Case Report

ANNALS OF MEDICINE & SURGERY

OPEN

Calciphylaxis during the course of psoriatic arthritis patient. Is it coincidence? A case report

Naram Khalayli, MD, Yara Hodifa, MD*, Amr Hodaifa, MD, Omar Alsamarrai, MD, Maysoun Kudsi, MD, PhD

Introduction and importance: Calciphylaxis manifests clinically by skin ischemia and necrosis and histologically by calcification of dermal arterioles. Usually, it occurs in patients with end-stage renal disease on dialysis or in patients who had a kidney transplant. Here, the authors present a case of calciphylaxis occurring in a patient with psoriasis and psoriatic arthritis.

Case presentation: A 66-year-old Syrian male with a history of psoriatic arthritis presented for evaluation of 2-month nonpainful ulcers on his feet and hands that were treated with warfarin. Biopsies confirmed the diagnosis of calciphylaxis. The patient received sodium thiosulfate, zoledronic acid, intralesional sodium thiosulfate injections, and an intravenous infusion of vitamin K with dramatic improvement. At the 3-month follow-up, his wounds had been completely remitted.

Discussion: Nonuremic calciphylaxis occurs in many cases, like vitamin D administration, vitamin K antagonists' administration, chronic inflammation, and others. The association between calciphylaxis and psoriasis was reported only in four cases in the literature; meanwhile, this was the first case that described calciphylaxis in the setting of psoriatic arthritis.

Conclusion: A suspicion of calciphylaxis should be maintained in patients with underlying inflammatory mechanism diseases.

Keywords: calciphylaxis, nonuremic calciphylaxis, psoriasis, psoriatic arthritis

Introduction

Calcific uremic arteriolopathy, also called calciphylaxis, is a rare but devastating disease involving patients with end-stage renal disease. It causes painful skin lesions that evolve to ulcerative lesions at risk of infection and sepsis[1,2]. The etiology and pathogenesis of calciphylaxis are complex and have yet to be clarified. The interaction between various promoters and inhibitors of calcification has been implicated[3,4]. The incidence of calciphylaxis in dialysis patients ranges from 0.04 to 4%, and the rate appears to be rising over the last decade[1,2,5].

The suspicion of calciphylaxis is based on clinical findings (ulcerative-necrotic cutaneous lesions) in a patient with risk factors[1,3,4]. CUA management lacks strong evidence[1]. Treatment of calciphylaxis requires a multidisciplinary approach involving nephrology, dermatology, plastic surgery, wound care, pain management, and palliative care[2–6].

Reported risk factors of CUA are female sex, obesity, diabetes mellitus, vitamin K antagonists, and ESRD[1,3,4]. Histopathological findings of skin lesions are mostly associated with thrombosis and vessel calcifications[1].

Here, we present a case of calciphylaxis that occurred in a patient with psoriasis and psoriatic arthritis. We use the term calciphylaxis to refer to the disorder in non-end-stage renal disease patients[1,2].

We aimed to focus on the occurrence of calciphylaxis in a course of psoriatic arthritis.

HIGHLIGHTS

- Calciphylaxis is a complex disorder of microvascular calcification that presents with cutaneous necrosis.
- It usually occurs in patients with end-stage renal disease, but nonuremic calciphylaxis occurs in many cases.
- The challenge of recognizing this disease in its early course, especially in the absence of kidney disease.
- A suspicion of calciphylaxis should be maintained in patients with underlying inflammatory mechanism diseases, like psoriatic arthritis.

Case presentation

A 66-year-old Syrian male, nonsmoker with a history of psoriatic arthritis presented in July 2022 for evaluation of 2-month nonpainful ulcers on his feet and hands. He had a 4-year history of psoriasis and one year of psoriatic arthritis, respectively. The other medical history was unremarkable. He had no family history, no stress, or psychological trauma. Daily medications included 5000 I.U. of oral vitamin D, tazarotene (a topical retinoid), and methotrexate 7.5 mg/week for the last year.

