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Case Report

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Umbilical abscess as a rare cause of abdominal pain: A case report

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ABSTRACT

Rationale: Abdominal pain is a common complaint with a broad differential diagnosis, including both intra-abdominal and abdominal wall pathologies. While visceral causes are frequently considered, abdominal wall conditions are often overlooked, leading to diagnostic delays. Among them, umbilical abscesses are rare but require distinction from urachal abscesses due to differences in management.

Patient's concern: A 46-year-old woman presented with a one-week history of periumbilical pain unresponsive to analgesics.

Diagnosis: Physical examination revealed localized tenderness and a positive Carnett's sign. Computed tomographic images identified an umbilical abscess without evidence of urachal remnants, ruling out a urachal abscess.

Interventions: The patient underwent abscess drainage and received cefalexin (1 500 mg/day) for 28 days.

Outcomes: The abscess resolved completely without recurrence.

Lessons: Umbilical abscesses are rare and may be mistaken for urachal abscesses. A thorough clinical evaluation, including Carnett's sign and imaging studies, is crucial for accurate diagnosis. Prompt differentiation facilitates appropriate management and prevents unnecessary interventions.

KEYWORDS: Umbilical abscess; Urachal abscess; Abdominal pain; Carnett's sign

1. Introduction

Abdominal pain is a common clinical complaint encountered in primary care and emergency settings, with a broad differential diagnosis encompassing both intra-abdominal and abdominal wall pathologies. While visceral causes such as gastrointestinal, hepatobiliary, and urological disorders are frequently considered, abdominal wall diseases can also present with abdominal pain and may be overlooked, leading to delays in diagnosis and unnecessary investigations[1,2].

A variety of abdominal wall conditions can mimic intra-abdominal pain[3,4]. Anterior cutaneous nerve entrapment syndrome, for example, is characterized by localized pain at the lateral edge of the rectus abdominis, often exacerbated by movement or changes in posture. Hernias may also present with localized discomfort that worsens with standing or straining, while muscle strain and surgical complications can contribute to persistent abdominal wall pain. Infectious and inflammatory conditions, such as herpes zoster and abdominal wall abscesses, may initially manifest as localized pain before progressing to more recognizable clinical signs. Additionally, hematomas, lipomas, and desmoid tumors can cause discomfort depending on their size and location. The Carnett test, which assesses pain exacerbation with abdominal wall tension, can help identify these abdominal wall pathologies[4].

Abdominal wall diseases may either show no abnormalities or have lesions distributed at the periphery, making them difficult

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to detect with imaging studies. This also applies to umbilical abscesses and urachal abscesses. Here, we present a case of an umbilical abscess in which a positive Carnett's sign served as a key diagnostic clue. The case highlights the diagnostic challenge posed by umbilical abscesses, which sometimes requires distinction from urachal abscess.

2. Case report

The patient agreed to the publication of the case report. Patient data were anonymized in this report.

A 46-year-old woman presented to the emergency department with abdominal pain. She reported having periumbilical pain for the past week. Despite taking loxoprofen for symptom relief, her condition did not improve, prompting her visit. She had no significant medical history, was not taking any regular medications, and did not smoke or consume alcohol. She had no history of trauma or umbilical abrasion.

On presentation, she was alert and oriented. Her vital signs were as follows: body temperature, 36.9 ℃; blood pressure, 120/70 mmHg; heart rate, 72 bpm; respiratory rate, 16 breaths/min; and SpO_2, 99% on room air. Physical examination revealed localized tenderness radiating to the 5 o'clock direction from the umbilicus and a positive Carnett's sign, but was otherwise unremarkable. Urinalysis showed no abnormalities, including the absence of leukocyturia or hematuria. Abdominal computed tomographic (CT) images showed an umbilical abscess with surrounding tissue hyperdensity (Figure 1). She was referred to urology for the differential diagnosis of an umbilical abscess and a urachal abscess; she was diagnosed with an umbilical abscess based on the absence of the urachus on CT images and was treated with abscess drainage and cefalexin at a dose of 1 500 mg/day. Although no microorganisms were isolated from the drainage specimens, antibiotic therapy was continued for a total of 28 days, at the end of which the lesion had healed. No recurrence of the abscess was observed during follow-up.

3. Discussion

Umbilical abscesses are relatively uncommon infections that can occur in both infants and adults, necessitating careful evaluation to ensure appropriate management. While umbilical disorders such as granulomas are among the most common umbilical abnormalities in infants, umbilical abscesses in adults are rare and sometimes associated with underlying conditions like urachal abnormalities. Urachal abnormalities, which may present as urachal abscesses, are diagnosed most frequently between ages 20 and 40 and show a male predominance with a 2:1 ratio[5,6]. However, their incidence remains extremely low, highlighting the importance of distinguishing between umbilical and urachal abscesses when patients present with umbilical infections.

The differential diagnosis between an umbilical abscess and a urachal abscess is critical due to differences in underlying pathology, management strategies, and potential complications[7,8]. Umbilical abscesses typically originate from superficial skin infections, often involving *Staphylococcus aureus*, *Streptococcus pyogenes*, *Escherichia coli*, *Klebsiella pneumoniae*, and *Proteus mirabilis*, are localized to the umbilical area[9,10]. In contrast, urachal abscesses arise from infected urachal remnants, with potential extension toward the bladder or peritoneum. Clinically, umbilical abscesses usually present localized erythema, tenderness, and purulent discharge, while urachal abscesses may be accompanied by systemic symptoms such as fever, lower abdominal pain, and urinary symptoms. Imaging studies play a crucial role in differentiating these entities. Ultrasound is often the first-line diagnostic modality, capable of identifying superficial abscesses or the presence of a hypoechoic tract indicative of urachal involvement. CT imaging is particularly useful for confirming the absence or presence of urachal remnants and delineating the extent of inflammation or abscess formation. In this case, the absence of a urachal tract on CT imaging was pivotal in diagnosing an umbilical abscess.

Figure 1. Computed tomographic image of presenting an umbilical abscess with surrounding tissue hyperdensity (arrow) in a 46-year-old woman.

Management strategies also vary based on the diagnosis. Umbilical abscesses are often treated with incision and drainage combined with antibiotic therapy, targeting both Gram-positive and Gram-negative organisms. In this case, cefalexin was selected, reflecting its efficacy against *Staphylococcus aureus*. Conversely, urachal abscesses frequently require not only drainage but also surgical excision of the urachal remnant to prevent recurrence or malignant transformation.

The case highlights the importance of a thorough clinical and radiological assessment to accurately differentiate between umbilical and urachal abscesses. Prompt recognition and tailored treatment based on the underlying pathology are essential to optimize patient outcomes and prevent complications. Further studies are warranted to better characterize the epidemiology, microbiology, and management outcomes of umbilical and urachal abscesses to inform evidence-based clinical practice.

Conflict of interest statement

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