Lower urinary tract obstruction in male children – a report of three cases.

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Abstract

Urinary retention in young children and infancy is relatively rare. The commonest malignancy cause of bladder outlet obstruction in infancy is prostatic rhabdomyosarcoma; the commonest cause of congenital bladder outlet obstruction in a male infant is posterior urethral valve and the commonest cause of urethral obstruction in male children is urethral calculi. We present here a report on three cases of urethral obstruction in male children.

Keywords: urethra, urine retention, posterior urethral valve, calculi, rhabdomyosarcoma.

Introduction

Urinary retention in the young child and infancy is relatively rare. Urethral obstruction can occur at the prostatic, bulbomembranous, or penile urethral levels. The commonest malignancy to cause bladder outlet obstruction in infancy is prostatic rhabdomyosarcoma (RMS). The commonest congenital disease to cause outlet obstruction in a male infant is posterior urethral valve (PUV) and the commonest cause of lower urinary tract obstruction in male children is urethral calculi of which penile urethral calculi is more common than posterior urethral calculi [1,2,3]. We present here three paediatric cases with lower urinary tract obstruction due to prostatic RMS, PUV, and calculi.

The ultrasound examinations were performed using the Logiq P5, GE Milwaukee US and Philips HD7, Bothell, WA, USA diagnostic ultrasound system.

Prostatic urethral obstruction

Case 1: Lower urinary tract obstruction due to a prostatic mass (embryonal RMS) in an infant.

A 9 month old male child presented with a history of acute onset of urine retention. Ultrasound examination evidenced a large solid mass of prostate with bladder distension (fig 1a); the mass showed good internal vascularity (fig 1b). Both the kidneys were seen to have dilatation of the pelvicalyceal system with preserved cortical thickness and echogenicity (fig 1c). Histological examination proved to be an embryonal RMS.

Bulbomembranous urethral obstruction

Case 2: Lower urinary tract obstruction due to PUV.

A 1 month old male infant presented with a lump in the suprapubic region. On physical examination the suprapubic lump extended above the level of the umbilicus and was soft and had a smooth outline. An ultrasound examination was advised. Transabdominal ultrasound evidenced bilateral hydronephrosis and the bladder was distended with a keyhole appearance (fig 2a-d). Transperineal ultrasound showed evidence of dilated posterior urethra suggestive of PUV (fig 2e,f). A 6F infant feeding tube was easily negotiated into the bladder.
Case 3: bladder outlet obstruction due to penile urethral calculus

A 9 year old male child presented with a 1 day history of urine retention with penile pain. Abdominal ultrasound evidenced distended urinary bladder with bilateral hydroureteronephrosis (fig 3a-c). Local ultrasound examination of the penile shaft showed an impacted calculus in the anterior penile urethra measuring more than 7 mm with proximal fluid filled dilated urethra (fig 3d-e). The calculus was pushed back into the bladder and an elective suprapubic cystolithotomy was planned.

Discussions

RMS is the most common paediatric soft-tissue sarcoma and constitutes 51% of all paediatric soft tissue sarcomas.
tumours. Approximately two thirds of rhabdomyosarco-
mas are embryonal in type, and the remainder are almost
evenly divided between the alveolar type and not other-
wise specified [4]. The majority (83.2 %) of RMS occur
in children less than 10 years of age, 68.3 % of all child-
hood RMS occur in the male child, and about 43.5 % of
all childhood RMS arises from the genitourinary tract in
childhood [5].

PUV is a congenital obstruction of the posterior ure-
thra. It is the commonest cause of bilateral renal obstruc-
tion in the lower urinary tract in male infants. Perineal
sonography is a very sensitive technique for the detection
of this pathology. In comparing routine pelvic and trans-
perineal sonography in the diagnosis of PUV it was found
out that transperineal imaging can aid in the diagnosis
of PUV and may enable imaging of the valve itself [6].
Transperineal ultrasound is used to demonstrate dilata-
tion of the posterior urethra also known as the “keyhole” sign.

Long standing bladder outlet obstruction in utero will
lead to dysplastic changes with increased cortical echo-
genicity or perirenal urinoma as seen in our case. Urinary
ascites can also result from long standing obstructive
uropathy. PUV is a common cause of urinary ascites in
the newborn [7].

According to the Young classification, there are three
types of PUV. Our case is a type III PUV with a dia-
aphragm oriented perpendicular to the urethra and having
a small opening.

In a review of the radiology database on the sono-
graphic diagnosis of urethral anomalies in infants, Hel-
mut Schoellnast et al found that the overall sensitivity of
urethral sonography for detection of urethral anomalies
was 100%; specificity, 94%; positive predictive value,
58%; negative predictive value, 100%; and accuracy,
94%[8].

In children less than 14 years, lower urinary tract
stones were found to constitute 27.9 % of all causes of
acute retention. The incidence of lower urinary tract
stones was 5.5-fold in boys [2]. Of all impacted urethral
calculi in children less than 12 years, the site of impac-
tion was more common in the anterior than the posterior
urethra. Stones in anterior urethra are either removed by
meatotomy or urethrolithotomy, while stones in the bul-
bous and posterior urethra are usually pushed back into
the bladder and later performed by suprapubic vesicoli-
thotomy [3].

In conclusion abdominal ultrasound plays a major
role in the investigation of lower urinary tract obstruc-
tion in male children and this along with transperineal
sonography helps in giving a more reliable diagnosis in
urethral lesions.

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