Calciphylaxis, also known as Calcific Uremic Arteriopathy (CUA), is a rare devastating skin disease characterized by cutaneous arteriolar calcification and subsequent tissue ischemia and infarction which leads to intense painful deep ulcers associated with significant morbidity and mortality (1).

There are various risk factors that predispose to the development of calciphylaxis (Table 1). It is mainly observed in dialysis, near-dialysis or kidney transplant population with incidence rate between 1 to 4%. Calciphylaxis can occur in patients without renal impairment and known as non-uremic calciphylaxis; however, the current incidence rate is unknown (2). There is a high index of morbidity in patients with calciphylaxis predominantly due to the severe pain from the ulcer, slow or non-healing wounds, frequent hospitalizations and infection. The reported annual mortality rate is at 45-80% in patients on dialysis (3).

Table 1. Risk factors

| ①  | End-stage renal disease | Peritoneal dialysis/hemodialysis/renal transplant |
| ②  | Derangements in calcium and phosphate homeostasis | Hyperphosphatemia | Hypercalcemia | Hyper- and hypothyroidism | Vitamin D |
| ③  | Vitamin D deficiency | Warfarin |
| ④  | Comorbid conditions and demographic factors | Obesity | Rapid weight loss | Diabetes mellitus | Female sex |

Diagnosis of this syndrome can be complex and histological evaluation remains gold standard for diagnosis; however, occasionally it’s difficult to obtain quality tissue. Currently no imaging tools have been systematically evaluated or recommended for its diagnosis.

**Xeroradiography** (XM) is a soft tissue radiography using low voltage, high-resolution film similar to mammography. This tool has the ability to demonstrate distinct focal vascular calcifications and microcalcifications (4).

**Case report**

We describe a case of a 54-year-old obese Caucasian female with end-stage renal disease and type 2 diabetes mellitus who was dialysis dependant. She presented with severe painful erythematous non-healing ulcerated skin lesions with necrotic eschars on right lower abdomen.

The lesions progressed rapidly over the course of two months to involve the right thigh and her right upper arm despite being extensively managed by multifaceted approach to include surgical debridement, antimicrobial therapy, potent analgesics and regular dressing by tissue viability nurse during her hospital admission. Following dermatology consultation, examination revealed deep indurated ulcerating lesions with hardening of skin in the periulcerated areas.

Autoimmune and infectious work-up including blood and swab cultures were normal or negative. Skin punch biopsies were performed. Histopathology results demonstrated non-specific acute and chronic inflammation associated with ulceration without evidence of calcium deposition.

Due to a high index of suspicion for calciphylaxis, xeroradiography was sought which revealed extensive vascular calcification and scattered microcalcifications supporting this diagnosis (Fig. 1 and Fig. 2).

Patient was treated with intravenous sodium thiosulfate 75g/week with rapid improvement of ulcers particularly of right lower abdomen (Fig.3).

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**Discussion**

Xeroradiography is an imaging technique discovered in 1937. It produces visible images utilizing the charge surface of a photoconductor (amorphous selenium) as the detecting medium, partially dissipating the charge by exposure to x-ray to form a latent image visible by xerographic processing (Fig. 4). It differs from halide film technique (general radiography) in that it doesn’t involve wet chemical processing nor the use of dark room (5); hence, the name “xero” which means dry in Greek.

**Conclusions**

This case highlights the importance of thorough diagnostic approach including the use of xeroradiography as a diagnostic tool for calciphylaxis supporting previous similar report by Hackett et al (4).

Xeroradiography is a simple non-invasive tool which may prove useful for dermatologists particularly in cases of high clinical suspicion of calciphylaxis without histological evidence. Well-controlled studies are required to assess its utility further.

**References**


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**Figure 1** Radiography of anterior abdominal wall and **Figure 2** radiography of right upper arm using soft tissue radiography. Dense vascular calcifications in vessels of varying sizes extending to the skin (arrow).

**Figure 3** Ulceration (a) at presentation (b) commencement of sodium thiosulfate and (c,d) almost complete wound healing.

**Figure 4** The steps of latent image formation by xeroradiography.

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**Xeroradiography – an essential tool in the diagnosis of Calciphylaxis**

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**Table 1. Risk factors**

1. End-stage renal disease
2. Derangements in calcium and phosphate homeostasis
3. Vitamin D deficiency
4. Comorbid conditions and demographic factors

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Discussion

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