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An Infected Urachal Cyst Coexisting With Posterior Urethral Valves ina Malnourished Child: A Case Report and Review of Literature

*Edoise M. Isiwele[1], Edet E. Ikpi[1], Glen E. Enakirerhi[1], Fidelis O. Otobo[1],Kenneth A. Omoruyi[2], Godstime I. Irabor[3], AkanimoEssiet[1]
[1]*Department of Surgery, University of Calabar Teaching Hospital, Nigeria*
[2]*Department of Pathology, University of Calabar Teaching Hospital,Nigeria*
[3]*Department of Pathology, Saba University School of Medicine, Netherlands*
Corresponding author: Edoise M. Isiwele.

Abstract:*Urachal abnormalities arerare and present more commonly in children. However when found in adults, the commonest variety is infected urachal cysts compared with other urachal abnormalities (patent urachus, urachal sinus andvesicourachal diverticulum). Posterior urethral valves (PUV) have also been documented to coexist with urachal abnormalities. We report the case of an 8 year old male Nigerian who presented with a tender suprapubic mass, progressive weight loss and urinary incontinence. Diagnosis of infected urachal cyst was confirmed at surgery. He had complete excision of the mass and histology excluded malignant transformation. He subsequently had surgical site infection that was managed with antibiotics.*

Keywords: *Infected,Malnourished,Posterior urethral valves,Urachal cyst.*

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I. Introduction

The urachus, is a midline tubular structure that extends from the dome of the bladder to the umbilicus and involutes before birth.[1] Its persistence can give rise to a spectrum of abnormalities - patent urachus, urachal sinus, vesicourachal diverticulum, and urachal cyst. The patent urachus is the most common of these abnormalities in children and accounts for about 50% of cases.[2,3] On the other hand, urachal cysts are the commonest presentation in adults and they frequently become infected.[4] Posterior urethral valves (PUV) are the commonest congenital cause of obstructive uropathy in males with an incidence of 1;5000-8000.[5]

II. Case Report

We present the case of an 8-year old male with a 5-month history of urinary incontinence, 2-week history of suprapubic swelling and progressive weight loss. There was associated history of low grade fever, anorexia, hesitancy, dysuria and easy fatiguability. He had no history of cough,but a history of enuresis since birth. He had been placed on herbal concoctions without improvement. Examination revealed a chronically ill-looking, lethargic boy in both respiratory and painful distress. He was pale and dehydrated and had a body mass index (BMI)of 10.7. Abdominal examination revealed an irregular suprapubic mass (about 7x8cm) that was firm and tender. Liver and spleen were not palpably enlarged but both kidneys were ballotable with bilateral renal angle tenderness. A size 10F Foley's catheter inserted drained 300ml of cloudy urine with significant reduction in the suprapubic mass. However a firm to hard variegated, multilobulated mass was still palpable in the suprapubic region. An initial diagnosis of PUV with bladder diverticulum complicated by pyelonephritis was made. The patient could only do some of the requested investigations due to lack of adequate funds. Blood picture revealed a packed cell volume of 15%, with a normal white cell count. Urea was 54.28mmol/L,Creatinine 406.64µmol/L and bicarbonate 14.3mmol/L. Urine culture yielded *Coagulase negative staphylococcus*. Abdominopelvic ultrasound scans (KUB) showed bilateral hydronephrosis with marked bladder wall thickness (1.7cm).There was a heterogenous mass (volume - 55.48cm^3) seen extending to the subcutaneous tissues of the anterior abdominal wall with areas of hypo- and hyper-echogenicity, walls were thickened with septae and an irregular outline. He was resuscitated, transfused and placed on intravenous antibiotics. Surgical exploration via a midline incision revealed a multiloculated, pus-discharging mass (9x6x4cm) extending from the dome of the bladder to the umbilicus (Fig 1).

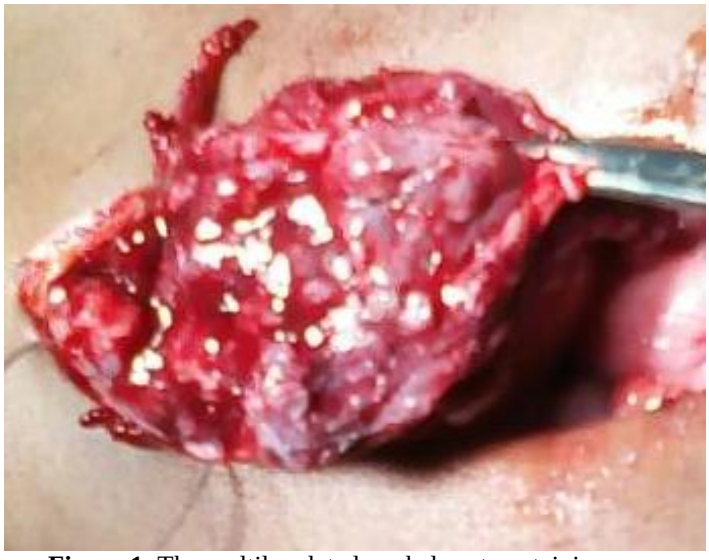

Figure 1: The multiloculatedurachal cyst containing pus.

