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CASE REPORT

Bladder Stone in a Three-Year-Old Nigerian Child with Posterior Urethral Valve: A Case Report

Pierre de la Vessie dans un Enfant de Trois-Year-Old Nigériane avec Valve Urétrale Postérieure: A Propos D'un Cas

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ABSTRACT

BACKGROUND: **Stone in the bladder is an uncommon presentation in the tropics, especially in children. Its rarity makes the index of suspicion to be low. Patients presenting with it may be mistaken for urinary tract infection (UTI) because of the presence of frequency and dysuria.**

OBJECTIVE: **To present a rare cause of urinary bladder stone in a child in the tropics.**

METHODS: **The patient, a three-year-old boy, presented with recurrent episodes of dysuria and stragury for a duration of about one year. Work up included clinical evaluation and laboratory assessments, results of which informed surgical intervention.**

RESULTS: **The child had been treated repeatedly for urinary tract infection. He was acutely ill with suprapubic tenderness dysuria and poor urinary stream. He was hypertensive. Micturating cystourethrography showed posterior urethral valves and a bladder stone. He had vesicolithotomy and valvotomy with improvement of his blood pressure.**

CONCLUSION: **The coexistence of bladder stone with PUV coupled with delayed diagnosis may be a predisposing factor to hypertension in children. Conventional surgical treatment gives good results. WAJM 2011; 30(3): 214–216.**

Keywords: **Bladder stone, posterior urethral valve, hypertension, open lithotomy and valvotomy.**

RÉSUMÉ

CONTEXTE: La pierre dans la vessie est une présentation rare dans les tropiques, surtout chez les enfants. Sa rareté en fait l'indice de suspicion d'être faible. Les patients se présentant avec elle peut être confondue avec une infection urinaire (IU) en raison de la présence de la fréquence et la dysurie.

OBJECTIF: Pour présenter une cause rare de pierre de la vessie chez un enfant sous les tropiques.

MÉTHODES: Le patient, un garçon de trois ans, présenté avec des épisodes récurrents de dysurie et stragury pour une durée d'environ un an. Le travail a comporté une évaluation clinique et évaluations en laboratoire, dont les résultats informés intervention chirurgicale.

RÉSULTATS: L'enfant avait été traité à plusieurs reprises pour infection des voies urinaires. Il était gravement malade avec une dysurie sensibilité sus-pubienne et de jet urinaire faible. Il était hypertendu. Urétrographie mictionnelle montré valve de l'urètre postérieur et une pierre de la vessie. Il avait vesicolithotomy et valvulotomie avec l'amélioration de sa pression artérielle.

CONCLUSION: La coexistence de pierre de la vessie avec PUV couplé à un diagnostic tardif peut être un facteur prédisposant à l'hypertension chez les enfants. Traitement chirurgical conventionnel donne de bons résultats. **WAJM 2011; 30 (3): 214–216.**

Mots-clés: Pierre de la vessie, l'urètre postérieur robinet, l'hypertension, ouverte gynécologique et valvulotomie.

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Abbreviations: IVU, Intravenous urography; **MCUG,** Micturating cystouretherogram **PUV,** Posterior urethral valve; **UTI,** Urinary tract infection.

INTRODUCTION

Stone in the bladder is an uncommon presentation in the tropics and in children. It is much commoner in people in the temperate region.[1] Furthermore, the association of bladder calculus with posterior urethral valve (PUV), which is the commonest cause of obstructive uropathy in children, is rare.[2] Although PUV is well documented in the literature, its association with vesical stone has not been widely reported.[3] Here, we report the case of a 3-year-old boy who had persistent dysuria for over a year, in whom further investigations revealed posterior urethral valve (PUV) and a radiopaque bladder stone.

CASE REPORT

Clinical Presentation

The patient was a three and half-year-old boy who was apparently well until 13 months prior to presentation when he developed dysuria and urinary frequency. He was treated at several times for urinary tract infections at a private clinic. Examination at presentation revealed an acutely ill child with an axillary temperature of 39^0C. Close observation revealed that he was always in painful distress during each micturition and had poor urinary stream. There was suprapubic tenderness. Other systems were essentially normal.

Laboratory Findings at First Presentation

Urine culture grew coliform sensitive to most of the conventional antibiotics. Serum urea (100mmol/l) and creatinine (600µmol/l) were elevated. Other investigations carried out included an abdominal ultrasound scan, which revealed mild calyceal fullness and mobile internal echoes in a moderately distended urinary bladder. Intravenous urography (IVU) was essentially normal.

Treatment Outcome at First Clinical Presentation

Patient was managed on ciprofloxacin 10mg/kg/day for one week as a case of urinary tract infection (UTI). He got better and was discharged on the 5th day for follow up. Serial urinalysis and a repeat urine microscopy during clinic visits were normal although history of dysuria without fever was regularly reported.

The patient represented 8 months later on account of high-grade intermittent fever of 4days duration and worsened dysuria. During this admission his blood pressure (BP) was elevated (160/100mmHg).

Laboratory Findings on Second Admission

Urinalysis revealed protein 2+, blood 2+, leucocyte 1+ and the presence of calcium oxalate. Haemogram revealed leucocytosis of polymorphonuclear type suggestive of bacterial infection. Pack cell volume was 24 percent. A review by the urologist then, led to the provisional diagnosis of obstructive nephropathy secondary to posterior urethral valve. Urgent abdominal ultrasound scan revealed moderately distended urinary bladder with thickened wall. There were mobile internal echoes as well as a curvilinear mobile echogenic structure casting a distant acoustic shadow in keeping with bladder stone (Fig. 1). The posterior urethra appeared normal but there was moderate bilateral calyceal fullness. Both kidneys were echogenic and showed poor corticomedullary differentiation. In view of the clinical suspicion of PUV, micturating cysto-urethrograhy (MCUG) was ordered. The scout film of the MCUG demonstrated an oval shaped calcified bladder stone, while the contrast film showed dilated posterior urethra that confirmed posterior urethral valve (Figs 2 and 3).

