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A Case Report of Urachal Adenocarcinoma Presenting as A Urachal Cyst

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Abstract | **Case Report**

Urachal carcinoma accounts for less than 1% of all bladder carcinomas and only 0.01– 0.02% of adult cancers, posing a diagnostic and therapeutic challenge due to limited literature [1-3]. We report the case of a 53-year-old man who presented with an abdominal mass and increased urinary frequency. Imaging revealed a 9 cm cystic mass at the dome of the bladder extending to the umbilicus. Cyst excision was performed, and histopathology confirmed mucinous cystic urachal adenocarcinoma. The patient subsequently received chemotherapy. Given the rarity of the condition, this case adds valuable data to the existing literature.

Keywords: Urachal adenocarcinoma, Urachal cyst.

INTRODUCTION

Urachal masses are rare in clinical practice and often pose diagnostic difficulties due to variable clinical and imaging features. In children, urachal anomalies range from asymptomatic to infected cysts, and management depends on severity. In adults, distinguishing between benign and malignant lesions is crucial for determining treatment and prognosis. While most adult urachal masses are malignant typically adenocarcinomas benign lesions like urachal cysts also occur. However, due to overlapping clinical and radiological findings, definitive diagnosis usually requires histopathological confirmation. Owing to limited literature and the rarity of this condition, we present a case of mucinous urachal adenocarcinoma initially mimicking a urachal cyst, treated with cyst excision and chemotherapy.

CASE PRESENTATION

A 53-year-old male presented with a palpable abdominal mass and increased urinary frequency for two months. He had a one-year history of intermittent dysuria, fever, and pyuria. There was no history of weight loss, abdominal pain, umbilical discharge, comorbidities, or previous surgeries.

On examination, a non-tender lump measuring approximately 8 × 8 cm was palpable in the hypogastric region. It extended from 2 cm below the umbilicus to about 5 cm above the pubic symphysis and was mobile horizontally.

Laboratory findings revealed leukocytosis [TLC 22,300/cumm]. Urine microscopy showed Ultrasound revealed a hypoechoic pelvic lesion measuring 10.7 × 7.8 cm. CECT abdomen and pelvis showed a well-defined, non-enhancing hypodense midline lesion [91 × 10.8 × 10.4 cm] just superior to the bladder dome, with loss of fat planes and peripheral calcification[fig.1]. MRI showed a midline supravesical cystic lesion with thin septations, measuring 11.3 × 8.2 × 11.4 cm [fig 2]. Tumor markers were not assessed preoperatively.

Exploratory laparotomy revealed mucoid to necrotic material in the preperitoneal space. A 16 × 9 × 2.5 cm cyst was identified from the bladder dome to the umbilicus and ruptured during dissection. The cyst wall was adherent to the bladder, cyst excised along with bladder tissue [fig.3]. The bladder repaired in two layers, and the abdomen washed with warm saline. [fig.4].

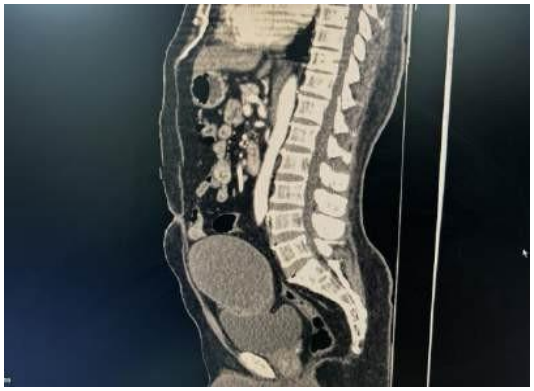

Figure 1 : CECT showing large cystic mass in pelvis extending up to umblicus

On histopathological examination mucinous urachal adenocarcinoma was confirmed [fig.5]. Immunohistochemistry was positive for CD7, CDX2, and beta-catenin. The postoperative course was uneventful. The patient was referred to medical oncology for chemotherapy and advised regular follow-up every six months.

