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Inflammation and infection

Periurethral abscess associated with deep dorsal vein thrombosis in a young male with cystolithiasis

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ABSTRACT

A case of periurethral abscess with an underlying deep dorsal vein thrombosis in a 35- year-old-male with a large bladder calculus is reported. The patient received antibiotics, a topical heparinoid, and underwent open cystolithotomy. The abscess drained spontaneously as the patient refused surgical intervention. He recovered with no penile deformity and maintained erectile function at 6 months from discharge.

Introduction

Periurethral abscesses are a potentially life or organ threatening emergency. We are reporting a case of periurethral abscess in a young male with overlying deep dorsal vein thrombosis and a large bladder stone. We discuss the possible etiologies behind such presentation and the outcome pertaining to this case.

Case report

A 35-year-old male, known case of glucose-6-phosphate dehydrogenase (G6PD) deficiency, presented to the emergency department complaining of a three-day history of penile tenderness and swelling, associated with difficulty in passing urine. There was no history of trauma or recent sexual activity.

The patient had been having severe lower urinary tract (LUT) symptoms for the past 10 years, which included hesitancy, straining, nocturia, frequency, dysuria, occasional frank haematuria with clot passage and a sense of bladder fullness; for which he did not seek any medical attention. The patient had a history of left renal colic 16 years ago and was planned for surgical intervention but he refused. He had no surgical history or trauma but a positive family history for urolithiasis. The patient is an alcoholic, engages in unprotected sex with multiple partners, and has a long history of substance abuse including inhalation of glue (for eight years starting at the age of 12) and gas duster (for ten years starting at the age of 21). There was no history of IV illicit drug use.

On physical examination, the entire penis appeared to be oedematous and moderately tender, with distal penile shaft deviation to the left and erythema extending towards the penile root (Fig. 1).

Upon investigation, a complete blood count (CBC) revealed a haemoglobin level of 10.2 g/dl and white blood cell (WBC) count of 15 × 10^9/l with neutrophil predominance of 80.4%. Renal function tests (RFT) revealed a creatinine level of 132 μmol/l with no known baseline and C-reactive protein (CRP) was 210.4 mg/l. Urinalysis revealed a red blood cell (RBC) count of >20/high power field and a white blood cell (WBC) count of >50/high power field. Urine culture was negative.

An ultrasound study of the penis reported marked subcutaneous oedema along the entire length of the penis with a fluid collection beneath the deep fascia encircling both the corpora cavernosa and corpus spongiosum. Subacute deep dorsal penile vein thrombosis was also noted (Fig. 2). Ultrasound of the kidney, ureter, and bladder (KUB) showed a thick irregular bladder wall with a large calculus; the right kidney showed a mild increase in parenchymal echogenicity, the left kidney was enlarged in size with marked decrease in parenchymal thickness with the presence of large lower calyceal calculus, X-ray KUB followed (Fig. 3). CT abdomen and pelvis showed a urinary bladder calculus measuring at 70 × 50 × 40mm with concentric vesical wall thickening, bilateral hydronephrosis (more so on the left). Of the left lower calyceal calculi, the largest measured 14 × 12mm, with evidence of thinning of the renal parenchyma.

The patient was admitted and started on Meropenem 1 gm Q8h IV, Clindamycin 600mg Q8h IV, Aspirin 300mg OD PO, and topical Mucopolysaccharide Polysuphate. Urethral catheterization was unsuccessfully attempted by emergency physicians. A suprapubic catheter was subsequently inserted by a Urologist. The patient refused drainage of the penile collection, which spontaneously drained pus on his third day as an inpatient. The patient responded well to conservative therapy using

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Fig. 1. Patient on presentation.

antibiotics, aspirin, and topical heparinoid with complete resolution of symptoms. He underwent a cystolithotomy during his hospital stay. Stone analysis revealed a composition of: carbonate apatite 70%, ammonium urate 20%, and ammonium magnesium phosphate hexahydrate 10%.

