



An Unusual Case of Gross Hematuria in a Two-Year-Old Boy

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Urachal cysts in children are rare with an incidence of 1 in 1,500 live births. We present a case of a two-year-old boy who presented with hematuria, foul smelling urine, and a bladder mass, which up until histopathological examination had features strongly suggesting malignancy. On histopathological examination, a diagnosis of an infected urachal cyst was made. This case report discusses a rare presentation of an infected urachal cyst and the multidisciplinary management approach taken.

Keywords: *Bladder mass; pediatrics; hematuria; urachal cyst.*

1. INTRODUCTION

Urinary bladder masses include benign and malignant entities. In the pediatric population, bladder tumors can be classified as either

urothelial neoplasms or as the more prevalent mesenchymal neoplasms[1]. The most common urinary bladder neoplasm in children is rhabdomyosarcoma, with a peak incidence between 2 to 16, and 15 to 19 years old [2].

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Clinically and sonographically, a wide variety of bladder masses can mimic carcinoma and these include: anatomical defects such as urachal remnants, bladder wall pathologies which include inflammatory pseudotumors, and luminal tumor-like lesions such as fungal balls, blood clots and foreign bodies [3].

This case report concerns itself with the presentation of a urachal cyst that mimicked the presentation of rhabdomyosarcoma, in a two-year-old boy, both clinically and sonographically.

2. CASE PRESENTATION

A two-year-old Yemeni Boy, known case of speech delay, presented with a one day history of hematuria associated with foul smelling urine. No other symptoms were reported. The patient is a product of an uneventful term pregnancy, with no significant past medical history of note.

On examination, the child was afebrile and appeared clinically well. The abdomen was soft, lax, non-tender, and a small mass was felt in the lower abdomen. Genital examination revealed an undescended right testis. The cardiovascular, respiratory, and neurological systems were unremarkable.

Laboratory investigations revealed the following: white blood cell count of $11.14 \times 10^9/L$ (reference range 3.6-9.6), hemoglobin of 11.6 g/dL (reference range 12-14.5), platelet count $383 \times 10^9/L$ (reference range 150-400), neutrophils 47.9% (reference range 42.2-75.2) lymphocytes 39.20% (reference range 20.5-55.1). Urea, Creatinine, Electrolytes, and Liver function tests were within normal limits.

Microscopic urine analysis showed: blood hemoglobin positive, red blood cells more than 100, white blood cells 50-99. Leukocyte esterase +2. Nitrite positive.

Given the laboratory findings suggestive of a urinary tract infection (*Escherichia coli*), the patient was started on intravenous fluid and intravenous antibiotics (Cefotaxime) and responded well, with a sterile urine culture obtained before discharge.

In addition to that, an ultrasound scan of the abdomen was obtained on admission and reported a well-defined vascular soft tissue lesion arising from the bladder apex measuring about 2.1x2.0x2.4 cm. Internal vascularity was noted within. The outline of the bladder wall was ill-defined and irregular at the site of the lesion raising the possibility of extraserosal extension. [Fig. 1].

Given the findings suggestive of malignancy, the consultant radiologist involved ordered a Magnetic Resonance Imaging (MRI) of the pelvis to further study the nature of the mass and evaluate the possibility of local extension. The MRI showed a well-defined lobulated soft tissue lesion that is isointense on T1W, heterogeneously mildly hyperintense on T2W and shows diffusion restriction and contrast enhancement. There was mild thickening and enhancement of the adjacent urothelium. No gross extraserosal extension was noted.

Given the age of the patient and the features seen on imaging, the differential diagnoses included rhabdomyosarcoma and inflammatory myofibroblastic tumor. [Fig. 2]

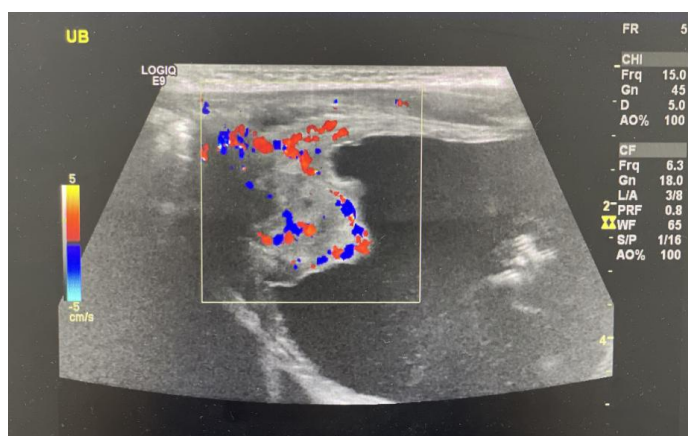


Fig. 1. Bladder ultrasound showing a lesion in the apex with internal vascularity



Fig. 2. MRI pelvis showing a well-defined lobulated soft tissue lesion

Taking into consideration the clinical presentation, the findings on imaging, and the persistence of hematuria throughout the hospital stay, the multidisciplinary team consisting of pediatricians, pediatric surgeons, radiologist and pathologist elected to excise the lesion.