Treatment Outcome

The continuous urinary bladder drainage instituted via an in-dwelling transurethral catheter led to the improvement of the hitherto elevated serum urea from 100mmol/l to 36mmol/l and creatinine from 600µmol/l to 110µmol/l. The blood pressure became easily controlled with captopril 12.5 mg b.d. He improved well enough to have open vesicolithotomy and valvotomy. He has since remained asymptomatic with the blood pressure and laboratory indices within normal limits.

DISCUSSION

Bladder calculi account for between 11–43% of all urinary calculi in different series.[4–6] It is an uncommon presentation in children in the West African sub-region. However, it has been reported in children in Zaria in Nigeria.[7] Similar studies in other parts of Nigeria showed that children and females were rarely affected.[8–9] The causes in all these studies were similar and ranged from obstructive uropathy, stasis, urinary tract infection, immobilization, metabolic disorders, intake of diary products to chronic dehydration.[4,9,10] Stasis resulting from PUV was the assumed cause of stone in our patient. Calcium stone was found in our patient, which is similar to the findings of other authors,[5,8] although

Fig.1: Plain Radiograph showing ovoid shaped calcified bladder stone.

Fig.2: Micturating cystouretherogram showing contrast filled urinary bladder with a dilated posterior urethra and normal anterior urethra diagnostic of posterior urethral valve.

mainly in adults. This case represents the first known to us in our Paediatric unit.

Our patient had been brought up largely in Nigeria and had not had history of outside travels. There was also no known family history of bladder stones. Thus, genetic and environmental predispositions are unlikely causes in this case. However, a cursory look at the child indicated a child of middle class parentage whose diet composed mainly of high fibre with special preference for rice. We are aware of the report from Thailand where consumption of large amount of rice has been associated with the formation of calcium oxalate stones.[11] Thus, further studies may be necessary to determine whether this is truly an association or a coincidental finding in Nigeria and beyond. It is possible that that the low calcium content of Nigerian waters, the minimal consumption of dairy products, the physically active life and some other unknown factors protect Nigerians against urinary calculus formation.[1] Furthermore, we would have thought that the high carbohydrate consumption believed to enhance the absorption of calcium and the high environmental temperature would facilitate stone formation and hence increase its occurrence in this environment, but that is not the case in several parts of Nigeria. The relatively low occurrence of bladder stone in many parts of Nigeria may possibly be an interplay between the antilithogenic effect of the high fibre dietary Nigerian staples and the lithogenic high environmental temperature.

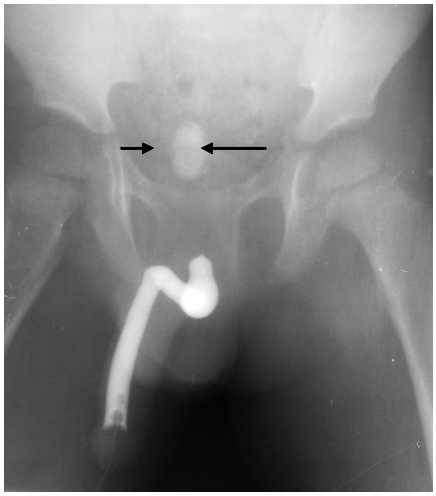

Fig. 3: Radiograph showing retrograde urethrogram done before bladder catheterization of the patient. Note the abrupt termination of contrast column with rounding at about the level of prostatic urethra in a 'virgin urethra'; a rarely reported finding in posterior urethral valve. The calcified bladder stone is arrowed.

Posterior urethral valve or stone in the bladder should be a considered in any male child presenting with dysuria/strangury in which there is consistently no evidence of infection. Again, a negative IVU and ultrasound scan do not preclude the possibility of bladder stone. Hence, caution at interpretation is advised. The long time it took to discover the stone in our patient is worrisome despite investigations. This may be because the stone was still forming or was not sufficiently calcified as at the initial investigation.

We presumed that the elevated BP of our patient was most probably renal in origin. Asinobi et al reported sustained hypertension in 4.8 % of boys with PUV.[12] On the contrary, all patients in whom blood pressure were recorded were hypertensive pre-operatively and normotensive post-operatively in Evins and Lorenzo review of 10 cases of PUV.[13] Our case was similar to the former because high BP was sustained post-operatively, although easily controlled with anti-hypertensive.

Once a patient has had stone, he should be followed up closely, including regular ultrasound assessment because of the possibility of recurrence.[14] The need for follow up is particularly imperative in our patient because of the association of bladder stone with PUV and early hypertension, which to the best of our knowledge is the first documented case in Nigeria and probably the first in the English literature in the preschool age.

Conclusion

Bladder calculi rarely form spontaneously and are usually a manifestation of an underlying pathologic condition of the lower urinary tract. The presence of dysuria/strangury in which there is consistently no evidence of infection especially in a male child calls for proper radiologic evaluation that must include renal-bladder ultrasonography and MCUG. The coexistence of bladder stone with PUV coupled with delayed diagnosis may be a predisposing factor to hypertension in children. Interestingly, conventional surgical treatment gives good result as typified by this case presentation.

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