The patient presented to the outpatient clinic after 6 months from discharge as he lost follow up. His wound had healed well, he had no penile deformities and his erectile function was completely preserved (scoring 24/25 on the international index of erectile dysfunction), and lower urinary tract (LUT) symptoms had significantly improved. He is still symptomatic but refuses active investigation or intervention.

Discussion

A periurethral abscess is uncommon but a potentially life threatening infection of the male periurethral tissue. It is most frequently associated with gonorrheal urethritis but may be caused by urethral strictures, trauma, catheterization or surgical instrumentation.[1] It presents with a fever, acute urinary retention, and occasionally spontaneous drainage of the abscess.

This presentation is compounded by the presence of a large bladder stone which is rare in the young male population and is usually caused by conditions resulting in bladder outlet obstruction, chronic catheterization, or a neurogenic bladder.[2] An obstructive cause is more likely in this presentation, best explained by urethral strictures, especially with a history of risky sexual behavior. A history of failed catheterization due to urethral resistance would further favor urethral strictures as a likely etiology. On review of scientific literature, a precedent of toluene abuse can result in a neurogenic bladder in a young male, but that is admittedly less likely.[3] The patient refused to be investigated for sexually transmitted diseases.

Fig. 3. X-ray KUB showing a large calculus in the bladder.

A periurethral abscess can be readily diagnosed by penile ultrasonography which is both a cheap and inexpensive imaging modality, but does rely on operator skill.[4] Once diagnosed, immediate suprapubic catheterization is required as well as drainage of the abscess, debridement of the affected tissue, and antibiotic coverage.[2]

An underlying deep dorsal vein thrombosis was also noted on the sonogram. Although the exact pathophysiology of the cause is unknown, the pathogenesis of DVT can be attributed to factors proposed by Virchow's triad: vessel wall damage, vascular stasis and hypercoagulable state. We suggest the possibility of vessel wall damage in conjunction with the overlying infective process and a compounding factor of vascular stasis due to venous compression by the abscess and oedema. In addition, bladder distension was caused by the bladder stone compressing the prostatic venous plexus and pelvic veins to which the deep dorsal vein drains. This phenomenon was clinically observed in cases of Mondor's disease which affect the related superficial dorsal veins.[5]

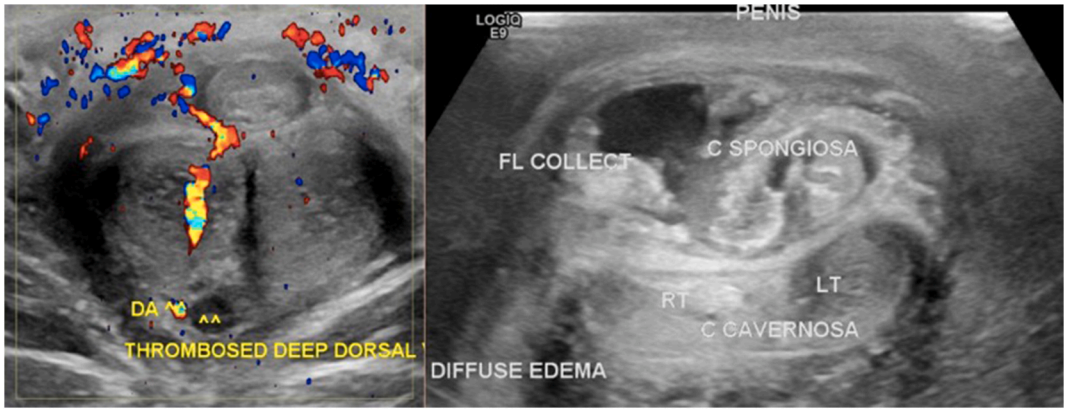

Fig. 2. Ultrasound penis showing a deep dorsal vein thrombosis (left) and an abscess (right).

Conclusion

Periurethral abscesses are a urological emergency that should be managed in a timely manner to avoid the development of complications. A novel finding in this case was the underlying venous thrombosis, which we attributed to the venous compression by both the calculus and the abscess as well as vessel wall damage due to the inflammatory process.

Declaration of competing interest

The authors of this case report have no conflicting interests to declare.

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