Under general anesthesia, the patient underwent a laparotomy, with Pfannenstiel incision and a muscle splitting technique, and partial segmental cystectomy for the bladder lesion. The intraoperative findings revealed a 2.0 x 2.5cm firm round mass with polyp-like projections, located at the dome of the bladder, with smooth parts of the surface abutting the serosal layer but not invading the surrounding tissue. [Fig. 3,4]

Upon histological examination, the mass was found to be an infected urachal cyst with no evidence of atypia or malignancy.

The patient was discharged with no postoperative complications. Two weeks later, he was followed up in the outpatient clinic and was doing well with no signs of wound infection.

3. DISCUSSION

The urachus is a primitive structure that connects the bladder to the umbilical cord in the developing embryo. It normally obliterates during the latter part of fetal life. However, defective obliteration can lead to different malformations, the most common being a urachal cyst[4].

A urachal cyst is a pocket of air or fluid that develops within the urachus. The incidence is 1 in 1,500 live births. In the majority of cases, the cyst remains asymptomatic unless infected. Infected urachal cysts can present in a myriad of ways, thus necessitating a high index of clinical suspicion to diagnose it. Presentations can include lower urinary tract symptoms, hematuria, a palpable mass, and an acute abdomen [5].

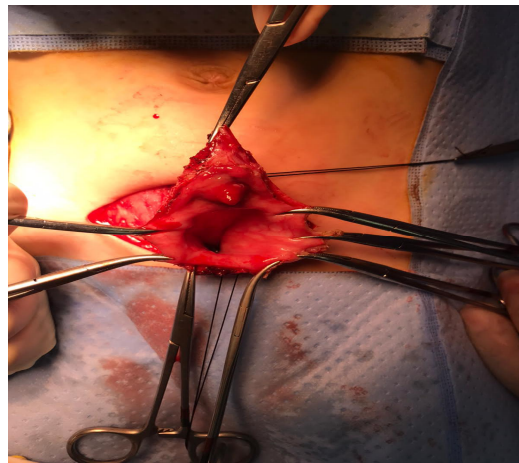


Fig. 3. Intraoperative findings with a view of the lesion in the apex of the bladder

Ultrasonography is the first line imaging modality for urachal cysts. The typical appearance is a

fluid filled cavity in the mid lower abdominal wall. When infected, a urachal cyst manifests with mixed echogenicity at ultrasound. However, the sensitivity and specificity of ultrasound in the presence of an infected urachal cyst is unknown. [6] [7].



Fig. 4. Gross specimen of the bladder lesion

In the case presented, the ultrasound reported internal vascularity within the lesion, which raised the suspicion of malignancy, thus necessitating cross sectional examinations by an MRI. On MRI, the cyst is expected to appear hyperintense on T2 weighted sequence with a clear visualization of the anatomical relation of the cyst to the bladder. This typical appearance was not seen in the case of our patient and so a urachal cyst was not even in the top of the list of differential diagnoses. Thus, histological examination of the specimen was needed to diagnose the nature of the lesion.

Although cystoscopy and proceed is indicated to obtain a histological specimen, primary excision of the lesion was chosen due to the ease of accessibility and resection given the location of the lesion in the dome of the bladder.

When diagnosed pre-operatively, the management of infected urachal cysts is not yet standardized. If infected, excision of the cyst is necessary due to the rare complications of cyst rupture and malignancy. Excision can be done through either the traditional two staged procedure, with an initial incision and drainage of the cyst followed by secondary excision, or the single staged procedure of primary excision [8] [9].

A study conducted by Yoo KH and Chang SG, to compare and evaluate the efficacy of both procedures suggested that although a single

stage excision can be accomplished safely in the setting of early detection by abdominal ultrasound and the use of antimicrobials, it has a higher incidence of complications compared to the two-staged procedure, which was complication free[10].

4. CONCLUSION

In conclusion, the case presented demonstrates that infected urachal cysts can present in a myriad of ways, including malignancy. This necessitates having a high index of suspicion for this condition and a multidisciplinary team to diagnose and effectively treat suspicious bladder lesions in the pediatric population.

CONSENT

"All authors declare that 'verbal informed consent was obtained from the patient and the parents for publication of this case report and that maximal patient anonymity was ensured and maintained during the writing of the case report."

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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