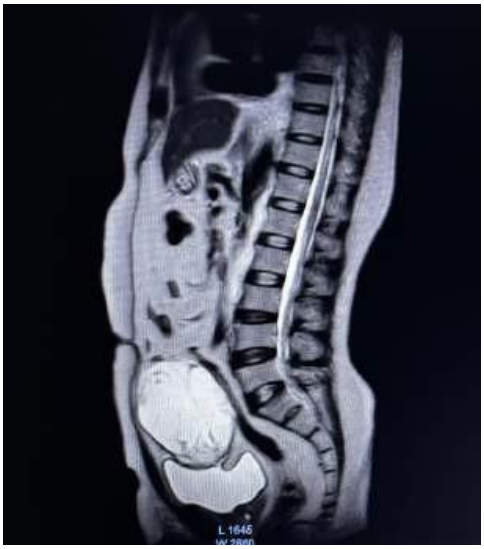

Figure 2 : MRI showing large cystic mass in supravesical region

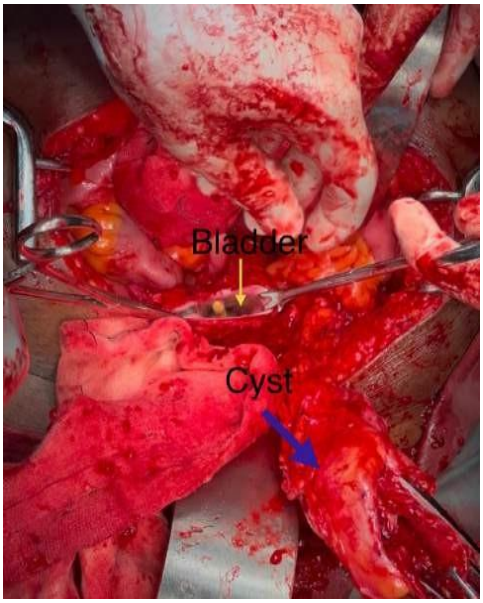

Figure 3 : Intraoperative image showing cyst wall adherent to bladder with bladder defect

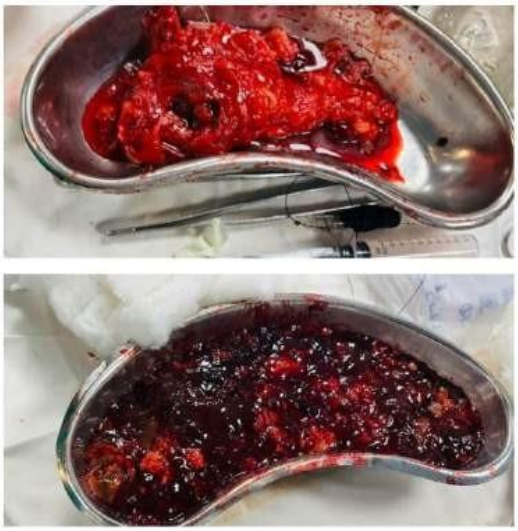

Figure 4 : Showing excised cyst and mucinous & necrotic material

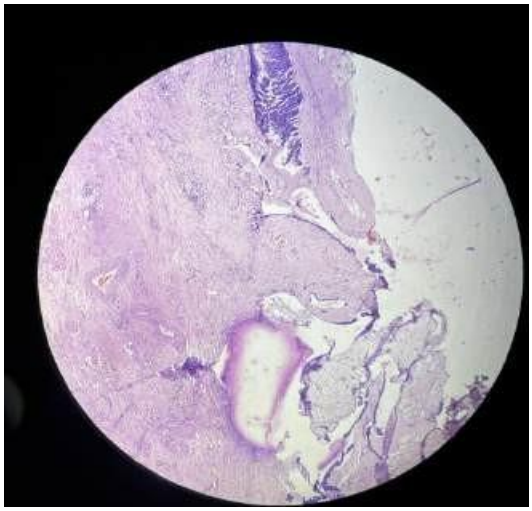

Figure 5: HPE showing mucinous pools with irregular infiltrative glandular structures with desmoplastic stroma

