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ANTERIOR URETHRAL DIVERTICULUM: A CASE REPORT

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INTRODUCTION

A urethral diverticulum is a tubular or spherical sac-like dilatation of the urethra. It is separate from but communicates with the urethra via an ostium. It may be congenital or acquired and occurs in males and females[1-3]. In the majority of cases it is acquired, while it is congenital in approximately 10-20%[3-6]. The diagnosis may be evident clinically. Micturating cysto-urethrogram and ultrasound are the imaging modalities to guide the urologist to the correct management options.

The case reported herein is interesting, because the presence or possibility of an anterior diverticulum was not considered by the referring physician prior to its diagnosis by retrograde urethrogram. It, therefore, highlights the importance of a high index of suspicion and the role of radiological assessment in cases with acute urinary retention in order not to miss the diagnosis of this pathology.

CASE REPORT

In 2003, Mr. A. T., a 60-year-old farmer, was referred from a private hospital within Ilorin metropolis to our diagnostic imaging unit. The patient presented with acute urinary retention which, as he said, had been rapid in onset and was very painful. The bladder was distended, easily felt and tender at the time of presentation.

The attending clinician at the referring hospital had been unable to pass a Foley's catheter per urethram and, therefore, had left a suprapubic catheter in situ. The patient had been sent to the radiology centre to assess for a possible enlargement of the prostate or urethral stricture. The point of obstruction during introduction of the urethral catheter was not mentioned in the referral note, neither had any rectal examination been done. A review of the patient's past medical record and history of the presenting complaint showed that he had had no previous hospital admissions. However, he confirmed that he had experienced acute urinary retention before the present episode and that he had always been taken to a private hospital where catheterization had usually been done to relieve the symptoms. In addition, he had been treated for urethral discharge in a private hospital twelve years earlier.

Fig. 1: Retrograde urethrogram showing the diverticulum

A preliminary suprapubic scan with a 3.5 MHz linear probe (Sonoline SL1 Siemens machine) revealed no significant enlargement of the prostate. An attempt at inserting a size 14 Fr. Foley's catheter for retrograde urethrocystogram was initially unsuccessful because of a stricture at the level of the coronal sulcus or proximal to the fossa navicularis. The tip of the catheter was eventually cut to allow the catheter balloon to be accommodated within the fossa navicularis for inflation to keep the catheter in position (no Knutson clamp was on hand as a substitute).

A review of the radiographs (Fig. 1) demonstrated a large saccular diverticulum at the bulbous urethra, superimposed on the scrotal image. A tight stricture linked to a false passage in the dorsal wall of the urethra was also present distally along the penile urethra. Furthermore, an abrupt termination of the urethra

proximally at the level of the prostatic urethra with a mild dilatation was seen, suggestive of another stricture at this point.

The patient was given antibiotics to sterilize the urine and decrease the inflammation around the urethra. Urine diversion was done via suprapubic cystostomy. The patient was scheduled for excision of the diverticulum and urethroplasty. Unfortunately he has not yet reported for definitive treatment due to financial reasons.

DISCUSSION

By classification, urethral diverticula may either be congenital or acquired. Most cases are acquired, and when they are encountered in males or females, they may be due to one of the following etiological causes:

1. Periurethral suppuration and abscess formation as a sequel of either infection of a paraurethral gland or infection of a hematoma.

2. Trauma to the urethra: This may be due to internal injury (instrumental false passage) or external injury causing partial wall rupture.

3. Occasionally it may develop as a pressure effect of an expanding calculus in the urethra with the calculus lying in the periurethral pouch.

4. Neurogenic dysfunction of the urethra in paraplegics is usually associated with secondary peri-urethral infection and abscess formation following trauma from instrumentation or indwelling catheter.

5. Bilharziasis of the urethra is common in Egypt, secondary to periurethral suppuration[1].

In other words, the acquired varieties are secondary to infection, trauma or distal obstruction.

Acquired diverticula can occur anywhere in the anterior or posterior urethra: The posterior urethra consists of the prostatic and membraneous parts, while the anterior or the distal urethra is made up of the bulbous and penile parts.

Classically, acquired diverticula are lined by septic granulation tissue, and the walls usually contain no smooth muscle fibers[1,4,7]. They are rarely lined by stratified epithelium, particularly in chronic lesions.

Acquired urethral diverticula are also seen frequently following repair of proximal hypospadias and have been reported as a late complication in as many as 3-5% of boys undergoing onlay island flap or tube repair. A diverticulum may occur if the neourethra is too wide and/or too long or if meatal stenosis develops[4]. Sometimes a leak from the inner suture line may create a pool that subsequently re-epithelializes as a diverticulum.

Important causes of the congenital varieties are anterior urethral valve and congenital megalourethra.

Pathologically, congenital urethral diverticula are lined by mucous membrane similar to that of the urethra, and their walls contain a striated muscle layer[4-6]. They are situated on the ventral side of the anterior urethra.

