

The illness: penile calciphylaxis

Penile calciphylaxis is a rare devastating condition of skin necrosis resulting from calcification of small blood vessels(1). It can affect blood vessels throughout the body(2), e.g. blood vessels in the lungs(3).

The typical features of calciphylaxis include violaceous skin lesions overlying painful, indurated, nodules located beneath the skin. The eye, and any part of the skin, can be affected. The lesions are frequently followed by necrosis and nonhealing ulcers, with secondary gangrene, sepsis, and death(4). It should be noted that penile gangrene is a symptom of severe systemic disease, with a 67% mortality rate within six months of onset of symptoms (5) and a mean time to death of 2.5 months (2).

The condition tends to affect patients in their 50s. It is associated with kidney disease (4) and diabetes mellitus (2,4). Treatment involves removal of the parathyroid glands (parathyroidectomy). A literature search revealed that all cases previous to the one presented in this case report were treated with either local debridement/wound care or partial/total amputation of the penis (penectomy). Survival was better in patients who underwent parathyroidectomy (75%) than in those treated with local debridement or penectomy alone (28%) (2).



Figure 1. Pre- treatment



Figure 2. Post-treatment

References: [1] Jhaveri FM, Woosley JT, Fried FA. Penile calciphylaxis: rare necrotic lesions in chronic renal failure patients. *Journal of Urology*. 160(3 Pt 1):764-7. 1998 Sep.; [2] Karpman E, Das S, Kurzrock EA. Penile calciphylaxis: analysis of risk factors and mortality. *Journal of Urology*. 169(6):2206-9. 2003 Jun.; [3] Oikawa S, Osajima A, Tamura M, Murata K, Yasuda H, Anai H, Kabashima N, Matsushima Y, Nakamoto M, Nakashima Y. Development of proximal calciphylaxis with penile involvement after parathyroidectomy in a patient on hemodialysis. *Internal Medicine*. 43(1):63-8. 2004 Jan.; [4] Jacobssohn HA, Jenkins PG, Jacobssohn KM. Penile calciphylaxis. *Urology*. 60(2):344. 2002 Aug.; [5] Barthelmes L, Chezian C, Thomas KJ. Progression to wet gangrene in penile necrosis and calciphylaxis. *International Urology & Nephrology*. 34(2):231-5. 2002.

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A case report

History

- 49 year old Caucasian man presented with a four week history of a necrotic ulcer on the right side of his glans penis.
- co- morbidities/ type 1 diabetes mellitus, hypertension, peripheral vascular disease and end-stage renal failure (ESRF), for which he had received peritoneal dialysis since October 2001
- non-smoker and drank minimal amounts of alcohol

Examination

- 1.5 x 1.5 cm dry necrotic ulcer on the right side of the glans penis
- clear lung fields
- no peripheral oedema
- blood pressure was 131/77 mmHg (normal)
- the patient no longer produced urine and relied on continuous ambulatory peritoneal dialysis

Investigations

- calcium 2.51 mmol/L (normal), phosphate 2.17 mmol/L (high), calcium-phosphate product 5.45 (high), alkaline phosphatase 66 IU/L (normal), PTH 12.6 pmol/L (high)
- negative for syphilis
- penile swab grew *staphylococcus aureus*
- penile x-ray showed advanced calcification in the small vessels.

Aim of the project

To present the only known case in the world of using medical treatment in the management of penile calciphylaxis, with the idea that it may replace the current surgical treatment.

Treatment

- diagnosis of penile calciphylaxis made
- switch from continuous ambulatory peritoneal dialysis (10L/day) to haemodialysis (4hr/ 3x/wk)
- aim of conversion to haemodialysis is to increase solute clearance (especially of phosphate) thereby reduce the calcium-phosphate product
- to reduce calcium load, phosphate binders were changed from calcium carbonate (1g, tds) to aluminium hydroxide (950 mg, bd).
- alfacalcidol (active vitamin D) was reduced from 0.5 to 0.25 mcg, once daily.
- a year later the penile lesion had healed completely
- the patient felt well in himself and is now being considered for the deceased donor kidney transplant list.