Conclusions**

Abdominal pain secondary to acute appendicitis is by far the commonest surgical condition encountered in the ED. The diagnosis can be challenging and the unusual presentation of our patient with spontaneous rupture of the appendix and associated development of retro- and pre-peritoneal abscess should raise the suspicion of the most common surgical cause of abdominal pain, which is acute appendicitis. We recommend that acute appendicitis should be considered high in the list of differential diagnoses of any patients presenting with abdominal pain with unusual presentation to the ED.

**Declaration of Figures’ Authenticity**

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