The patient noticed the presence of a small dark lesion on the finger, which ulcerated and expanded over the next 2 months. It

Faculty of Medicine, Damascus University, Damascus, Syria

Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

**Corresponding author. Address: Faculty of Medicine, Damascus University, Damascus 0096311, Syria. Tel.:+96 396 682 20 79; fax:+69 311 212 36 64. E-mail: Yarahd33@gmail.com (Y. Hodifa).*

Annals of Medicine & Surgery (2023) 85:5263–5266

Received 14 June 2023; Accepted 27 August 2023

Published online 7 September 2023

http://dx.doi.org/10.1097/MS9.0000000000001281

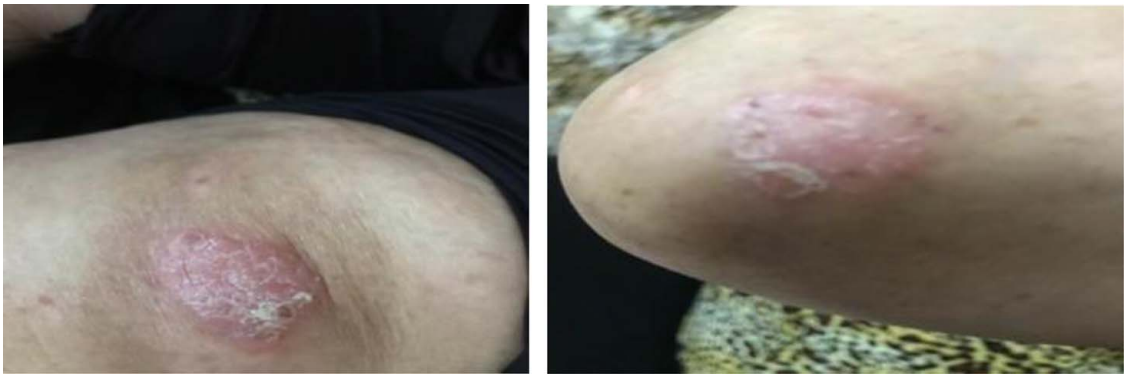

Figure 1. Psoriatic lesions.

was treated with enoxaparin and then warfarin by a vascular surgeon who then referred him for evaluation.

His BMI was 26 kg/m^2. A cutaneous examination demonstrated psoriatic lesions on the knees and elbows [< 2% body surface (Fig. 1)], with tenderness in the hand joints, feet joints, and knees. On his fingers and feet, there were small tender necrotic ulcers (the largest one was measured 1–2 × 1–2 cm) (Fig. 2).

Laboratory studies showed normal values of white blood cells, hemoglobin, platelet count, liver enzymes, serum uric nitrogen, creatinine, electrolytes, parathyroid hormone, and 25 Hydroxy-vitamin D. Thrombophilia evaluation include bleeding time, coagulation time, and partial thromboplastin time, and the rheumatological immune profile including RF, anti-CCP, ANA, anti-ds DNA, P-ANCA, and C-ANCA were negative.

An radiograph of the hands and feet revealed calcifications (Fig. 3).

Biopsies confirmed the diagnosis by Von Kossa stain (Fig. 4).

According to the characteristic clinical cutaneous lesions, the biopsy results, and the associated risk factors, calciphylaxis was diagnosed.

The patient received 25 mg of intravenous (IV) sodium thiosulfate, an IV infusion of 4 mg zoledronic acid, one round of intralesional sodium thiosulfate injections (250 mg/ml), and one IV infusion of vitamin K in the hospital after admission; with daily wound care in the form of ointment for enzymatic debridement and foam dressings. The patient continued the 7.5 mg/week methotrexate and oral vitamin D. Topical retinoids (tazarotene) and warfarin were discontinued.

Lesions showed a dramatic improvement by the first month of hospitalization. Postdischarge, the patient received another five cycles of 25 mg/IV sodium thiosulfate and 5 monthly infusions of 4 mg zoledronic acid. By the third month of follow-up, his wounds had been completely remitted.

This case report has been reported in line with the SCARE 2020 criteria.

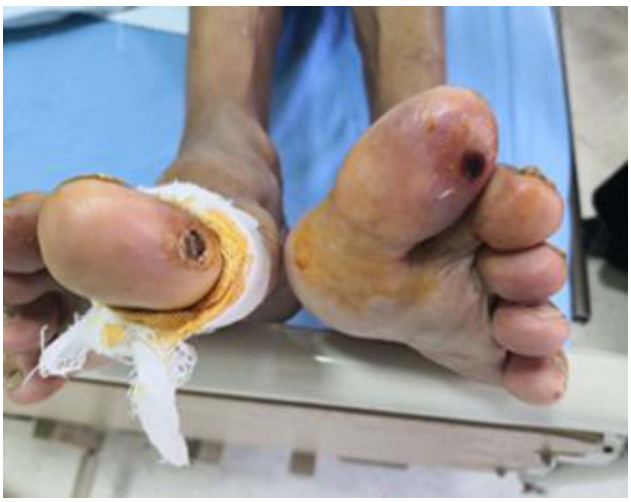

Figure 2. Caciphylaxis on feet.