DISCUSSION

The urachus is a fibrous remnant of the allantois, which during fetal development connects the bladder to the umbilicus. Normally, it obliterates before birth; however, incomplete involution can lead to anomalies such as a patent urachus, urachal sinus, urachal cyst, or vesicourachal diverticulum [4]. These anomalies can present with symptoms like umbilical discharge, recurrent infections, or suprapubic masses, though some may remain asymptomatic and be discovered incidentally. Rarely, they can undergo malignant transformation, most commonly into adenocarcinoma, as first described by Begg in 1930. [5,6]

Epidemiologically, urachal anomalies are uncommon, occurring in about 1 in 5,000 to 8,000 live births, with a male-to-female ratio of approximately 2:1. Ueno et al., in a pediatric ultrasonographic screening study, found urachal anomalies in 1.6% of cases, with a majority being symptomatic [7]. Among urachal malignancies, adenocarcinoma is the most frequent histological type, accounting for up to 90% of urachal cancers. Furthermore, it is estimated that 20–40% of bladder adenocarcinomas originate from the urachus [8,9].

Urachal carcinoma generally presents in adults between 40 and 70 years of age and is more common in males [10]. The most frequent presenting symptom is painless hematuria, seen in up to 80% of patients. Other symptoms may include abdominal discomfort, dysuria, mucosuria, lower urinary tract symptoms, umbilical discharge, and, less commonly, systemic symptoms such as fever or weight loss. In contrast, urachal cysts are often asymptomatic and are usually detected incidentally during imaging [11-13].

Differentiating between benign and malignant urachal lesions preoperatively remains a challenge due to overlapping clinical and radiologic features. For example, an infected urachal cyst may appear on ultrasound as a complex midline mass with mixed echogenicity, sometimes containing intralesional gas.

CT and MRI often show a heterogeneous enhancing mass with surrounding inflammation, features that can mimic urachal carcinoma [14-16]. Typical imaging features of urachal carcinoma on ultrasound include a midline mass with mixed echotexture and calcifications. The mucin component within the tumor may appear hyperechoic [2]. CT findings often demonstrate a calcified supravesical mass with low attenuation areas corresponding to mucinous content and solid-cystic architecture. Perilesional fat stranding, indicative of local invasion, can also be seen but may be present in both malignant and infected benign lesions, making accurate differentiation difficult [17].

Establishing the correct diagnosis is crucial, as management strategies differ significantly. While simple excision is sufficient for benign lesions, malignant urachal tumors require partial cystectomy with en bloc resection of the urachus and umbilicus [11]. Pelvic lymph node dissection may be performed for staging purposes, though it has not shown a clear survival benefit [18]. Neoadjuvant chemotherapy may be considered in invasive cases, and adjuvant chemotherapy regimens commonly include 5-fluorouracil, cisplatin, or FOLFOX6, with gemcitabine increasingly integrated into treatment protocols [18]. Radiotherapy, however, has shown limited effectiveness as a local control measure [19].

In prognostic terms, factors such as tumor size, Mayo staging, and whether umbilectomy was performed have been independently associated with overall survival. Tumor differentiation, along with Mayo stage and umbilectomy, also correlate with progression-free survival. Notably, lymph node dissection has not demonstrated a significant impact on overall survival in recent studies [20].

Conclusion

Urachal adenocarcinoma is a rare and aggressive malignancy with limited data in the literature. Its radiologic appearance often mimics benign conditions like infected urachal cysts, making preoperative diagnosis difficult and complicating management. Reporting such cases contributes valuable insights to improve understanding and guide future diagnosis and treatment strategies.

Conflict of Interest: None.

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Ethical approval: Institutional ethical committee approval was obtained. Ethics committee, Guntur medical College, Guntur.

Consent: Written informed consent was obtained from the patient for publication of this report and accompanying images.

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