Bilateral penile cavernosal abscess secondary to *Escherichia coli*: a case report of a rare diagnosis

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ABSTRACT

Cavernosal abscess is a rare diagnosis. Disparity exists in the literature but the most common colonising agents appear to be *Neisseria gonorrhoea* and *Staphylococcus aureus*. We describe a 75-year-old man who presented with sepsis and was found to have *Escherichia coli* positive blood and urinary cultures. Following initial treatment for sepsis of unknown origin, computed tomography demonstrated a bilateral cavernosal abscess. The patient was successfully treated with incision and drainage, multiple re-looks and a delayed closure, alongside a course of appropriate antibiotics. A defect in the bulbar urethra was identified and repaired with bladder drainage via both suprapubic and urethral catheters. Following discharge, a urethrogram showed no urethral leak or stricture and the patient is now catheter free.

KEYWORDS

Penile abscess – *Escherichia coli* – Bilateral penile cavernosal abscess

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Case history

A 75-year-old man with known hormone-controlled metastatic prostate cancer, emphysema and asymptomatic spinal stenosis, presented with rigors and faecal incontinence. On admission, he was hypotensive (99/56 mmHg), pyrexial (40.2 degrees C), tachycardic (160 beats/minute) and hypoxic (saturation 93% requiring oxygen) and was therefore septic. Consequently, he was treated as per the Sepsis six guidelines. High-flow oxygen was started, intravenous access was gained immediately, with bloods sent particularly for lactate and culture. He was commenced on fluids and broad-spectrum antibiotics (amoxicillin, metronidazole and gentamicin), as per protocol for sepsis of unknown source; a urethral catheter was inserted for monitoring. He was admitted to intensive care for inotropic support. Antibiotics were rationalised to intravenous gentamicin after three days and then to oral amoxicillin after a further two days, when he was stepped down to the ward. He continued to show sequelae of infection with persistent temperature spikes and cognitive impairment. Further investigations were then conducted.

Investigation

On admission, blood tests showed raised inflammatory markers with a white cell count of 25.5×10^9 . Both urine and blood cultures were positive for *Escherichia coli*. Chest x-ray and echocardiogram did not demonstrate an obvious cause of infection. Due to *E. coli*-positive blood cultures, a

urological opinion was sought. Computed tomography was recommended and identified a fluid-filled structure adjacent to the urethral catheter with evidence of inflammatory change, suggestive of an infected collection. Clinically, the patient had a firm sausage shaped mass extending from his perineum up into the distal penis. With the other differential diagnosis of penile metastases from his metastatic prostate cancer, an ultrasound was performed and an ultrasound-guided aspiration confirmed the presence of pus. Microscopy, culture and sensitivity confirmed an AmpC-positive *E. coli*, thus supporting blood cultures, which had demonstrated the same bacteria sensitive to amoxicillin and gentamicin.

Treatment

Antibiotics were rationalised according to microbiology advice and guided by cultures. With continued temperature spikes despite a prolonged course of antibiotics, the decision was taken for incision and drainage of the abscess in theatre.

The abscess cavity was opened via a perineal approach, and 300 ml of pus was drained from the abscess and loculations were broken down as the cavity was explored. The cavity sat solely within the corpus cavernosum and was well delineated with pus confined within it. While it extended towards the rectum, it did not communicate with it. The wound was debrided and packed with Kaltostat® alginate dressing. A defect in the bulbar urethra was noted and it was considered that the passage of urine through

Figure 1 Computed tomography scan demonstrating a cystic abnormality related to the penis replacing the corpus callosum adjacent to the penile urethra and urethral catheter; the catheter is appropriately sited.

the defect into adjacent tissue was the probable cause of his sepsis. A suprapubic catheter was inserted under cystoscopic guidance. He returned to theatre three days later for a planned washout, drainage and further packing. A delayed closure was performed on a third re-look with two corrugated drains left in place, which were removed on the ward once they were dry. He recovered well and completed a course of amoxicillin. He was discharged with both a suprapubic and urethral catheter. The urethral catheter was removed after two weeks.

The patient was reviewed in the outpatient clinic at three months, when he was clinically vastly improved and the perineal wound had completely healed. A urethrogram was performed, which did not demonstrate a persisting urethral injury or developed stricture, and the suprapubic catheter was subsequently removed. To date, he remains well with no bothersome lower urinary tract symptoms.

Discussion

Corpus cavernosum abscesses are rare, with varying triggers identified, including but not confined to: intracavernous injection, foreign bodies, disseminated infection, priapism or abscess drainage.^{1,2} A structural defect is also an acknowledged cause. We suspect that such a defect was created when this patient was catheterised for monitoring of his urosepsis prior to his admission to intensive care.

Dugdale *et al* noted that typical causative organisms include *Staphylococcus aureus*, *Streptococci*, *Bacteroides* and *Enterococci*, although cases involving *Mycobacterium tuberculosis*, *E. coli*, *Klebsiella*, *Actinomyces* and other anaerobes have also been identified.¹ *E. coli* is a particularly rare organism and was identified to be the causative organism in only 1 of 23 reported cases in a previous literature review.¹

Cases where a penile abscess is being considered can be investigated with an ultrasound, a readily available, non-ionising modality. Further imaging in the form of computed

Figure 2 Ascending urethrogram demonstrating a well-opacified anterior urethra which appears unremarkable. No fistulous tract demonstrated. Contrast passed through the posterior urethra, in to the bladder and out of the suprapubic catheter with no adverse features demonstrated.

tomography and magnetic resonance imaging may also be appropriate.⁵

Surgical incision and drainage should be considered as the first line of treatment,² but awareness of the potential complications including fistulous tract formation and stricture that can arise from surgical management is vital and, as such, all management options should be considered on a case by case basis. In this instance, continuation of conservative methods would have been inappropriate as this patient had already failed to respond to a prolonged course of antibiotics.

Conclusion

Penile abscess is rare but life threatening if untreated. Such a diagnosis should be considered in the following instances: when symptoms are indicative of a penile pathology; a likely cause of an abscess is identified such as injections into or trauma to the penis; or in patients with sequelae of infection not responding to treatment despite no distinguishable cause. Appropriate treatment should be commenced as soon as a definitive diagnosis is established and the patient should be counselled with regards to the potential risks of management.

References

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