Signs and symptoms may vary depending upon the etiology of the diverticulum and include weak stream, post-void dribbling, dysuria and infection.

The diverticulum is usually clinically obvious during micturition[4,8]. Smaller diverticula are silent. As they increase in size, there may be involuntary dribbling of urine on movement or pressure; as the course progresses, they become palpable and visible. However, in our patient the presence may not have been too obvious because of its location (bulbous urethra), and the additional symptoms and signs of the underlying stricture in this elderly patient with the possibility of having an enlargement of the prostate may have further diverted the attention of the physician.

If the diverticulum is infected, there will be recurrent attacks of pain in the pouch with dysuria and blood-stained pus discharge. If there is a urethral stone, there is characteristic hardness and fixation of the 'mass' that cannot be evacuated on pressure.

Sometimes, urethral diverticula are filled with opacified urine during voiding at urography and, thus, can be diagnosed on the post-voiding radiograph. However they often fail to

fill during the urographic study, in which case the diagnosis can be made by retrograde urethrography. Cystoscopy and urethroscopy often fail to demonstrate the diverticulum. Positive pressure retrograde urethrography can usually demonstrate the diverticulum, but the technique may be difficult as experienced in this case report[9].

Sonography has also been used for the evaluation of traumatic urethral diverticula. Gray scale ultrasound is done placing an 8 MHz linear array probe on the penile shaft at the penoscrotal junction. The urethral diverticulum appears as a fluid-filled pouch adjacent to the urethra. Those diverticula that do not fill on retrograde urethrography can be seen sonographically.

Sonourethrography is done by injecting 25 cc of saline via an infant feeding tube through the urethra, while scanning anteriorly shows the fluid passing through the urethra via an opening into the diverticulum. Detailed anatomy and pathology of the diverticulum, namely its relation to the urethra, its size, its neck (broad/narrow), presence of echoes etc. can be visualized[10].

In conclusion, a high index of suspicion is necessary on the part of both the radiologist and the urologist in order to avoid missing the diagnosis of a diverticulum. This is important because the persistence of the diverticulum can lead to stone formation, further infection and urethral discharge which may worsen the stricture. This again may lead to further damage to the urethra during catheterization and bouginage. Stones are found in 10% of diverticula, and also carcinoma may develop in the sacculations[8]. Preoperative evaluation should include either a retrograde urethrogram or voiding cystourethrogram and cystourethroscopy for proper assessment. Surgical management depends upon the etiology of the diverticulum[2,11]; a large diverticulum requires open diverticulectomy and urethroplasty.

REFERENCES

1. Trivedi VD, Salve SA, Dangle P, Navale A, Merchant S, Farooq M. Anterior urethral diverticulum: Report of two cases. *Ind J Radiol Imag* 2003, 13:441.

2. Fowler C. *Urethral stricture.* In: Russell RCG (ed.): *Bailey & Love's Short Practice of Surgery*, 23rd ed., New York: Oxford University Press Inc., pp. 1261-1264, 2000.

3. Edwards D, Beggs I. *Lower urinary tract obstruction, incontinence, postprostatectomy problems.* In: Sutton D (ed.): *Textbook of Radiology and Imaging*, 4th ed., Churchill Livingstone, pp 1198-1204, 1987.

4. More BB, Potdar SR, Sawant VV, KamatTA, Waingankar VS, Nadkasni MM.. Congenital anterior urethral diverticulum in a case of operated hypospadias. http://www.bhj.org/journal/2000_4203ju100/CASE_495.htm

5. Bisset GS III, Strife JL, Kirks DR. *Genitourinary tract – Anterior urethral diverticulum.* In: Kirks DR, Griscom NT (eds.): *Practical Pediatric Imaging. Diagnostic Radiology of Infants and Children*, 2nd ed., Boston: Little, Brown and Company, pp. 974-975, 1991.

6. Kirks DR, Grossman H. Congenital saccular anterior urethral diverticulum. *Radiology* 1981, 140:367.

7. Basmajian JV *Pelvis and perineum.* In: Grant JCB, Basmajian JV, Slonecker CE (eds.): *Grant's Method of Anatomy. A Clinical Problem-Solving Approach*, 11th ed., Baltimore: Williams & Wilkins, pp. 218-219, 1989.

8. Benson RC. *Urethral diverticulum.* In: Krupp MA, Chatton MJ. *Current Diagnosis and Treatment*, 4th ed, Los Altos, CA: Lange Medical Publication, pp. 415-476, 1976.

9. Khade N. Radiology – Case of the Month 16. King Edward Memorial Hospital, 2000 www.kem.edu/dept/radiology/case16_00.htm

10. Gluck CD, Bundy AL, Fine C, Loughlin KR, Richie JP. Sonographic urethrogram: comparison to roentgenographic techniques in 22 patients. *J Urol* 1988, 140:1404.

11. Ortlip SA, Gonzalez R, Williams RD. Diverticula of the male urethra. *J Urol* 1980, 132::350.

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