Discussion

Calciphylaxis is a complex disorder of microvascular calcification. Several reports suggest that the mean age at the time of diagnosis is from 50 to 70 years, very few patients are children[2], and ~60–70% of patients with calciphylaxis are women[1,3,4]. Our patient is a 66-year-old male.

The possible pathogenesis is due to vessel calcification occurrence, resulting from reductions in the arteriole's blood flow because of the vascular endothelial injury, which causes cutaneous arteriolar narrowing and a hypercoagulable state that cause tissue infarction([1,2,7].

It presents classically with unpainful cutaneous necrosis and ulceration[1], as in our case.

The delay in diagnosis illustrates the challenge of recognizing this disease in its early course, especially in the absence of kidney disease[1,7], as in our case.

The differential diagnosis with the early plaque-only presentation may be indistinguishable from that of our patient, who presented with bilateral lesions, which spread and ulcerated[1,8].

Nonuremic calciphylaxis occurs in the presence of malignancy, alcoholic liver disease, connective tissue disease, hyperparathyroidism, diabetes, abnormalities in calcium and phosphate, vitamin D administration, and chronic inflammation[3,4,7,9].

Calciphylaxis is considered a manifestation of dysregulated calcium-phosphorous metabolism in dialysis patients due to the high prevalence of mineral bone abnormalities, the frequent use of calcium salts and vitamin D, and the original description of parathyroid hormone, and vitamin D as sensitizing agents in Selye's model[10].

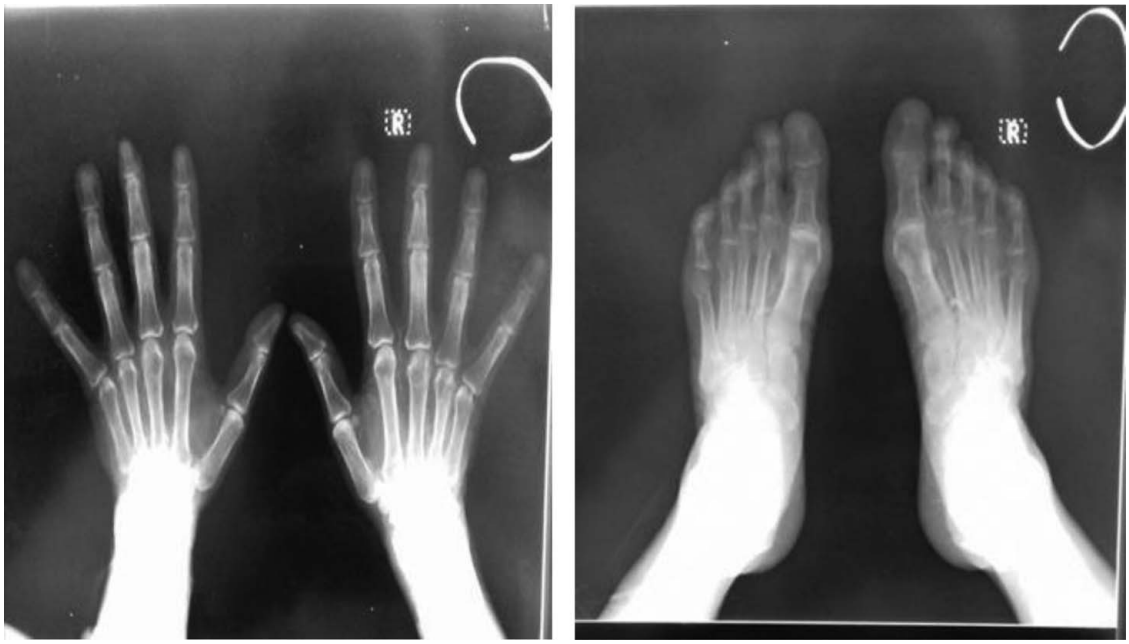

Figure 3. An radiograph of hands and feet revealed calcifications.

