INFECTED URACHAL CYST INITIALLY MISDIAGNOSED AS AN INCARCERATED UMBILICAL HERNIA

Adam Ash, DO, Rashmeet Gujral, DO, and Christopher Raio, MD

Department of Emergency Medicine, North Shore University Hospital, Manhasset, New York
Reprint Address: Adam Ash, DO, Department of Emergency Medicine, North Shore University Hospital, 300 Community Drive, Manhasset, NY 11030

Abstract—Background: Urachal abnormalities are a rare cause of lower abdominal pain. They are often initially mistaken for more common causes of lower abdominal pain, and the diagnosis is usually made during evaluation for one of these more common conditions. Case Report: We report a case of a painful periumbilical mass ultimately diagnosed as an infected urachal cyst. Although the cyst was evident sonographically, it was misidentified as an umbilical hernia, and the correct diagnosis was not made until the patient underwent computed tomography of the abdomen and pelvis before surgery. Conclusion: Emergency physicians should consider urachal disease in patients presenting with lower abdominal pain and should also be familiar with both the clinical and radiologic findings characteristic of this disease. Published by Elsevier Inc.

Keywords—urachus; urachal; urachal cyst; ultrasound; hernia; sonography

INTRODUCTION

The urachus is an embryological remnant of the allantoid, a canal that empties the fetal urinary bladder into the umbilical vein. During normal fetal development, the urachus narrows to become a fibromuscular strand that extends from the bladder to the umbilicus at approximately 4–5 months gestation, and is completely involuted at birth. Anomalies of this structure represent a rare form of acute abdominal pain. We present one such case.

CASE REPORT

An 18-year-old man with no significant past medical history presented to the Emergency Department (ED) with a chief complaint of dull, mild periumbilical abdominal pain that began after lifting weights 4 days prior. The pain was associated with constipation unresponsive to over-the-counter laxatives. Physical examination revealed a healthy-appearing, afebrile young man with an approximately 2-cm, non-reducible infraumbilical mass. No erythema was noted. There was tenderness to palpation over the mass itself, but the abdomen was otherwise soft and non-tender. Hemoccult testing was negative.

A focused ED sonogram was performed and revealed an anechoic periumbilical mass protruding through the rectus abdominus muscle (Figure 1A). The surgical team was consulted and a computed tomography (CT) scan with oral and intravenous contrast was ordered to further elucidate the findings. The CT scan showed a 1.5 × 1.3 × 3.1-cm circumscribed low-attenuation fluid collection with a thin, linear connection to the bladder, suggestive of an infected urachal cyst (Figure 1B). The patient was started on antibiotics and taken to the operating room, where he underwent excision of the cyst and had an uneventful recovery. Surgical pathology verified the diagnosis.
DISCUSSION

The urachus is an embryological remnant of the allantois, a canal that empties the fetal urinary bladder into the umbilical vein. Incomplete involution leads to five potential urachal anomalies. The first, and most severe, is a patent urachus, in which the urachus remains open. This is usually diagnosed in the newborn period, as drainage from the umbilicus will be evident early on (1). A urachal cyst occurs when both ends of the canal close, but the central portion remains open. Cysts often remain clinically silent, and may never require medical treatment unless they become infected. Urachal sinuses and vesicourachal diverticuli are, essentially, cysts that drain proximally into the umbilicus (sinus) or distally into the bladder (diverticuli). An alternating urachal sinus drains into both the umbilicus and the bladder, but not both simultaneously (2).

Although the true incidence is not known, urachal anomalies are thought to be rare. In one study, urachal cysts were found in 1:5000 autopsies, with a 3:1 male-to-female ratio (1). Others have predicted an incidence as high as 2% (3,4).

Numerous complications of urachal remnants have been reported in the literature, the most common of which is an infected urachal cyst (5). Clinical findings that suggest this diagnosis are a tender midline infraumbilical mass, umbilical discharge, and sepsis. Peritonitis may be present with rupture into the abdominal cavity (6).

Urachal disease is usually initially misdiagnosed. We initially suspected a hernia in our patient. Other common misdiagnoses include appendicitis, Meckel diverticulitis, acute prostatitis, urinary tract infection, pelvic inflammatory disease, and bladder carcinoma (2,7). The diagnosis is often not considered until an imaging study suggests its presence. Ultrasound, CT, and magnetic resonance imaging (MRI) may all be used to evaluate suspected urachal abnormalities. Because urachal cysts are anterior, extraperitoneal structures in close proximity to the bladder, ultrasound has been suggested as an ideal imaging modality for diagnosis (8,9). It has been estimated to be diagnostic in up to 77% of cases (2). This estimate is based on a limited number of small, retrospective studies (2,8–11). The characteristic appearance is a cystic mass in the midline lower abdominal wall, just beneath the umbilicus and above the bladder. It can often be seen to communicate with the bladder, as opposed to an umbilical hernia, which will communicate with the abdomen and should contain fat or bowel. If incarcerated, free fluid will often be present within the hernia sac (12). If this diagnosis is suspected, ultrasound is a reasonable initial test and, if diagnostic, can eliminate the need for CT or MRI.

It is important to note that the incidence of urachal malignancy is high. One retrospective study of 130 adults with urachal abnormalities found that 51% were malignant and 20% of these were metastatic at the time of diagnosis (2,13). Therefore, if a urachal abnormality is found incidentally, referral for further evaluation is critical (2).

The definitive treatment for a urachal cyst is surgical excision. When a cyst is infected, a two-step approach may be indicated. In these cases, excision is delayed to allow for drainage of the cyst and antibiotic therapy. This is thought to reduce infectious post-surgical complications.

Figure 1. (A) Sonogram shows an anechoic periumbilical mass protruding through the rectus abdominus muscle. (B) Computed tomography scan shows periumbilical fluid collection (circle) consistent with an infected urachal cyst.
Alternatively, a period of antibiotic therapy alone before excision may be adequate (2,14).

**CONCLUSION**

Although rare, complications from urachal anomalies are occasionally encountered in the ED. Their tendency to mimic other causes of low abdominal pain makes the diagnosis difficult. Familiarity with clinical signs and symptoms as well as radiographic characteristics can safely expedite definitive diagnosis and treatment in these cases.

**REFERENCES**