Giant abscessed urachal cyst in an adult. Case report

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Abstract

**Background:** During gestation, the urachus represents the connection between the bladder dome and the allantoic duct. Urachal cyst occurs preferentially in young adults, advocating the hematogeneous or lymphatic pathway as possible routes of transmission, although a cord or bladder origin may also occur. Urachal cyst is uncommon in adult life, with an incidence of only 2%.

**Clinic case:** We present the case of a 30-year-old male with a history of alcoholic hepatitis, type 2 diabetes mellitus, chronic malnutrition, increased volume beginning with generalized abdominal pain, and solid, mobile abdominal tumor (20 x 15 cm) without signs of peritoneal irritation. Computed tomography demonstrated the presence of an apparently cystic tumor, probably dependent on the bladder. Exploratory laparotomy demonstrated infected urachal cyst, draining purulent material (3000 cc). Partial resection of the anterior side was carried out, retaining the posterior side due to firm adhesion to intestinal loops. The patient had a satisfactory postoperative evolution.

**Discussion:** Urachal abnormalities are rare with a male:female ratio of 2:1. Although urachal abscess is an infection confined to an enclosed space, definitive treatment should not be simple incision and drainage because of the possibility of malignant transformation of urachal remnants. Definitive treatment should be considered as complete excision of urachal cyst and with limited infection.

**Conclusion:** Urachus cyst is a rare pathology and is a differential diagnosis for acute appendicitis. Appropriate treatment needs to be initiated.

**Key words:** abscessed urachal cyst, urachal cyst, adult, urachal diverticulum

Introduction

During pregnancy, the urachus represents the connection between the dome of the bladder and the allantoic duct. Normally, the lumen path is obliterated forming a fiber tract during embryonic development. Urachal abnormalities occur when the obliteration is incomplete due to persistent permeability. This can occur along its entire length, resulting in a permeable urachus or, in partial form, a sinus, cyst or urachal diverticulum.1

The urachus cyst is rare in adults and can only be observed in 2% of the population.2 The infection occurs mainly in young adults and suggests possible routes of transmission as either hematogenous or lymphatic and as either an umbilical cord or bladder origin with possible occurrence of *Escherichia coli* and *Proteus* as the most frequently cultured bacteria, with *Staphylococcus* being relatively rare.2,3 The combination of data from three studies conducted over the past 10 years shows that the most common type of urachal anomalies are cysts (45%) followed by sinus (37%) and permeable urachus (16%).4,6

Clinical Case

The patient is a 30-year-old male with a history of alcoholic hepatopathy previously diagnosed though an ultrasound that showed diffuse liver damage, type 2 diabetes mellitus with 2 years of evolution (treated with metformin and glibenclamide) and chronic malnutrition. The patient attended the clinic because of abdominal cramping with a 48-h evolution with increasing abdominal girth, unquantified fever for 2 days, asthenia and adynamia. Data exploration found signs of malnutrition
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and a solid, mobile, nonpainful abdominal tumor (~20 x 20 cm) without signs of peritoneal irritation (Figure 1). Computed tomography showed a cystic tumor (Figures 2 and 3) with well-defined edges, apparently dependent on the bladder. Laboratory studies reported hemoglobin (10.4), hematocrit (36%), platelets (318,000), leukocytes (6,000); glucose (135 mg/dL), BUN (20), urea (42 mg/dL), creatinine (0.4 mg/dL), cholesterol (119 mg/dL), TB (0.3), Na (128), K (4.3), and Cl (91). Urinalysis report was clear appearance, free of bacteria and leukocytes. PT was 13.2, PTT was 32, and INR was 1.2. Chest x-ray was normal.

Exploratory laparotomy showed surgical findings of an abscessed urachal cyst with 3000 cc of purulent contents. A culture was taken and treatment was initiated with ceftriaxone and metronidazole. The wall was 6-mm thick. The anterior side was resected because the posterior side had firm adhesions to the intestinal loops, with a high risk of intestinal damage. Ligation was performed proximal to the bladder. During surgery, two packed red cell concentrates were transfused (Figures 4 and 5).

