

Posterior Prostatic Urethral Diverticulum As A Cause of Recurrent Febrile Urinary Tract Infection in An Infant: An Infrequently Seen Condition and Literature Review

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ABSTRACT

This study aimed to report a case of recurrent urinary tract infection (UTI) with Escherichia coli in an infant, secondary to the prostatic urethral diverticulum. Neonatal UTI is a rare cause of late-onset sepsis with an incidence of 1.1% in term neonates. Recurrent UTI in infancy is often associated with vesicoureteral reflux. A prostatic urethral diverticulum is an extremely rare cause of recurrent UTI in neonatal age group. The infant in the present case was treated with intravenous antibiotics and discharged on oral antibiotics prophylaxis. The infant is in regular follow-up with no readmission for repeat UTI. This was a rare presentation of a prostatic urethral diverticulum in newborns/infants. Treatment involves antibiotic prophylaxis with regular urological follow-up.

Key words: Antibiotic prophylaxis, late-onset sepsis, prostatic urethral diverticulum, urinary tract infection, voiding cystourethrogram

INTRODUCTION

A Neonatal urinary tract infection (UTI) is a rare cause of late-onset sepsis (LOS) sepsis with an incidence of 1.1% in term neonates. The most common cause of recurrent UTI in neonates is vesicoureteral reflux (VUR) (1). A few case reports of urethral diverticulum presenting as recurrent UTI are available, but all these cases were reported in children beyond neonatal period or infancy. The present case report might guide the treating pediatrician to consider posterior prostatic urethral diverticulum as a cause of recurrent UTI.

CASE PRESENTATION

A follow-up case of preterm newborn (27 weeks at birth), birth weight 740 g, was admitted at 2 weeks of corrected gestational age with complaints of high fever. The infant was admitted to the nursery for 2 months after birth considering extreme prematurity and extremely low birth weight. The infant was managed for respiratory distress and necrotizing enterocolitis postnatally. At the time of admission, the infant had a fever (102°F) and glandular hypospadias with bilateral descended testes on examination. The rest of the examination was uneventful. He was diagnosed as a case of LOS, and necessary investigations were done. The total leukocyte count was 15,200/mm³ with 55% of polymorphs; C-reactive protein (CRP) was 15.9 mg/dL (normal <1 mg/dL). The infant was catheterized with aseptic precautions for urine collection. Urine microscopy was suggestive of a plenty of pus cells, and the culture revealed the growth of Escherichia coli. Blood culture showed the growth of coagulase-negative Staphylococcus aureus. Ultrasound of kidney, ureter, and bladder showed mild dilatation of pelvicalyceal junctions with normal kidney size and architecture. The infant was started on intravenous antibiotics immediately at the time of admission in the nursery, and a complete 10-day course of antibiotics was done. Micturating cystourethrogram (MCUG) and dimercaptosuccinic acid (DMSA) scan were planned on follow-up. The infant was discharged but got readmitted with a complaint of high fever after 2 weeks. Repeat investigations revealed elevated CRP (17.4 mg/dL) and 25–30 pus cells/high-power field on urine microscopy. Urine culture again showed the growth of E. coli. Fungal elements were negative in urine microscopy and culture. After giving antibiotics for 2 weeks, the MCUG showed small posterior urethral diverticulum (7 × 4 mm²) with no VUR (Figure 1). The

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baby was discharged on antibiotic prophylaxis and is on regular urological follow-up. The cystoscopic evaluation of the infant is planned at follow-up.

DISCUSSION

A urethral diverticulum is defined as an outpouching of urethral mucosa from the urethra into the urethro-vaginal potential space (2). It can occur at any point along the course of urethra in both male and females. However, female predominance exists with a reported incidence varying from 0.5% to 5% of the cases that underwent surgery, and it is rarely seen in males (3,4). In autopsy, the incidence is 1/500–4000, whereas in clinical settings, its incidence is 1/5000–12000 (5). Most cases of posterior urethral diverticulum are acquired secondary to trauma: post-surgery, catheterization, calculi, or infection. In the index case, the most probable reason for posterior urethral diverticulum would have been the urinary catheterization during the postnatal period in the initial days of life. Few cases of congenital anterior urethral diverticulum have been reported in the pediatric population (6,7). Affected patients usually present either with urinary obstruction or as UTI (8), although few reports show its varied presentation of midline prostatic cyst (9) and need differentiation from the paraurethral cyst (10). The posterior urethral diverticulum may occur due to the faulty or incomplete fusion of a segment of the urethral plate. The diverticulum can swell up while voiding urine and cause bladder outlet and urethral obstruction by pressure. It can have varied presentation with no clinical symptoms on one end of the spectrum (where they can present in later life with symptoms or may be an incidental finding) and as recurrent UTI or with calculi on the other end (11). The other clinical features include post-urinary dribbling, recurrent cystitis, urinary retention, hematuria, and pain (12). Vesico-cystourethrography (VCUG) helps in defining the lesion and the extent of complication. Ultrasonography may be used to define the defect and in defining the trabeculated bladder. Other diagnostic modalities include contrast-enhanced computerized tomography scan and magnetic resonance imaging (MRI). Dynamic MRI has also been used successfully in the diagnosis of posterior urethral diverticulum. Kundum et al. reported a case of posterior urethral diverticulum with calculi, where the diagnosis was made using dynamic MRI and VCUG (13). Differential diagnosis of cystic lesions of prostate includes Müllerian duct cysts and utricular cysts. Both are midline cysts with opening into verumontanum, whereas the diverticula communicate with the urethra proximal

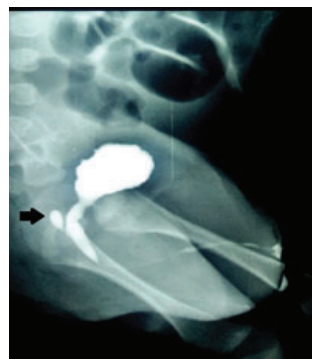


FIGURE 1: Micturating cystourethrogram) showing small posterior urethral diverticulum (7 × 4 mm²) with no vesicoureteral reflux. See the tip of the closed arrow.

to verumontanum and in a paramedian position. Initial treatment of the lesion includes supportive care in the form of catheterization in the case of obstruction, treatment with broad-spectrum antibiotics, and appropriate fluid balance in case of renal failure. Asymptomatic defects can just be followed up for complications. In the case of symptomatic lesions, definitive surgical therapy includes open excision of the diverticulum (14). Similar cases of urethral diverticulum have been reported in the past, but most of them presented at a later age. Agrawal et al. reported a case of posterior urethral diverticulum in a 26-year-old male causing bladder outlet obstruction (15). Mousavi et al. reported posterior urethral diverticulum as a predisposing factor for recurrent UTI in a 19-year-old patient (16). WT et al. reported the case of a 3-year-old male child with Down syndrome with a long history of recurrent UTI because of *E. coli* (17). Alsowayan et al. reported two cases of posterior urethral diverticulum and showed the management using the minimally invasive surgical approach in place of open surgical approach (18). The uniqueness of the index case is early reporting of the case, as all of the cases were reported after infancy. Urethrocele usually occurs with obstruction instead of recurrent infection as seen in the index case.

CONCLUSIONS

In infant presenting with recurrent UTI, prostatic urethral diverticulum should be considered as it is very rare and prone to be missed as a differential. These infants must be started on antibiotic prophylaxis and should be kept in regular follow-up, as they are at risk for recurrent UTIs. These infants must undergo detailed urological examination for detecting other associated renal system malformations.

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