The mass was excised alongside a cuff of the bladder dome and omentum adherent to its undersurface. Intraoperative diagnosis of PUV was made once the bladder was open and valvotomy was carried out using a Mohan's valvotome. The bladder was repaired in two layers over a 10F Foley's catheter and abdominal wall closed in layers over a drain. Histopathologic analysis of the specimen revealed a cystic cavity surrounded by fibrocollagenous tissues lined by columnar cells and urothelial epithelium, with intense inflammatorycell infiltrates within the cyst without evidence of malignancy (Figs 2 & 3). Patient developed surgical site infection which was treated with antibiotics.

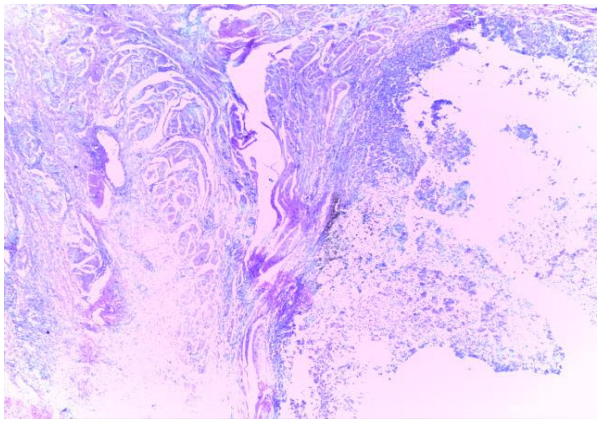

Figure 2: Urachal cyst with inflammatory cells (H&E ×40)

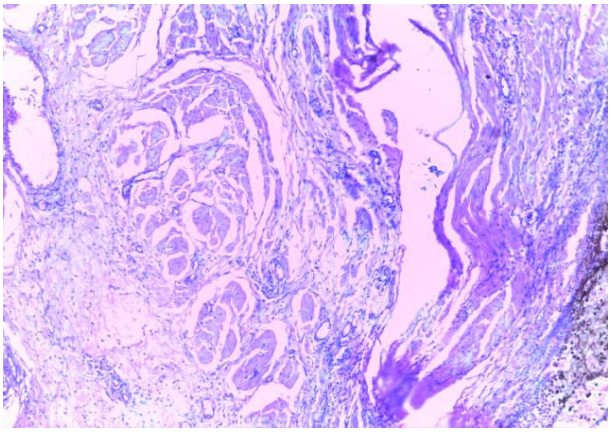

Figure 3: Urachal cyst with inflammatory cells (H&E ×100)

III. Discussion

Urachal abnormalities rarely occur in adults however when it occurs it tends to be infected urachal cysts. This is less common in children.Patent urachus is found to coexist with PUV in one-third of cases.[6]Early diagnosis of PUV is important if the complications of the disease, which can be severe and life threatening are to be avoided. Associated complications usually make patient management difficult. One of the complications associated with this condition is malnutrition. Nyagetuba et al[7] reported malnutrition to be present in 36% of PUV patients studied in Kenya over 7 years, with 20% of them being severely undernourished.Our index patient presented at the age of 8 years when he had developed several complications including malnutrition having a BMI of 10.7.[8]Commonly cultured microorganisms from the cystic fluid of an infected urachal cyst include *Escherichia coli*, *Enterococcus faecium*, *Klebsiella pneumonia*, *Proteus*, *Streptococcus viridans and Fusobacterium*with *Escherichia coli* also being cultured in urine and blood.[9] In the case of our patient, the organism was *Coagulase negative staphylococcus*. Symptoms of infected urachal cysts are varied and caninclude fever, abdominal pain, and a midline mass. Due to this fact and the relative rarity of the condition, patients can be misdiagnosed.[10]Clinically, diagnostic challenges could also arise where a suprapubic abdominal mass exists in a patient withPUV as well as urachal cyst. Drainage of the urine by catheterization usually will still leave the patient with a mass. This is because despite emptying the bladder of urine, the cyst still exists.Ultrasound scan is helpful in making diagnosis of urachal cyst in 77% of patients[10], however CT scans or MRI may be necessary before the diagnosis is made.[11,12] In our case, ultrasound scan was non-specific and the patient could neither afford a CT scan nor an MRI. The gold standard in the diagnosis of PUV is voiding cystourethrogram which also could not be afforded by our patient. However a high index of suspicion is also necessary as VCUG may not be clearly diagnostic.[13]The options of treatment for an infected ur[illegible] a tw[illegible] as be[illegible] te excision is necessary to prevent malignant transformation of urachal remnants.[9,11]Our patient had a single stage excision of the cyst and valvotomy using a Mohan's valvotome at the same surgery. The financial implication of having hospital admission and surgery twice for a financially challenged family was a consideration. Long term follow up of patients with both conditions is essential as complications like chronic renal failure or malignant transformation of urachal remnants (where not completely excised) can result.[14,15]

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