

# An unusual case of calciphylaxis in a psoriatic patient without kidney disease



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**Key words:** calciphylaxis; non-uremic calciphylaxis; psoriasis; sodium thiosulfate; vitamin D; warfarin.

## INTRODUCTION

Calciphylaxis is a rare and life-threatening form of metastatic calcification most commonly observed in the setting of chronic kidney disease or other systemic illness. Herein, we present an unusual case of calciphylaxis occurring in an otherwise healthy patient with psoriasis and polycythemia vera.

## CASE DESCRIPTION

A 58-year old obese woman with a history of psoriasis (baseline body surface area, 25%) and polycythemia vera was referred to dermatology for evaluation of intensely painful right calf ulcers of 4 months' duration. She had no history of kidney disease and medical history was otherwise unremarkable. Daily medications included 5000 IU of oral Vitamin D, topical calcipotriene cream, and 5 mg of warfarin daily following a provoked deep vein thrombosis 8 years previously. She was not undergoing systemic therapy for psoriasis at presentation. Her Janus kinase-positive polycythemia vera had been managed with intermittent phlebotomy and remained stable for 20 years.

The patient reported the initial development of a 1-cm "dark purple bruise" at the site of a psoriatic plaque she had peeled off one month before (Fig 1, A). Over the next 3 months, the lesion ulcerated and expanded, and she developed additional peripheral lesions (Fig 1, B). The lesions were exceptionally painful, causing the patient to miss several workdays a week. She was evaluated by multiple providers during this time with several emergency department visits and had received 2 courses of cephalexin with no improvement. Four months following lesion onset, she was seen by vascular

### Abbreviations used:

IV: intravenous  
NUC: non-uremic calciphylaxis  
STS: sodium thiosulfate

surgery who held her warfarin, started enoxaparin, and referred her to dermatology for evaluation.

Evaluation by dermatology revealed no recent fevers, symptoms of vasculitis, or gastrointestinal complaints. Cutaneous examination demonstrated psoriatic skin lesions (25% body surface area) on the lower legs, lower arms, trunk, and buttocks. On her right calf, there were several large, exquisitely tender, necrotic ulcers (largest one measured 4 × 5 cm) extending to the fascia with underlying induration and livedo reticularis (Fig 2, A). Punch biopsies demonstrated lace-like foci of calcification within the subcutaneous adipose tissue confirmed by Von Kossa stain (Fig 3). A diagnosis of calciphylaxis was established evidenced by the characteristic progression of clinical cutaneous morphology, supportive biopsy results, and associated risk factors. The patient was admitted for pain control and multidisciplinary medical management.

Laboratory studies revealed normal serum urea nitrogen (17 mg/dL), creatinine (0.6 mg/dL), calcium (9.7 mg/dL), potassium (5.0 meq/L), and phosphorus (4.1 mg/dL). Serum parathyroid hormone and total 25-hydroxy-vitamin D were normal at 24 pg/mL (reference range, 15-65 pg/mL) and 61 pg/mL (reference range, 30-80 pg/mL), respectively. An extensive evaluation for thrombophilia and rheumatologic disease revealed no abnormalities.

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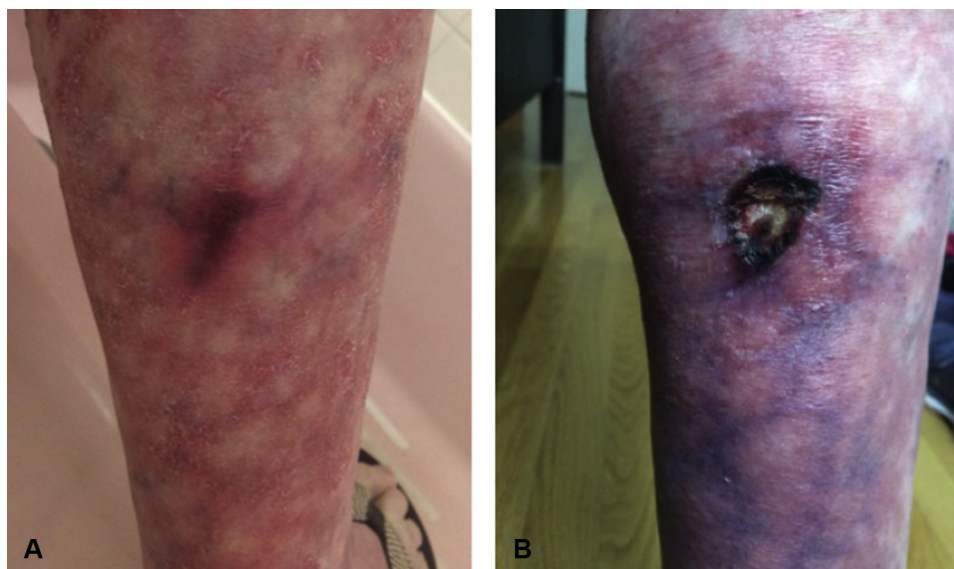
Funding sources: None.