Recent studies showed the involvement of extracellular matrix protein G1a, a potent inhibitor of vascular calcification whose action requires vitamin K–dependent carboxylation. Thus, the anticoagulant vitamin K antagonists could interfere with its action and thus boost the calcification process[3,4,11].

Reported risk factors of CUA are female sex, obesity, diabetes mellitus, vitamin K antagonists, and end-stage renal disease[12]. Obesity and diabetes mellitus are also risk factors for calciphylaxis in patients without end-stage renal disease[3,4,9].

There are no specific laboratory findings, like the increase in parathyroid hormone levels and the product calcium by phosphorus, but they were all normal in our case[3,4,8].

When standard X-rays and computed tomography scans were performed, calcifications were identified in arteries, arterioles, both, or extravascular areas, as in our case. Doppler ultrasound revealed mostly medial calcification sclerosis associated with nonsignificant stenosis[12,13]; meanwhile, it was normal in our case.

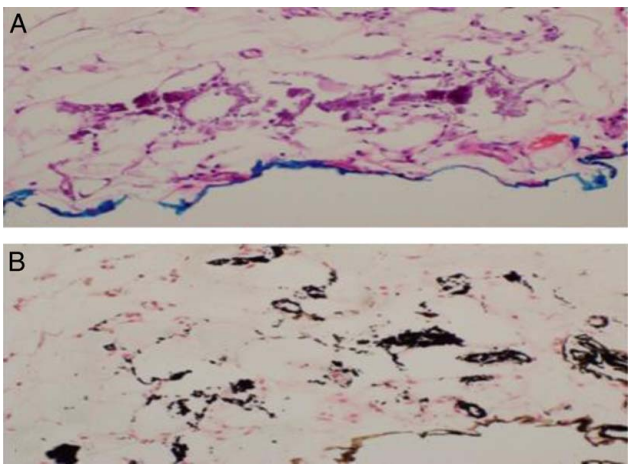

Figure 4. Skin biopsy with Von Kossa staining, showing calcification.

Calciphylaxis is a rare but devastating disorder most commonly observed in patients with end-stage renal disease, although it does occasionally develop in patients with acute renal failure, normal renal function, or earlier stages of chronic kidney disease[1]. Diagnosing calciphylaxis requires a high index of suspicion. A definitive diagnosis is made after a skin biopsy of one of the lesions. A skin biopsy is more frequent among nondialyzed cases and confirms the diagnosis in 65% of cases[14]. In our case, the biopsy confirmed the diagnosis. Wound care, avoidance of local tissue trauma, painkillers, bisphosphonates, sodium thiosulfate, and parathyroidectomy are the suggested treatments[15–19], and that is how we managed our patient.

The outcomes in calciphylaxis patients remain poor, with a mortality rate at ~30% at 6 months and 50% at 12 months. Septicemia from the infected wounds is the main cause of death. The morbidity is related to pain, advanced wounds, and recurrent hospitalizations[20].

Only four case reports in the literature describe calciphylaxis in patients with psoriasis, three of them occurred in patients on dialysis, in the setting of end-stage renal failure, two of whom had previous parathyroidectomies, and only one in the setting of psoriasis without normal kidney function[3,4,21–23]. To the best of our knowledge, this was the first case that describes calciphylaxis in the setting of psoriatic arthritis.

Conclusion

We revealed a case of calciphylaxis in a patient with psoriatic arthritis. For that, a suspicion of calciphylaxis should be maintained in patients with underlying inflammatory mechanism diseases.

Ethical approval

Ethical approval by Ethical committee of Faculty of medicine, Damascus University, Syrian Arab Republic, IRB:DH259894, 2023.

Consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Sources of funding

Not applicable.

Author contribution

Y.H. and N.K.: manuscript writing and editing, review and approval of the final manuscript; A.H. andO.A.: designed and acquired data for the work and approval of the final manuscript; M.K.: clinical follow-up, literature review and shared her expert opinion to support treatment decision and also revised it. Also approval of the final manuscript.

Conflicts of interest disclosure

The authors have no conflicts of interest to declare.

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Guarantor

Yara Hodifa. E-mail: yarahd33@gmail.com.

Data availability statement

The case data is available.

Provenance and peer review

Not commissioned, externally peer-reviewed.

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