Penile actinomycosis clinically diagnosed as an epidermal cyst: a case report

Kyueng-Whan Min, Sung Yul Park¹, Seung Sam Paik

Departments of Pathology and Urology¹, College of Medicine,
Hanyang University, Seoul, South Korea

ABSTRACT

A 27-year-old man presented at our hospital with a 1.5cm, spherical, soft and movable subcutaneous mass at the mid portion of the ventral aspect of the penile shaft. The possibility of an epidermal cyst was considered and a simple resection was performed. Histologically, the lesion was a unilocular cyst without an epithelial lining, containing eosinophilic necrotic material and a few dispersed scalloped sheets of actinomycotic granules. The centre of the largest granular body demonstrated many fragments of foreign substance. The patient was treated successfully with combined antibiotic therapy.

KEYWORDS

Actinomycosis – Penis – Circumcision

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CORRESPONDENCE TO

Seung Sam Paik, Associate Professor, Department of Pathology, College of Medicine, Hanyang University, 17 Haengdang-dong, Seongdong-gu, Seoul 133-792, South Korea
T: +82 (0)2 2290 8252; F: +82 (0)2 2296 7502; E: ss paik@hanyang.ac.kr

Primary cutaneous involvement of actinomycosis is very uncommon because of the exclusively endogenous habitat of the organism. Therefore, cutaneous actinomycotic infections are often secondary to local injury or spread from visceral infected organs.¹ Actinomycosis is a relatively rare chronic suppurative granulomatous bacterial infection caused by anaerobic Gram-positive bacteria, *Actinomyces israelii*.² The most common infection sites are cervicofacial, thoracic and abdominopelvic regions.³ Actinomycosis of the penis is an extremely rare condition and most cases present an association with pilonidal sinus of the penis.^{4–6} We report a case of primary penile cutaneous actinomycosis presenting clinically as an epidermal cyst.

Case history

A 26-year-old man presented with a palpable penile mass located at the ventral portion of the penile shaft. He had no past medical history except for a circumcision ten years earlier. Physical examination revealed a 1.5cm, spherical, soft and movable subcutaneous cystic lesion. It was clinically considered to be an epidermal cyst and surgical excision was performed.

On gross examination, the cut surface of the mass showed a well demarcated unilocular cyst containing yel-

lowish purulent material. Microscopically, the section showed no epithelial lining and the cavitory space was filled with purulent exudates (Fig 1A). There were many irregularly lobulated or scalloped basophilic granules surrounded by closely attached neutrophils, 'sulphur granules', characteristic of *Actinomyces* (Fig 1B). The cyst wall showed dense fibrosis with inflammatory infiltrates and fibre-like foreign substance. The histochemical stains including periodic acid-Schiff (PAS) and Grocott's methenamine silver (GMS) highlighted entangled, delicate, branched and filamentous organisms in sulphur granules (Fig 2). Gram staining demonstrated positive filamentous bacilli. The final diagnosis was penile cutaneous actinomycosis. At the one-year post-operative follow-up visit no complications were observed and the patient remained well after antibiotic therapy.

Discussion

Actinomycosis is a chronic suppurative granulomatous bacterial infection caused by anaerobic or microaerophilic Gram-positive bacteria of the genus *Actinomyces*. The main causative organism in humans is *A israelii*, a resident of the oral cavity and the aerodigestive tract.¹ Actinomycotic infections have been largely classified into five types: cervicofacial, thoracic, abdominal, pelvic and disseminated. Cervico-

Figure 1 Haematoxylin and eosin staining: The excised mass showed a unilocular cyst with a purulent abscess (20x magnification) (A). The abscess contained sulphur granules with peripheral radiating eosinophilic filaments and attached neutrophils (100x magnification; inset: 400x magnification) (B).

facial actinomycosis is the most common type, accounting for almost half of all infections.^{1,5}

Penile actinomycosis has rarely been reported and most published data were characteristically associated with pilonidal sinus.⁴⁻⁶ The most common site is the region around the corona involving the foreskin. The pathogenesis is that the coronal sulcus acts as a cleft where hairs may accumulate and are then driven into the shaft of the penis and the prepuce by the natural movement that occurs between these two surfaces. Rare complications include actinomycosis, squamous cell carcinoma and verrucous carcinoma. Among them, actinomycosis in association with sinus of the penis has been rarely described.⁴⁻⁶ In our patient, there was only a unilocular cystic mass associated with no pilonidal sinus.

The definitive diagnosis of cutaneous actinomycosis depends on the clinical triad of painless subcutaneous nodules, sinuses and discharge followed by histological examination that reveals a diffuse mixed infiltrate with granulation tissue, microabscesses and sinus tracts.⁷ *Actinomyces* present the pathognomonic 'sulphur granules' composed of basophilic structures with elongated eosinophilic filaments radiating from the periphery. The granules contain Gram-positive organisms that are typically branching filaments. The histochemical stains including PAS and GMS are helpful. In addition, culture is definitive but may be positive in less than a quarter of cases.⁸

The treatment of choice for the common deep seated or superficial forms of actinomycosis is long-term penicillin therapy to eradicate the organism and prevent a relapse. Other antibiotics including erythromycin, tetracycline, clindamycin, lincomycin and imipenem have demonstrated an anecdotal clinical efficacy.⁷ Several reports have suggested

Figure 2 Gram staining (A) showed positive filamentous bacilli that resemble radiating rays (400x magnification). Tangled clumps of filamentous organisms were recognised in the Grocott's methenamine silver (B) and periodic acid-Schiff (C) staining (400x magnification).

a quite favourable prognosis in cases in which limited surgical intervention plus antibiotic therapy is realised,² when there are large collections of purulent and necrotic material or the lesion is associated with another condition causing a persistent inflammatory response. The present case was clinically considered to be an epidermal cyst and then surgical excision was performed. After identification of actinomycosis in tissue section, antibiotic therapy was started. The postoperative recovery was uneventful.

Conclusions

We present a case of cutaneous actinomycosis mimicking an epidermal cyst in an extremely unusual site of penile shaft in a 26-year-old healthy man. Although the incidence is extremely rare, the possibility of infectious condition including penile cutaneous actinomycosis should be considered in the differential diagnosis of penile cystic mass. Additionally, raising awareness is important as early diagnosis can prevent complications.

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