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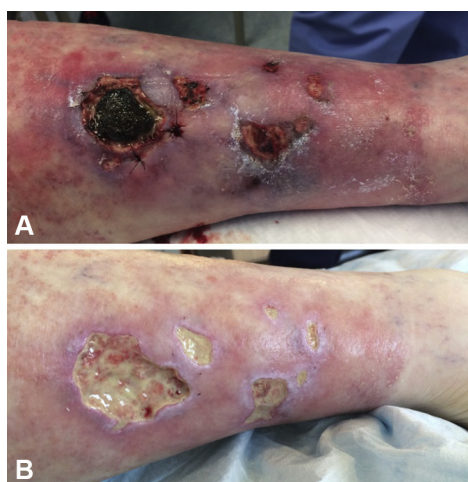
JAAD Case Reports 2021;10:41-3.  
2352-5126

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<https://doi.org/10.1016/j.jidcr.2021.01.024>

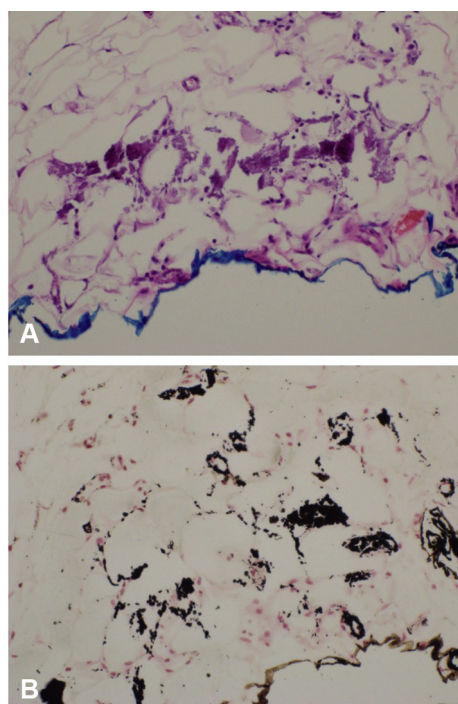


**Fig 1.** **A**, A 1-cm violaceous plaque on the right calf on a background of scaly psoriatic lesions; **B**, Progression to a necrotic ulcer with livedo reticularis, 3 months following lesion onset.



**Fig 2.** **A**, Five large necrotic ulcers (largest one measured  $4 \times 5$  cm) with central black eschar and underlying induration, 4 months following disease onset. **B**, Healing lesions with overlying granulation tissue following 14-days of inpatient management.

Oral Vitamin D, topical calcipotriene, and warfarin were discontinued. The patient received 10 cycles of 25 mg intravenous (IV) sodium thiosulfate (STS), one round of intralesional STS injections (250 mg/ml), one IV infusion of pamidronate, and one IV infusion of Vitamin K. Wound care was performed daily with collagenase ointment for enzymatic debridement and foam dressings. Lesions showed dramatic improvement by the end of hospitalization (Fig 2, B). Post-discharge, the patient received 2 months of weekly intralesional STS injections and 6 monthly



**Fig 3.** Lace-like foci of calcification within subcutaneous tissue confirmed by Von Kossa Stain.

infusions of pamidronate. At the 4-month follow-up, her wounds had completely cleared.

## DISCUSSION

Calciphylaxis classically presents as reticular erythematous-to-violaceous plaques, which progress to subcutaneous necrosis and ulceration. The

lesions are notoriously painful. The condition carries significant morbidity and mortality, with a one-year survival of 40%-50%.<sup>1</sup> The mortality rate rises to 80% once ulceration develops,<sup>2</sup> highlighting the rare and positive outcome of our patient's case.

The delay in diagnosis illustrates the challenges in recognizing this disease early in its course, especially in the absence of kidney disease. Calciphylaxis can be categorized as uremic (moderate-to-severe kidney disease) or non-uremic (mild or no chronic kidney disease). The former is far more common, comprising 75% of the cases.<sup>3</sup> Further complicating detection, the early plaque-only presentation may be indistinguishable from cellulitis, and the patient may undergo unrevealing workup and futile treatments, while the disease progresses to its poorly prognostic ulcerating phase. What may have further inhibited early detection in our patient's case is the fact that while the disease is usually bilateral,<sup>2</sup> our patient's lesions remained limited to her right calf.

While non-uremic calciphylaxis (NUC) occurs in the absence of kidney disease, it almost always occurs in the presence of another significant chronic illness. NUC is associated with malignancy, alcoholic liver disease, connective tissue disease, hyperparathyroidism, and diabetes.<sup>4</sup> Interestingly, our patient did not suffer from significant chronic illness, and an extensive workup revealed no associated conditions. However, her risk factors included obesity, white race, and female gender.<sup>4</sup>

Our patient's medications most likely played a key role in the development of calciphylaxis. Warfarin use is implicated in 50% of uremic and 25% of non-uremic cases.<sup>4,5</sup> Vitamin D analogs have also been independently associated with calciphylaxis.<sup>6</sup> Local trauma, such as that from recurrent injections, has also been described as a potential trigger of the development of calciphylaxis. We suspect that our patient's use of offending medications promoted a pro-mineralizing microenvironment suitable for disease propagation following trauma from disruption of psoriatic plaques.

Only 3 case reports exist in the literature describing calciphylaxis in the setting of a background of psoriasis. All 3 cases occurred in patients with end-stage renal failure on dialysis, 2 of whom

had histories of previous parathyroidectomies.<sup>7-9</sup> Aside from our current report, no cases of NUC in the context of psoriasis have been described to date.

We present an unusual case of calciphylaxis in a patient with psoriasis and no significant systemic illness. In the setting of known risk factors, a high index of suspicion for calciphylaxis should be maintained while evaluating characteristic cutaneous lesions, even in the absence of chronic disease.

The authors would like to thank Thomas Cibull, MD, Kambiz Zorriasateyn, MD, and Stuart M Sprague, DO of the Northshore University HealthSystem and Sagar U Nigwekar, MD of the Massachusetts General Hospital for their assistance in identification and therapeutic management of this patient's complex disease.

#### Conflicts of interest

None disclosed.

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