

Advancement in Calciphylaxis Management: Report of 3 Cases

Harrison A. Edwards¹, Chadwick E. Barnes²

¹School of Medicine, James Cook University, Townsville, Queensland, Australia

²Kidney & Hypertension Clinic of Alaska, Anchorage, Alaska, United States

Introduction

Calciphylaxis (calcific uraemic arteriopathy - CUA) involves life-threatening calcification of arterioles leading to necrotic infarcts of the skin and subcutaneous tissue (panniculus adiposus), erythema and livedo reticularis, followed by painful, pre-ulcerative, subcutaneous plaques with surrounding pruritic areas. These areas ulcerate revealing regions of necrotic subcutaneous adipose tissue covered by eschars with high potential for infectious complication.

The incidence of calciphylaxis is approximately 4.1% in patients on dialysis, with the reported incidence increasing over the past decade^{1,2,3}. It is associated with significant morbidity and mortality, with limited studies suggesting a one year cause-specific mortality of 54.2%². However, it is our experience that early diagnosis and increasing expertise has significantly improved the course of recovery for these patients.

Classically, calciphylaxis has been considered a disease of patients with advanced or end-stage renal disease. However, calciphylaxis in patients with near-normal renal function may not be as rare as previously believed^{3,4,5}, therefore patients may present to dermatology after referral from primary care.

The table below outlines the risk factors for calciphylaxis present in these patients.

	Pt 1	Pt 2	Pt 3
Obesity	X	X	X
Iron supplementation		X	
Corticosteroid	X	X	
Diabetes	X	X	
Vitamin D supplementation	X	X	X
Peripheral Arterial Disease	X		X
Warfarin		X	X
High Calcium-Phosphorus Product	X		
Hyperparathyroidism	X	X	X
Hypoalbuminaemia		X	

Diagnosis



Patient 1

This patient's lesions demonstrate acral necrosis, whereas the vast majority of lesions occur on the adipose tissue of the lower extremities and abdomen.

The varied clinical presentation of calciphylaxis (this patient was initially treated as having impetigo) highlights the importance of strong clinical suspicion.



Patient 2

The clinical presentation of calciphylaxis is varied and often appears benign. The lesions often begin as livedo reticularis or erythematous tender raised plaques. More advanced lesions develop central necrosis.



Patient 3

This patient had a personal history of calciphylaxis. Even still, the patient attributed the new lesions to scraping his leg, and the correct diagnosis was not reached for several weeks as the wounds failed to heal and the lesions occurred on the contralateral leg.

The presentation can be similar to peripheral vascular disease, which should be ruled out as an impediment to wound healing.

Management



Patient 1

Non-healing acral lesions often require amputation, and the recurrence of lesions can be problematic, necessitating vigilant monitoring.



Patient 2

Judicious wound care and debridement is important in the healing process.



Patient 3

Resolution can take several months, which requires careful monitoring of the wounds in order to ensure the progression of healing and timely treatment of infection. This patient's wounds were healed two months from the time of these photos.

Conclusion and Recommendations

The rapid progression of calciphylaxis lesions highlights the need for swift response when the early signs appear. It is our experience that early diagnosis and increasing expertise has improved the course of recovery for these patients. The diagnostician must maintain a high degree of suspicion in at-risk patients.

We have observed recurrence in several patients, indicating the importance of continued vigilance, even after successful treatment.

We suggest developing and maintaining a treatment algorithm that can be shared with the team involved in the care of patients with calciphylaxis, so that management is standardised and details are not forgotten or delayed. Our approach includes the following measures:

1. Cease vitamin D supplementation
2. Cease calcium supplementation
3. Cease warfarin (changing to another anticoagulant when necessary)
4. Intensive wound care, with judicious, limited debridement.
5. Administer sodium thiosulfate with dialysis
6. Intensive dialysis with increased time and frequency
7. Consider parathyroidectomy if parathyroid hormone levels remain elevated
8. Intensive nutritional supplementation including enteral tube feeding with broad vitamin, mineral, fat, and protein supplementation
9. Address peripheral vascular disease
10. Address analgesia
11. Administer antibiotics for infection, directed by proven microbiological sensitivity, when possible

With these measures, our experience is that the mortality rate in our patients has been much lower than historically quoted in studies. However, inpatient care rates are still very high and the disease course is often 6 to 12 months before resolution of open wounds occurs. It is our hope that continued research and experience will help to contribute to better courses and outcomes for patients with calciphylaxis.

Literature Cited

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Contact

1. harrison.edwards@my.jcu.edu.au
2. cebarnes@kent.edu