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Encrusted Cystitis and Corynebacterium Urealyticum: A Radiological Perspective

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Abbreviations: CT: Computed Tomography.

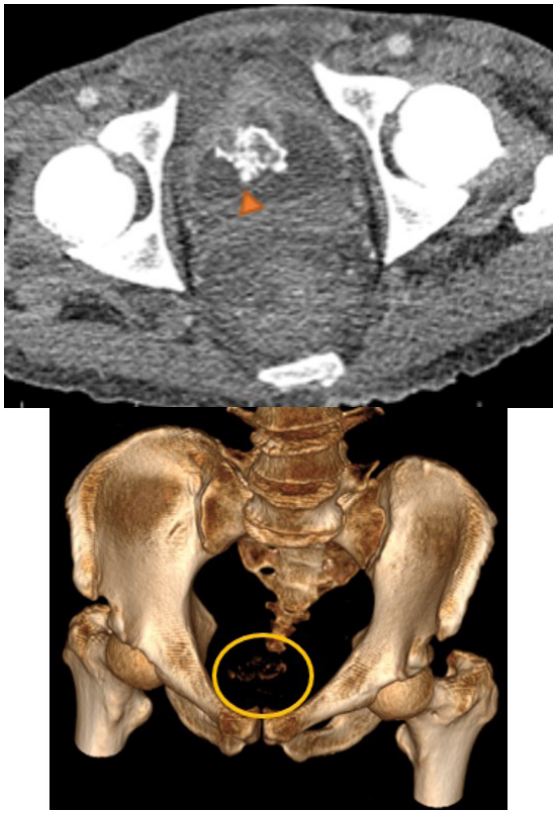
Abstract

Although considered rare, *Corynebacterium urealyticum* bladder infection can be accurately diagnosed by the association of bladder calcifications on imaging, alkaline urine, struvite crystals in the sediment, and recurrent bladder infections. This pathogen is typically opportunistic, affecting immunocompromised individuals or those with prolonged catheter use. Treatment often requires prolonged antibiotic therapy, and in cases of significant bladder calcifications, surgical intervention may be necessary to remove encrustations. Early diagnosis, a proactive approach, is essential to prevent complications, including chronic cystitis and obstructive uropathy.

Case observation

A 70-year-old man with a history of hypertension, chronic cardiac failure, and a past tuberculosis infection (treated) presented with several relapsing lower urinary tract infections over the past 5 months. The patient was on corticosteroids combined with multiple rounds of broad-spectrum antibiotics. Biological markers showed a mild infectious syndrome: C-reactive protein 58 mg/dl (normal <0.5), neutrophilic leukocytosis 12,800 per cubic millimetre (64% neutrophils), and urea and creatinine within normal range. Blood and urine cultures were inconclusive.

Computed Tomography (CT) imaging revealed diffuse calcification plates inside the bladder and along its walls, moderate nephrosis, and a few kidney stones bilaterally. Based on these radiological findings, a cystoscopy revealed a calcified and fragile bladder with a thickened wall.



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The initial differential diagnoses included an aggressive tumour, sequelae of past tuberculosis, or encrusted cystitis. Pathological analysis of biopsies and non-specific and specific bacteriological cultures for *Corynebacterium* and tuberculosis confirmed a *Corynebacterium urealyticum* infection. The patient was treated with intravenous vancomycin 15 mg/kg every 8 hours for 3 weeks. After treatment, bacterial urinalysis was negative, and the patient fully recovered, showing no signs of infection or encrustations in follow-up CT scans.

Commentary

Corynebacterium urealyticum bladder infections are rare and can cause extensive calcified lesions along the urinary tract, kidneys, and bladder [1]. This bacterium converts urea into ammonia, triggering the formation of struvite crystals, eventually forming calcified stones, plates, and encrustations on the infected mucosa [1]. Clinically, an encrusted bladder has no specific symptoms, and C. urealyticum is often missed in blood and urine cultures due to its slow growth [1].

However, the presence of bladder calcifications on CT imaging, coupled with alkaline urine and a history of recurrent bladder infections, strongly suggest the diagnosis. C. urealyticum is frequently found in the peri-genital area of elderly patients, making them prone to opportunistic bladder infections, especially males with indwelling urinary catheters placed for benign prostatic hypertrophy. Corticosteroid use and broad-spectrum antibiotic exposure are additional risk factors, as was the case with our patient.

Treatment involves urinary acidification, glycopeptide-based antibiotics, and the surgical or endoscopic removal of calcifications. Effective management of recurrent infections, a sign of commitment, is crucial for long-term recovery.

References

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