Anterior Urethral Valves as an Unusual Cause of Urethral Obstruction

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INTRODUCTION

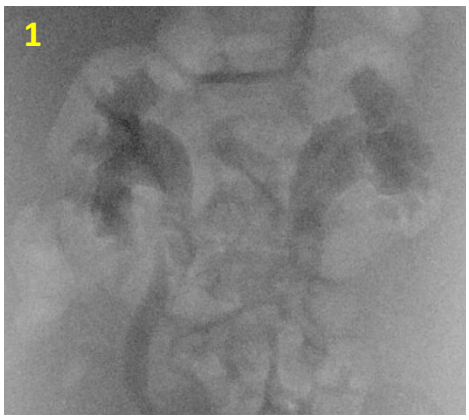
Anterior urethral valves (AUV) are a rare cause of congenital urethral obstruction and are 15-30 times less common than their posterior counterpart. Clinical presentation is extremely varied, ranging from high grade lower tract obstruction in utero to lower urinary tract symptoms in childhood, ultimately leading to significant challenges in diagnosis. Whilst it has been suggested that patients with congenital AUVs have better clinical outcomes than that of posterior urethral valves, the relatively low incidence of this condition lends itself to a fair amount of ambiguity with regards to the study of long-term prognosis.

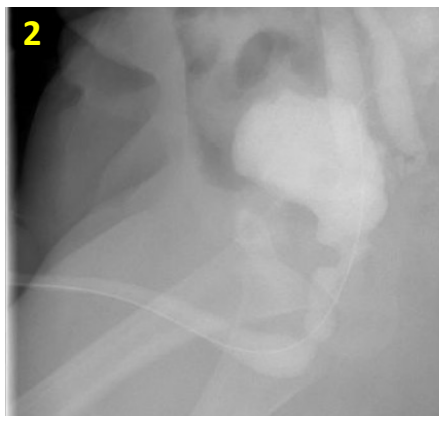
We report 2 cases of anterior urethral valves in 6-month and 3-year-old boys, both of whom underwent successful AUV fulguration and who are on long-term follow-up.

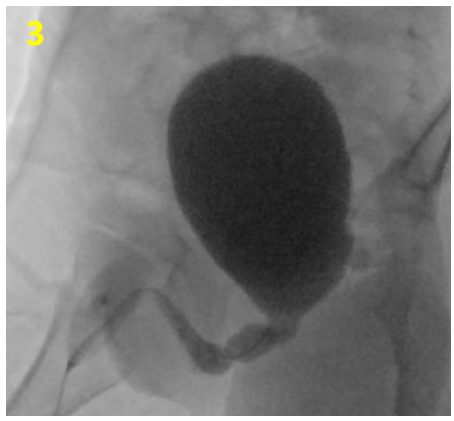
METHODS

An electronic search of MEDLINE was conducted with key terms "anterior urethral valves" and "paediatric urethral obstruction" and relevant information was selected for review.

CASE PRESENTATION







Img 1. MCU for patient A showing bilateral grade 4 VUR. Image 2. MCU for patient A showing focal narrowing at the anterior urethra. Image 3. MCU for patient B showing focal narrowing at the anterior urethra.

Both patients were born at term without antenatal or postnatal complications and had normal age-adjusted serum creatinine on diagnosis. Patient A presented at 6 months of life with a first episode of febrile urinary tract infection. Examination was unremarkable except for physiological phimosis. Initial ultrasound of the kidneys and urinary bladder showed mild right pelvicalyceal dilatation. Follow-up micturating cystourethrogram (MCU) 1 month later showed moderate dilatation of bilateral pelvicalyceal systems with blunted fornices and ureteric dilatation consistent with bilateral grade 4 vesicoureteric reflux (VUR) suggestive of progression of the condition. Focal narrowing was also noted at the anterior urethra without significant contrast hold-up proximal to the obstruction. DMSA scans reported a differential function of 63.6% in the right and 36.4% in the left kidney respectively.

Patient A subsequently underwent circumcision and cystoscopic assessment wherein anterior semilunar urethral valves were noted. The posterior urethra was prominent but not significantly dilated and no other significant pathology was noted along the length of the urethra. Transurethral AUV fulguration was performed to good effect and the patient is now on active follow up with the paediatric surgery and renal teams for close follow-up of his long-term renal function in view of his co-existing VUR.

Patient B presented at 3 years of age with a chronic history of poor urinary stream after successfully being toilet trained more than 1 year prior. No previous episodes of febrile UTI were reported. Clinical examination was unremarkable; however, voiding observation revealed a slow and stuttering flow. Uroflowmetry showed a plateau waveform with a Qmax of 2.4ml/s, voided volume of 141mls and a voiding time of 145 seconds. Ultrasound of the kidneys and urinary bladder was normal with no evidence of obstruction. MCU was performed which was initially reported as normal, however a review of the images demonstrated focal narrowing at the anterior urethra with proximal dilatation. In view of this ambiguity, cystoscopic correlation was performed which revealed anterior urethral valves which were successfully fulgurated. Recovery was uneventful and post-operative UFRU showed marked improvement in flow with a Qmax of 14.5ml/s, voided volume of 100mls and study voiding time of 10.2 seconds. He is now on long-term follow-up with paediatric surgery.

DISCUSSION

Paediatric lower urinary tract obstruction (LUTO) is a rare entity with an incidence of 2-3 every 10,000 births. Posterior urethral valves (PUVs) are the most common cause of LUTO with an incidence of 1 every 3000 to 8000 births; conversely, anterior urethral valves are 15 to 30 times less common than PUVs [1]. AUVs present a significant diagnostic challenge due to the wide spectrum of clinical presentation, which ranges from high grade obstruction with diagnosed in utero with renal impairment postnatally, to more subtle signs such as incontinence, infection, poor urinary stream or a ventral bulge noted along the penis [2].

Micturating cystourethrogram is the gold standard imaging modality for diagnosis of AUVs. Further imaging to assess the upper tract is also often performed with an ultrasound of the kidneys and urinary bladder or nuclear medicine scans to assess for differential function particularly in the event of any ultrasonographically detected obstruction [3]. Whilst an indwelling catheter or a vesicocostomy is sometimes employed to facilitate urinary decompression, the treatment of choice is that of definitive cystoscopic evaluation with transurethral AUV fulguration [4]. Other previous surgical options included open urethrotomy, valve excision and segmental urethrectomy with anastomosis, which are no longer considered first-line.

Although little is known about the long-term overall outcomes of this rare condition, preservation and monitoring of renal function remains the primary focus. Recent studies have indicated that patients with AUV and concurrent VUR and UTI have a 25-fold increase in poor renal function. Patients with concurrent VUR (grade III-V) may also require ureteric reimplantation in later life despite early valve fulguration if persistent reflux is noted [5]. Overall, AUVs, though uncommon, should be on the paediatric surgeon's arsenal of differentials for any child presenting with lower urinary tract obstruction due to its serious ramifications on renal function.

REFERENCES

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