A Man with Chronic Painful Penile Ulcer

Kornphaka Kantikosum MD,

Ratchathorn Panchaprateep MD PhD.

ABSTRACT:

KANTIKOSUM K, PANCHAPRATEEP R. A MAN WITH CHRONIC PAINFUL PENILE ULCER. THAI J DERMATOL 2022;38:61-4.

DIVISION OF DERMATOLOGY, DEPARTMENT OF MEDICINE FACULTY OF MEDICINE, CHULALONGKORN UNIVERSITY, BANGKOK, THAILAND.

Penile calciphylaxis or calcific uremic arteriolopathy of the penile arteries is a rare condition of calcium deposition in the arteries associated with poor prognosis and high mortality rate. This phenomenon usually coexisted with hemodialysis dependent end stage renal disease status. The sign and symptom are intolerable pain, associated with discoloration of the skin and infection. More than half of genital calciphylaxis patients will be diagnosed along with concurrent extra-genital calciphylaxis. It is crucial to diagnose the patient early due to its high morbidity and mortality nature. Currently, the definite treatment in inconclusive, eradication of risk factors and correction of imbalanced electrolyte are recommended. There are reports of successful treatment with sodium thiosulfate, phosphodiesterase-5 inhibitors.

Key words: Penile calciphylaxis, end-stage renal disease, penile ulcer, calcified uremic arteriolopathy

From: Division of Dermatology, Department of Medicine Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand.
Corresponding author Ratchathorn Panchaprateep MD, PhD, E-mail: rpanchaprateep@gmail.com

Received: 27 January 2022 Revised: 20 April 2022 Accepted: 26 April 2022

Case Report

A 61-year-old man presented with painful ulcer at glans of penis for 1 year. He denied urethral discharge or multiple sexual partners history. He had underlying diseases of diabetes mellitus with microvascular complications, hemodialysis-dependent end stage renal disease, chronic hypothyroid with adrenal insufficiency, old ischemic heart disease and pleural tuberculosis. The patient had been on hemodialysis for a year. Physical examination revealed a well-defined irregular border painful shallow ulcer with whitish patches at the glans penis (Figure 1). His current medications were isoniazid, rifampicin, pyrazinamide, ethambutol, levothyroxine, erythropoietin, prednisolone 10 mg/day, NaHCO3, atorvastatin, omeprazole, aspirin, furosemide, linagliptin, metoprolol, insulin, and CaCO3. The differential diagnosis were infection (ex. granuloma inguinale, chancroid, herpes simplex infection, cytomegalovirus infection, tuberculosis), drug-induced genital ulcer, and inflammation such as vasculopathy, vasculitis, balanitis and erosive lichen planus. The bedside investigations including KOH examination, Tzanck's smear, and gram stain were negative. After reviewing medications, the patient did not have any medication associated with drug-induced genital ulcer (ex. foscarnet). Combining the finding of necrotic lesion at glans penis and the patient underlying diseases of diabetes mellitus and hemodialysis-dependent end stage renal disease, calciphylaxis is the most suspected. The pelvic x-ray revealed diffuse vascular calcification along the penile region and also seen vascular calcification along femoral arteries (Figure 2). Laboratory showed serum creatinine 3.55 mg/dL, corrected serum calcium 10.56 (8.5-10.5) mg/dL, phosphate 2.6 (2.3-4.7) mg/dL, intact parathyroid hormone 12.6 (15-65) pg/ml, total vitamin D level 18.9 (30-100). By clinical and imaging studies, the patient was diagnosed with penile calciphylaxis.

