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Case report

PELVIC ULTRASOUND DIAGNOSIS OF GIANT VESICAL CALCULUS IN 10 YEAR OLD BOY

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ABSTRACT

Ultrasonography has a vital role to play in the management of children with urinary tract infection as it helps not only in assessing the urinary tract, but also in excluding complication that may arise from the diseases such as a urinary tract stone formation. We report a case of a 10 year old boy with giant vesical calculus to the alert pediatricians to the likelihood of bladder calculus complicating urinary tract infection in our environment and the usefulness of imaging modality both in the clinical work-up and the follow up in order to reduce delay in patient management. It is also presented to alert general practitioners that simple non-invasive and cheap ultrasound has a role to play in making a diagnosis and management.

Keywords: Giant vesical calculus, Ultrasound, Low resource settings.

INTRODUCTION

Giant bladder calculus is defined as a stone in the urinary bladder weighing more than 100g.¹ Such giant stones are rare in modern urological practice. Urinary bladder stone account for about 5% of urinary calculus,^{2,3} a giant stone is rare² and commoner in males due to higher incidence of lower urinary tract obstruction.² This stones are usually mixed stones and are frequently associated with urinary tract infection by urea splitting organisms.³ Recognized causes bladder stones include other urinary system problems such as Bladder diverticulum, Neurogenic bladder, urinary tract infection and enlarged prostate in the elderly. Almost all bladder stones occur in men^{4,5} and bladder stones are much less common than kidney stones.^{4,5} Bladder stones may occur when urine in the bladder is concentrated and materials crystallize.^{4,5} Bladder stone may also result from foreign objects in the bladder.^{4,5} Recognized symptoms of urinary bladder calculus include dysuria, urine frequency

haematuria, urine retention, hydronephrosis and renal failure among others.⁵ Urinary incontinence can occur also with bladder stones.⁵ The techniques of removal of giant vesical calculus includes open suprapubic vesicolithotomy which is the treatment of choice,^{4,5} percutaneous cystolithotomy and cystolitholapaxy. This relieves obstruction and infection is treated with antibiotics. We report a case of unusually giant vesical calculus to alert the pediatricians to the likelihood of bladder calculus complicated urinary tract infections, and the usefulness of imaging modality both in the clinical work-up and the follow-up, in order to reduce delay in patient management. It is also presented to alert general practitioners that simple non-invasive, cheap ultrasound has a role to play in making a diagnosis and management of bladder calculus.

CASE REPORT

Ten years old school child, presented to Ultrasound Unit of the Radiology department of Sir Yahya Memorial Hospital Birnin Kebbi with a referral to do an abdominopelvic ultrasound scan. He was referred on account of suspected urinary tract infection which was recurrent and not responding to conventional antibiotics. The patient has been treated severally in the paediatric outpatient department (POPD) with antibiotics but with no improvement in symptoms. On abdominopelvic ultrasound a very huge strongly echogenic curvilinear structure was demonstrated within the bladder lumen, casting posterior acoustic shadows and approximately measuring about 3cm x 2.5cm. The surrounding urine noted show mobile internal echoes signifying superimposed cystitis (fig 1). In addition the kidneys show poor corticomedullary differentiation with reversal of echotexture but their sizes are normal, consistent with early renal parenchymal diseases presumably pyelonephritis (fig 2). Abdominal USS examination concluded that the patient had a huge vesical calculus and superimposed cystitis and pyelonephritis (Ascending UTI) and advised plain pelvic x-ray for further evaluation. The patient was however yet to do x-ray up to the time the surgery was done and the bladder stone removed.

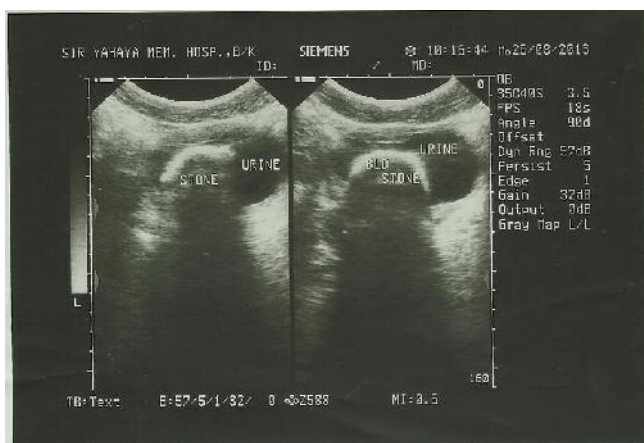


Fig.1: Pelvic Sonogram Showing a Huge (giant) Vesical Stone Casting Posterior Acoustic Shadow

Urine M/C/S (microscopy, culture and sensitivity was done) which yielded no bacterial growth, microscopy however, revealed few leucocytes, erythrocytes, oxalate crystals and casts. Haematologic indices and urea, electrolytes and creatinine were within normal limits.

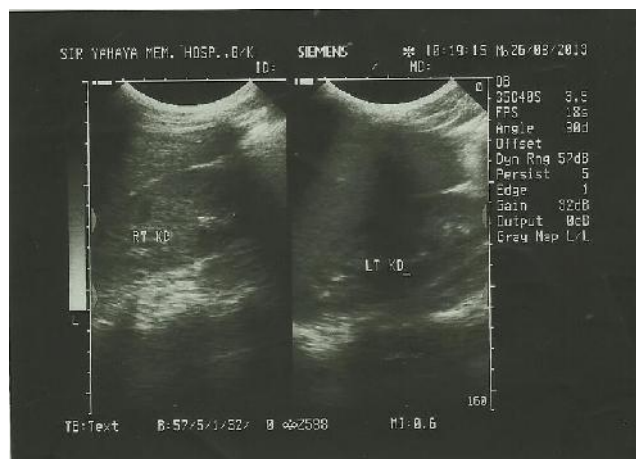


Fig 2: Abdominal Sonogram Showing Poor Corticomedullary Differentiation and Reversal Echotexture

DISCUSSION

Huge vesical calculus whether in children or in adults are extremely rare in modern urologic practice.¹ A huge stone is rare and commoner in males,² just as it is in the presented case and is usually due to higher incidence of lower urinary tract obstruction or urinary tract infection. No metabolic problems were discovered in our patient and the precipitating factor was an underlying urinary tract infection, even though no isolate of a microorganism was made on urine culture, this is presumably due to recurrent antibiotics therapy before presentation. In the presented case a combination of recurrent urinary tract infection and dietary (nutritional deficiencies of Vit. A, Magnesium, Phosphate, Vit. B6 combined with low protein and high carbohydrate diet) is the most likely cause of huge calculus.⁵ This finding agrees with what was reported by Rahman et al in Ilorin North-central Nigeria.⁶ No evidence of established lower urinary tract obstruction in our patient that would have caused the formation of such a huge calculus, similar cases have been reported in the literature.^{6,7,8} Surgery is the treatment of choice in the management of a Giant bladder calculus; most documented literature reports recommend an open suprapubic vesicolithotomy as the treatment of choice.⁸

CONCLUSION

The report of this case is hoping to alert the paediatricians and general duty doctors managing paediatric patients with suspected urinary tract infection to always request Abdominopelvic scan in

their clinical work-up. This would not only confirm the diagnosis but would also exclude the complication of this disease entity such as bladder calculus that may arise from it.

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Conflict of interest: Nil

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