Calciphylaxis of the fingers: a case report

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ABSTRACT

We report a case of calciphylaxis of the fingers in a 75-year-old woman with end-stage renal disease. She was on haemodialysis and had diabetes mellitus, hypertension, ischaemic heart disease, and hypothyroidism. She presented with progressive blackish discoloration of the fingertips of both hands. Calciphylaxis is caused by arterial calcification with consequent tissue necrosis and gangrene. It commonly occurs in patients with chronic kidney disease undergoing haemodialysis. Treatment involves modifying risk factors, wound care, cinacalcet, and sodium thiosulfate in addition to haemodialysis.

Key words: Calciphylaxis; Hemodialysis; Kidney failure, chronic

CASE PRESENTATION

In February 2021, a 75-year-old woman presented with painful and gradually progressive blackish discoloration of the fingertips of both hands. She was receiving haemodialysis for end-stage renal disease and insulin for type-2 diabetes mellitus. She also had hypertension, ischaemic heart disease, and hypothyroidism. She denied having a history of oral ulcers, photosensitivity, joint pain, swallowing difficulty, binding down of skin, proximal muscle weakness, or Raynaud phenomenon. Physical examination revealed dry gangrene with necrotic scabs on the tips of the left ring finger, right middle, and ring finger without any discharge. The pulp appeared dusky with sluggish capillary refill time of 4 seconds (Figure 1). Mild tenderness was noted on the left ring finger pulp.

Blood tests showed normal serum calcium level but slightly raised serum phosphate level to 2.23 mmol/L (normal range, 0.65-1.65 mmol/L) and serum parathyroid hormone level to 8.09 µmol/L (normal range, 1.30-7.60 µmol/L). Radiographs showed erosions of the left ring finger distal phalanx with a pathological fracture and dense vascular calcification of digital arteries bilaterally (Figure 2).

The patient was diagnosed with digital calciphylaxis (calcific uremic arteriolopathy). Calcium acetate was switched to sevelamer, and calcium and vitamin D supplements were stopped. Sodium thiosulfate may be used if the lesions continue to progress. At the 4-month follow-up, the lesions did not progress with no signs of infection or bleeding, and the patient was satisfied with the progress of the wounds with improvement in pain.
DISCUSSION

Calciphylaxis is a rare disorder, characterised histologically by calcification of arterioles and capillaries in the dermis and subcutaneous adipose tissue leading to skin ischaemia and necrosis.\(^1\) It commonly occurs in patients with end-stage kidney disease undergoing dialysis.\(^2\) It is caused by precipitation of calcium phosphate crystals into the small- and medium-sized vessels. It has high morbidity and mortality, with an estimated 6-month survival being 50%.\(^3\) Skin lesions commonly involve the distal lower extremities (55%), proximal lower extremities (39%), trunk (31%), distal upper extremities (as in our patient) [7%], and proximal upper extremities (3%).\(^4\) The risk factors for the development of calciphylaxis are female sex, obesity, diabetes, end-stage kidney disease with a longer period of dialysis, hyperphosphataemia, hypoalbuminaemia, medications (warfarin, calcium-
based binders, vitamin D and its analogues, systemic steroids), autoimmune conditions, and recurrent skin trauma.

Diagnosis is made based on the painful, subcutaneous nodules, plaque, or ulcerated lesions covered by a black eschar after exclusion of differential diseases such as atherosclerosis, warfarin necrosis, vasculitis, endarteritis obliterans, and cellulitis. Skin biopsy is rarely performed to avoid poor healing, superimposed infection, and induction of necrosis. Plain radiograph, which was used in our case, is a useful diagnostic tool to identify the vascular calcification, with sensitivity of 90%. There is no guideline for the optimal treatment approach for calciphylaxis. Treatment should aim at wound care, analgesia, non-calcium-containing phosphate binders, controlling underlying hyperparathyroidism, cinacalcet, sodium thiosulfate, and managing the risk factors associated with dialysis.

**CONTRIBUTORS**

All authors designed the study, acquired the data, analysed the data, drafted the manuscript, and critically revised the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

**CONFLICTS OF INTEREST**

All authors have disclosed no conflicts of interest.

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**DATA AVAILABILITY**

All data generated or analysed during the present study are available from the corresponding author on reasonable request.

**ETHICS APPROVAL**

The patient was treated in accordance with the tenets of the Declaration of Helsinki. The patient provided written informed consent for all treatments and procedures and for publication.

**REFERENCES**