Figure 1 A well-defined irregular border painful shallow ulcer with whitish patches at the glans penis

Calciphylaxis or calcified uremic arteriolopathy is a rare condition of calcium deposition at small to medium-size arteries. The condition reduces blood flow and stimulates microthrombi which leads to vascular occlusion and results in skin necrosis and ulcer[1]. This condition is commonly associated with hemodialysis-dependent chronic

renal disease. The comorbidites which usually coexist with calciphylaxis are diabetes mellitus, obesity with proximal calciphylaxis, alcoholic liver disease, prolong hemodialysis, hypoalbuminemia, autoimmune diseases, and hypercoagubility state. In addition, many medications are known to be associated with this condition such as calcium and active vitamin D supplements, corticosteroids, insulin injection, and warfarin[2].

Figure 2 The pelvic x-ray revealed diffuse vascular calcification along the penile region and also seen vascular calcification along femoral arteries

Penile calciphylaxis is calciphylaxis in the penile arteries. This condition is associated with a high overall mortality rate and a mean time to death of 2.5 months. The mortality rate at 3 months and 6 months are 50% and 62.5 %, respectively, the numbers which are significantly higher than those who had calciphylaxis in other sites[3]. The presentations of penile calciphylaxis are varied such as pain, redness to purplish discoloration, dusky color, atrophic plaque, chronic ulcer, yellow fibrinoid patch on top and necrosis of the penis. The most common location of the lesion is the glans of penis[3].

The pathogenesis of calciphylaxis remains unclear and is considered a complex disorder involving two main mechanisms. The first, more popular, hypothesis is the dysregulation of parathyroid hormone, vitamin D, calcium, and phosphate metabolism. The second hypothesis is abnormal vascular calcification through increased bone morphogenic protein (BMP)-2 and -4[4].

Various steps are commenced for accurate diagnosis of the disease including typical skin lesions, radiological findings (calcification and/or netlike calcified pattern), laboratory tests. However, the best way to confirm the diagnosis of calciphylaxis requires a biopsy of the involved area of skin. However, it is not mandatory to perform a biopsy in patients with classic penile calciphylaxis and ulcers in the acral part due to the risk of non-healing ulcers at the biopsy site[5].

Management of penile calciphylaxis is inconclusive. The main concept of treatment is to eradicate the risk factors using multidisciplinary team. Phosphaste and calcium should be corrected with adequate hemodialysis using low calcium hemodialysate Sodium thiosulfate is frequently mentioned in many literatures as an antioxidant and calcium chelation. Recently, phosphodiesterase-5 inhibitors have been reported to be beneficial in penile calciphylaxis due to an increase blood flow to the cavernous

tissue[5]. Surgery methods such as partial or total penectomy have been used for treatment calciphylaxis.

Penile calciphylaxis is a rare systemic condition with a poor prognosis and high mortality rate. The pathogenesis is vascular calcifications due to dysfunction of the regulatory mechanisms and thrombotic occlusion. Eradication of the risk factors is a crucial key for the treatment. Due to its dire prognostic nature, early diagnosis and prompt management are recommended.

Management

The patient was treated by normalized calcium-phosphate electrolyte, pain control, wound dressing, low calcium dialysate and intravenous sodium thiosulfate during hemodialysis. The urologist suggested conservative treatment and penectomy was to be scheduled if the clinical was non-salvageable

References

1. Wilmer WA, Magro CM. Calciphylaxis: emerging concepts in prevention, diagnosis, and treatment. Semin Dial 2002;15:172-86.
2. Nigwekar SU, Kroshinsky D, Nazarian RM, et al. Calciphylaxis: risk factors, diagnosis, and treatment. Am J Kidney Dis 2015;66:133-46.
3. Gabel C, Chakrala T, Shah R, et al. Penile calciphylaxis: A retrospective case-control study. J Am Acad Dermatol 2021;85:1209-17.
4. Li X, Yang HY, Giachelli CM. BMP-2 promotes phosphate uptake, phenotypic modulation, and calcification of human vascular smooth muscle cells. Atherosclerosis 2008;199:271-7.
5. Nigwekar SU, Thadhani R, Brandenburg VM. Calciphylaxis. N Engl J Med 2018;378:1704-14.