Case 15846

Posterior urethral valves: not uncommon presentation in older age – Case report
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Section: Paediatric radiology
Area of Interest: Kidney Urinary Tract / Bladder
Procedure: Diagnostic procedure
Imaging Technique: Ultrasound
Imaging Technique: Conventional radiography
Special Focus: Dilatation Obstruction / Occlusion Case
Type: Clinical Cases
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Patient: 10 years, male

Clinical History:

A 10-year-old boy presented with progressively increasing lumbar pain. His urinary function was normal. There were no symptoms to suggest urinary tract infection. External genitalia, abdominal examination, and spinal examination revealed no abnormality.

Imaging Findings:

Ultrasound showed bilateral (Right > Left) hydronephrosis and diffuse urinary bladder wall thickening (Fig. 1a-c) with no post-voiding residual urine. Voiding cystourethrogram (VCUG) showed a large capacity urinary bladder with funneling of the posterior urethra and a urinary bladder diverticulum posteriorly (Fig. 2a, b). There was no evidence of vesico-ureteric reflux (VUR). Blood investigations revealed normal renal function tests. The patient underwent cystoscopy and valve fulguration under general anaesthesia. A type 3 valve was identified and fulgurated. Post-operatively the child had no complaints of pain.

Discussion:

Posterior urethral valves (PUVs) are commonly suspected and diagnosed antenatally. Valves represent a membranous barrier to the flow of urine. PUVs occur in 1 in 8000-25000 live births. PUVs are associated with a higher incidence of cryptorchidism (16%) and inguinal hernia (11%).

Clinical presentation ranges from severe pulmonary hypoplasia due to oligohydramnios, to milder forms of obstruction which manifest later [1-4]. Older patients present with lower urinary tract symptoms (LUTS), recurrent urinary infection, and ejaculatory and voiding dysfunction. Rarely gross haematuria and renal insufficiency may be seen [3, 4].
Three types are recognised [5]. Type I entails a ridge arising at the lower margin of verumontanum, dividing into two strips and coursing anteriorly to attach to the anterior urethral wall at the bulbomembranous junction (95%). Type II arises from the verumontanum and courses along the posterior urethral wall to the neck of the bladder. Type III is a transverse membrane with a central opening across the urethra. Types II and III are rare, and type III has a worse prognosis.

Classic ultrasound findings [6] include a “keyhole” appearance due to the dilated posterior urethra and bladder, and diffuse bladder wall thickening. Hyperechoic renal parenchyma with/without small cysts suggests renal dysplasia.

VCUG is diagnostic and provides anatomical and functional information about the bladder, bladder neck and urethra. Diverticula and VUR may also be depicted. A hypertrophied bladder neck is seen as a lucent ring/collar. During voiding, the posterior urethra dilates and valve leaflets are seen as lucent bands, appearing like a spinning top. VUR is present in at least 50%. Nuclear studies provide functional information.

Valve ablation is done with the help of hooks, balloon catheters and valvulotomes. Following ablation boys commonly develop lower urinary tract dysfunction, regardless of their presenting age.

A review of late-presenting PUV patients aged between 2 and 14 years showed that 68% had good functional outcome in the immediate post-operative period. However, at mean follow-up of 25 months, 63% were seen to have poor urinary continence [3]. There was no significant improvement in 80% of those with hydronephrosis. In these patients upper urinary tract damage can be averted and rapid recovery achieved by clean intermittent catheterisation and overnight bladder drainage [7, 8]. At 6 months follow-up our patient did not have significant urinary disturbance.

A high degree of clinical suspicion is needed in boys of any age presenting with pain, LUTS and/or other urologic complaints. Following ablation, commonly encountered complications should be promptly addressed for improved recovery.

Differential Diagnosis List: Posterior urethral valve (type III), Neurogenic bladder, Urethral stricture

Final Diagnosis: Posterior urethral valve (type III).

References:


Figure 1

**a** Description: Right kidney showing severe hydronephrosis. **Origin:** Kiran M, Department of Radiodiagnosis, Kamineni Hospital, LB Nagar, Hyderabad, India.

**b** Description: Left kidney showing moderate hydronephrosis. **Origin:** Kiran M, Department of Radiodiagnosis, Kamineni Hospital, LB Nagar, Hyderabad, India.
Description: Diffuse urinary bladder wall thickening. Origin: Kiran M, Department of Radiodiagnosis, Kamineni Hospital, LB Nagar, Hyderabad, India.
Figure 2

Description: Left oblique radiograph showing dilated posterior urethra, and a diverticulum posteriorly.

Origin: Kiran M, Department of Radiodiagnosis, Kamineni Hospital, LB Nagar, Hyderabad, India.
Description: Postvoid frontal radiograph showing small residual urine. No opacification of the upper urinary tract. Origin: Kiran M, Department of Radiodiagnosis, Kamineni Hospital, LB Nagar, Hyderabad, India.