Postoperative evolution was satisfactory. The patient was discharged on the third day with little pain, tolerating an adequate diet and normal bowel movements. There was no spiking fever and hospital discharge was with indication of continuing outpatient antibiotic treatment.

Histopathological examination showed the luminal surface of the cyst with fibrin and acute chronic and inflammatory infiltrate (Figure 6A) and fibromuscular stroma in the thickness of the wall (Figure 6B).

Discussion

The urachus is a three-layered structure with actual or potential space commonly lined by transitional epithelium. Surrounding the epithelium is a layer of connective tissue and an outer layer of muscle that is continued with the underside of the detrusor.7

Urachal abnormalities are rare with a male:female ratio of 2:1. The reported incidence is two cases per 300,000 patients admitted to the Hospital Infantil de Mexico; however, when considering the findings in pediatric autopsies, it increases to 1/5,000 births.8

Most develop in the lower third of the urachus and like other alterations it usually remains asymptomatic, being diagnosed in only one-third of children.2 Some malignant tumors such as adenocarcinoma are reported to develop in urachal remnants, especially in adults.9,10

Screening studies have shown that some urachal anomalies are asymptomatic; however, most manifest themselves clinically with leaks, signs of infection or palpable tumor.11
Figure 4. Cyst macroscopic image.

Figure 5. Urachal cyst base with no attachment to the bladder.

Figure 6. Histological urachal cyst cross-sections.
In adults, diseases of the urachus are expressed as non-specific abdominal discomfort, abdominal tenderness, bloating or periumbilical pain. The classic triad of the urachus is characterized by umbilical secretion, abdominal pain and urinary symptoms.\(^5\),\(^12\),\(^13\)

An abscess can be formed and drained into the navel or into the bladder and can also break into the peritoneal cavity causing localized or generalized peritonitis, which may have fatal consequences.\(^2\)

Although urachal abscess implicates a confined infection in a closed space, definitive treatment should not be a simple incision and drainage because there is a recurrence rate of 30% and because there is the possibility of malignant degeneration of the urachal debris. Therefore, definitive treatment should consider a complete excision of the cyst and the urachus when the infection is limited.\(^2\),\(^3\)

Cilento et al. reported that an ultrasound correctly diagnosed 100% of urachal cysts; however, they found a lower rate of diagnosis of the urachal sinus (50%) and permeable urachus (33%).\(^3\)

If the ultrasound is not diagnostic and there is no periumbilical drainage, a CT scan can be performed to differentiate between urachal cyst and other possible abdominal diagnoses such as appendicitis and Meckel’s diverticulitis.\(^4\)

The elective treatment for urachal cyst is complete primary excision and in the case of infected urachal cysts, a surgical procedure should be performed in a single stage and accompanied by the appropriate antibiotic to the causative agent.\(^14\) However, Yoo et al. suggested that the procedure be performed in two steps, with an initial incision and drainage and subsequent removal of the urachal remnant.\(^15\)

The traditional approach for total excision of urachal lesions in children has been through a vertical incision under the umbilicus or across the midline.\(^16\) In adults, the laparoscopic approach for resection of urachal anomalies is advocated by some groups.\(^16\)-\(^18\)

Lipskar et al. propose that non-surgical treatment of symptomatic urachal anomalies is a reasonable approach and may extend to infected urachal cyst after the initial drainage. These authors express that properly drained infected cysts can be obliterated over time.\(^19\)

Reports of favorable results of laparoscopic surgery for urachal anomalies have reported the potential benefits for children, including shorter hospital stay, less analgesic requirements, and better esthetic results.\(^20\)

The robot-assisted laparoscopic surgery offers an effective tool for minimally invasive procedures, with more accuracy in pediatric surgical procedures requiring reconstruction such as the removal of urachal cyst and resection and repair of the bladder.\(^21\)

In conclusion, urachal cysts are rare. In our case, it manifested as acute abdomen pain, which required exploratory laparotomy. The importance of knowledge of this condition during the differential diagnosis of acute appendicitis must be kept in mind during the diagnostic process in the emergency room. Indicated treatment must be kept in mind as total exeresis of the urachal cyst and, if necessary, to perform a second intervention to complete the exeresis if not achieved during the first surgery.

**References**

