

A leg ulcer with hard, yellow projections

N Gomes¹ MD, A Cerejeira¹ MD, CS Moura² MD, JM Lopes²⁻⁴ PhD, T Baudrier¹ MD, F Azevedo¹ MD

Affiliations: ¹Department of Dermatovenereology of Centro Hospitalar Universitário de São João, Porto, Portugal,

²Department of Pathology of Centro Hospitalar Universitário de São João, Porto, Portugal, ³Cancer Signaling and Metabolism Group, Institute for Research and Innovation in Health Sciences (i3S), University of Porto, Portugal,

⁴Department of Pathology, Institute of Molecular Pathology and Immunology, University of Porto (IPATIMUP), Porto, Portugal

Corresponding Author: Nuno Gomes, Alameda Prof. Hernâni Monteiro, 4200-319 Porto, Portugal, Tel: 351-225512100, Email: nunompretogomes@gmail.com

Abstract

Gout is a multisystem disease that may present in different ways. We report an elderly man who presented with a large ulcer of the left leg with hard yellow projections evolving for one year. Analytical study revealed a normal uric acid level, but histopathology showed a focal basophilic acellular material compatible with a gouty tophus. This tophus represents the cardinal feature of advanced gout and may present several challenges to wound care professionals. In fact, the ulcer in our patient persisted after one-year follow-up. Our aim is to alert clinicians about a rare cutaneous presentation of gout that may be increasingly diagnosed.

Keywords: calcification, crystals, gouty tophus, leg ulcer, urates

Introduction

Gout may present in different ways. Rarely, a gouty tophus may be large enough to cause a leg ulcer, which may be very difficult to heal. Herein, we present a rare case of a gouty tophus with secondary calcification that presents several challenges to wound care professionals.

Case Synopsis

An 80-year-old obese man with antecedents of stroke, heart failure, atherosclerosis, hypertension, and gout (for 30 years), presented with a painless ulcer of the medial left leg (**Figure 1**). The ulcer measured 4 centimeters in maximum diameter, was covered by hard yellowish projections of stony

consistency, and had evolved for one year; he denied local trauma or insect bite. There was no regional lymphadenopathy and systemic examination was otherwise normal.

Complete blood count and hepatic and renal function tests were normal. The uric acid was

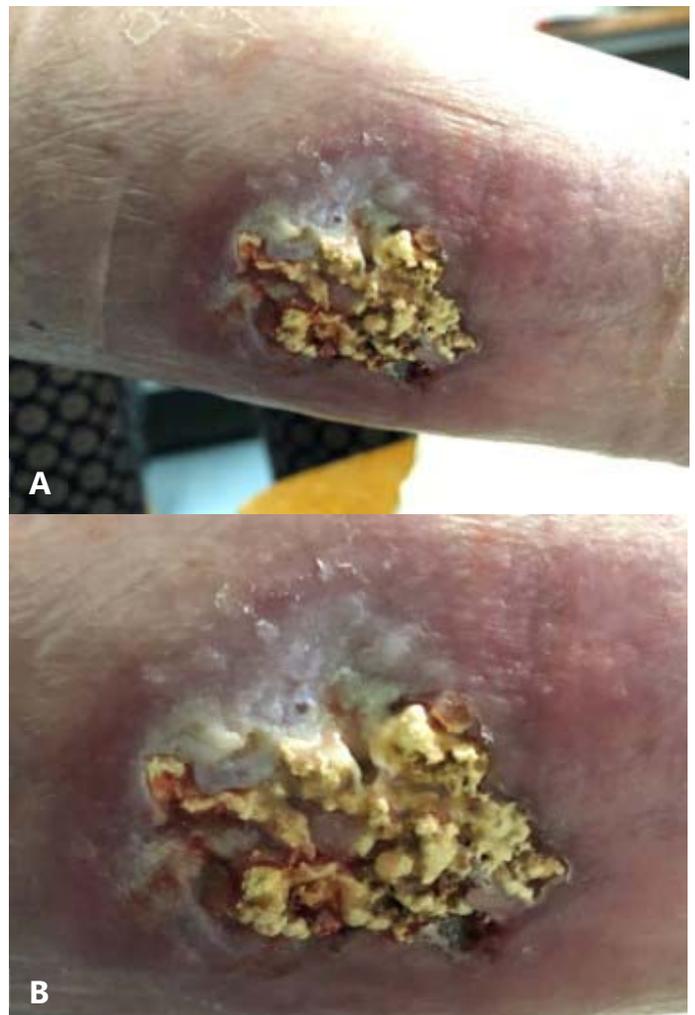


Figure 1. A) Clinical features of the left leg ulcer covered by hard yellowish projections of stone consistency. **B)** Detail of the left leg ulcer with the yellowish projections highlighted.

