Case Report

Posterior urethral valves diagnosed by bedside ultrasound in the ED[*,*]""""'

Abstract

Posterior urethral valves are the most common cause of urinary obstruction in male children. Presentations of posterior urethral valves beyond the neonatal period include urinary tract infection, abdominal mass, renal failure, diminished urinary stream, crying during micturition, incontinence, dysuria, hematuria, or failure to thrive. Early diagnosis is imperative because early surgical relief of the obstruction is believed to help prevent the progression to end stage renal disease.

This case serves to remind us that, in the male child who presents with urinary symptoms and/or abdominal symptoms, the bedside sonogram is a valuable tool that can clarify the diagnosis and expedite care.

A 7-year-old boy with no known medical history presented to the pediatric emergency department (ED) with chronic abdominal pain. His description of the pain was that it was generalized, but no further details could be provided. On review of systems, he was also straining to urinate, having pain with urination, and occasional hematuria. He was seen in the ED 12 days earlier with hematuria, dysuria, and suprapubic pain. At that time, he was started on antibiotics for treatment of a urinary tract infection and was discharged home with outpatient follow up.

On examination, he was afebrile, with normal vital signs. He was in no acute distress and had a normal abdominal examination with no tenderness or masses. The rectal examination was normal. The genitourinary examination was limited by the patient’s lack of cooperation, but there were no obvious abnormalities. Laboratory tests were significant for a peripheral leukocytosis with a left shift, and the urinalysis had greater than 250 white blood cells per high-power field and greater than 150 red blood cells per high-power field. Creatinine and blood urea nitrogen were normal. Bedside ultrasound with a Phillips HD11XE (Philips Healthcare, Andover, MA) using the 2 to 5 MHz curvilinear transducer revealed bladder hypertrophy, severe bilateral hydronephrosis, and hydroureter (Figs. 1-3).

The patient was admitted for hydronephrosis presumed to be secondary to posterior urethral valves (PUV) with pyelonephritis and was scheduled for cystoscopy and voiding cystourethrogram the following day. A voiding cystourethrogram confirmed the diagnosis of PUV, and he underwent successful repair. The postoperative course has been complicated by multiple urinary tract infections and incontinence. His renal function has remained stable, and he continues to follow with nephrology and urology services.

Posterior urethral valves are the most common cause of urinary obstruction in male children. Its incidence is estimated to be between 1:3000 and 1:8000 [1]. Posterior urethral valves are a congenital malformation of the male urinary tract leading to the development of a membrane or “leaflets” obstructing urinary outflow in the proximal (posterior) urethra. With the current use of prenatal sonography, it is usually diagnosed in utero and may be accompanied by oligohydramnios and pulmonary hypoplasia.

Presentations of PUV beyond the neonatal period include urinary tract infection, abdominal mass (due to palpation of either the distended and hypertrophied bladder or the hydronephrotic kidneys), renal failure, diminished urinary stream, crying during micturition, incontinence, dysuria, hematuria, or failure to thrive [2-4].

Early diagnosis is imperative because early surgical relief of the obstruction is believed to help prevent the progression

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to end stage renal disease [5-9], although the degree of renal dysfunction is likely multifactorial and approximately one third of patients progress to end stage renal failure [2,10].

Prior reports have described the use of bedside ultrasound in facilitating the diagnosis in undifferentiated abdominal pain in pediatrics [11], yet this practice is far from common place in the pediatric ED [12].

With the increasing debate over the use of radiologic investigation of first time urinary tract infections in children, specifically with renal ultrasound [13], as clinicians, we may need to raise our suspicion for delayed presentations of congenital renal abnormalities including PUV, autosomal recessive polycystic kidney disease, ureteropelvic junction obstruction, and duplication anomalies. This case serves to remind us that, in the male child who presents with urinary symptoms and/or abdominal symptoms, the bedside sonogram is a valuable tool that can clarify the diagnosis and expedite care.

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References