Case 8822

Eurorad ••

Acute spongiositis: MRI findings

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DOI: 10.1594/EURORAD/CASE.8822 ISSN: 1563-4086 Section: Uroradiology & genital male imaging Case Type: Clinical Cases Authors: Tonolini M, Campari A Patient: 35 years, male

Clinical History:

A young man affected with neurogenic bladder, treated by daily intermittent self-catheterisation, complained of sudden onset of perineal pain. His past medical history recorded previous corporoplasty, bladder neck incision, removal of a penile prosthesis and positioning of a neurostimulator. **Imaging Findings:**

The patient complained of intense perineal pain radiating along his penis associated with urethral discharge. Physical examination revealed induration and tenderness of the corpus spongiosum, but he was not febrile. Laboratory investigation showed normal leukocyte count, mildly raised C-reactive protein levels. Mixed purulent and bloody secretions from his urethra, investigated with microbiology and cultural studies, were positive for Streptococcus haemolyticus and Enterococcus faecium, negative for Mycoplasma, Chlamydia and Neisseria gonorrhoeae.

Urethroscopy saw an atrophic and desquamating mucosal surface in the rigid penile urethra, with focal ulcerated and stenotic tracts.

After inconclusive penile ultrasound (not shown), MR examination of the pelvi-perineal region including the scrotum and penis was ordered, to exclude the presence of abscess lesions needing surgical intervention.

When imaged, the patient had a urinary catheter in place. MRI was performed in the prone position using a phasedarray coil positioned over the pelvic region. Unenhanced multiplanar images revealed diffuse, uniform signal changes in the corpus spongiosum with T1-weighted hypointensity and T2 hyperintensity. The dartos tunica and Buck's fascia were mildly thickened. The urinary bladder demonstrated a dysmorphic configuration, small capacity and marked circumferential wall thickening, consistent with a chronic inflammatory status.

After intravenous gadolinium contrast administration, multiplanar T1-weighted sequences depicted intense, diffuse enhancement of the corpus spongiosum and ruled out the possible presence of periurethral abscess collections. The corpora cavernosa, scrotum and ischioanal spaces were not involved.

The patient underwent positioning of a temporary suprapubic catheter, repeated antibiotics instillations in the urethra and intravenous therapy, and recovered successfully.

Discussion:

Intermittent catheterisation is commonly recommended to protect the urinary tract in people with voiding problems, particularly neurogenic bladder dysfunction. Its most common complications include urinary tract and genital infections, bleeding and urethral strictures.

Among these, urethritis is a rare occurrence, but may be further complicated with a periurethral abscess through the infection of a Littrè gland (usually by Gram-negative rods, enterococci, and anaerobes) and the formation of an infected pseudodiverticulum communicating with the urethral lumen. Since the tunica albuginea of the penis prevents the dorsal spread of infection, the abscess tends to track ventrally along the corpus spongiosum, where it is confined by the Buck fascia. Sometimes, when the Buck fascia is perforated, gangrenous necrosis of the subcutaneous tissue and fascia is observed.

Treatment consists of immediate suprapubic urinary drainage, surgical abscess debridement, and administration of

appropriate antibiotics.

The diagnosis of acute urethritis is usually made on clinical and laboratory findings, and no imaging studies are necessary for noncomplicated urethritis. Sometimes periurethral abscesses drain spontaneously, but accurate clinical evaluation is needed to exclude complications and imaging studies may be requested.

In the past, conventional contrast-enhanced radiographic studies were the primary imaging modalities for imaging the male urethra, particularly for assessment of traumatic injuries, strictures and abscesses draining into the urethra; retrograde urethrography optimally visualizes the anatomy of the urethra but has limited value in demonstrating abnormalities concerning adjacent structures.

Ultrasound examination of the penis may demonstrate the presence of a periurethral abscess, but may be cumbersome with acute inflammation and diffuse thickening of the penile and perineal structures.

Nowadays, cross-sectional imaging such as MRI can better assess periurethral structures. MR imaging has been reported in literature as a helpful imaging modality to assess severe urethral inflammation, the presence and extent of a periurethral abscess and complications such as fasciitis and Fournier gangrene. The study should be carried out with the penis positioned ventrally in the supine position, and taped to the abdominal wall beneath the surface coil. The use of intravenous contrast media is helpful in patients with extensive tumours or inflammation, as it has been reported that urethral lesions can be better demonstrated on contrast-enhanced images than on T2-weighted images.

The reported MR findings for acute urethritis include a diffuse thickening of the urethra and periurethral tissues with intermediate signal intensity on T2-weighted images. A periurethral abscess appears as a cavitary lesion along the course of the urethra, while a periurethral sinus tract may show similar findings but with an opening to the perineum; they may be indistinguishable from a urethral diverticulum located in the distal urethra.

In our experience, MR imaging has proved useful to diagnose an uncomplicated form of urethro-spongiositis and to guide treatment, excluding the need of surgical intervention.

Differential Diagnosis List: Acute urethro-spongiositis

Final Diagnosis: Acute urethro-spongiositis

References:

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Figure 1



Description: Sagittal (a) and axial (b-d) T2-weighted images demonstrate small-volume, dysmorphic urinary bladder with Foley catheter; hyperintense signal in the corpus spongiosum; mild diffuse thickening of the dartos and Buck's fascia. **Origin:**



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Figure 2



Description: Axial fat-suppressed (a to c) and sagittal (d) T1-weighted images after iv gadolinium administration show intense, diffuse enhancement of the corpus spongiosum. No evidence of periurethral abscess collections. **Origin:**



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Figure 3



Description: Strong hyperintensity on axial STIR images (a to c) of the corpus spongiosum with corresponding hypointense signal on T1-weighted images (d-e). No involvement of the corpora cavernosa and surrounding structures. **Origin:**



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