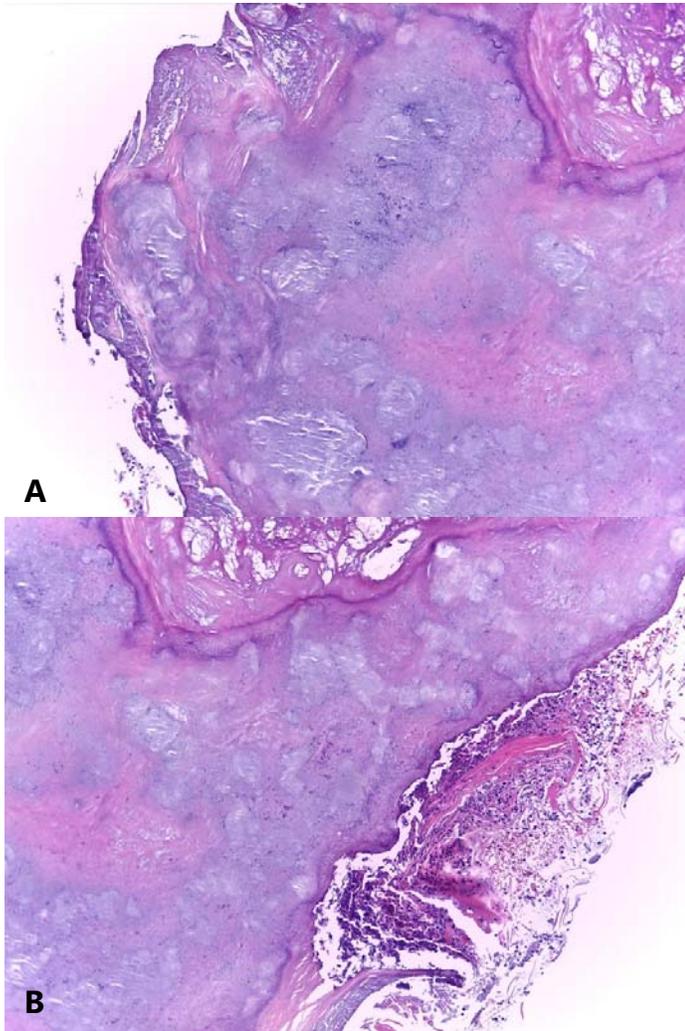


Figure 2. A) Histopathological features of the edge of the ulcer, showing a focal basophilic acellular material. H&E, 100 \times . **B)** Highlight of the fibrinoleukocytic exudate. H&E, 200 \times .

2.7mg/dL (normal range 3.6-8.2mg/dL). Serum calcium, phosphate, magnesium, vitamin D₃, and calcitonin were within normal values. Parathormone was 125pg/mL (normal 10.0-65.0pg/mL). The left leg X-ray showed dystrophic gross calcifications of the superficial soft tissues of the middle third of the posterior area. The histopathological examination of the ulcer edge revealed a focal basophilic acellular material with fibrinoleukocytic exudate without other changes (**Figure 2**). Even with a low uric acid after treatment with allopurinol, the ulcer persists after one-year follow-up. The patient is under treatment with weekly hydrocolloid dressings. Monitoring and treatment of his atherosclerosis, hypertension, and obesity are ongoing.

Case Discussion

Gout develops in four stages: asymptomatic hyperuricemia, gouty attack, intercritical period, and chronic gouty arthritis [1]. The gouty tophus is the cardinal feature of advanced gout and typically occurs more than a decade after the first presentation of gout in the context of untreated hyperuricemia. It represents an organized chronic foreign body granulomatous inflammatory response to monosodium urate (MSU) crystals [1-3]. Histologically, a tophus is characterized by a subcutaneous accumulation of MSU crystals surrounded by chronic mononuclear and giant cell inflammation [2]. In formalin-fixed material, the crystals will usually have dissolved and there are characteristic, amorphous pink areas corresponding to the sites of crystal deposition [4].

Tophi generally form in or close to joints, in subarticular regions of bone, bursae, tendon sheaths, and articular cartilage. In fact, these lesions can exist anywhere on the body [1, 2, 5]. Tophi may also form at sites of trauma, such as the anterior shin [1]. Despite the propensity for these sites, surprisingly ulceration over gouty tophi remains uncommon, even in the presence of quite large nodules [2, 6]. However, some tophi develop a large, bullous covering consisting of necrotic dermis that ruptures, leaving an ulceration that can take months or years to close as drainage continues [1, 4]. Cutaneous calcification is an important finding to distinguish tophaceous deposits. Furthermore, tophi may undergo dystrophic calcification that can lead to diagnostic confusion [1]. A recent study showed that old age, large tophus size, and lack of protective sensation were independent risk factors for ulceration over tophi [7]; all of them likely played a role in this patient.

Conclusion

As the prevalence of gout increases, dermatologists will see more cutaneous manifestations of this old disease, such as ulcerated tophi. Also, the development of ulceration overlying a gouty tophus has been associated with significant morbidity [2, 5,

7]. Thus, diagnosing and treating these ulcers is an uncommon but important clinical challenge.

References

1. Falasca GF. Metabolic diseases: gout. *Clin Dermatol*. 2006; 24:498-508. [PMID: 17113968].
2. Patel GK, Davies WL, Price PP, Harding KG. Ulcerated tophaceous gout. *Int Wound J*. 2010; 7:423-7. [PMID: 20840184].
3. Chhana A, Dalbeth N. The gouthy tophus: a review. *Curr Rheumatol Rep*. 2015; 17:19. [PMID: 25761926].
4. Molina-Ruiz AM, Cerroni L, Kutzner H, Requena L. Cutaneous deposits. *Am J Dermatopathol*. 2014; 36:1-48. [PMID: 23249837].
5. Forbess LJ, Fields TR. The broad spectrum of urate crystal deposition: unusual presentations of gouty tophi. *Semin Arthritis Rheum*. 2012; 42:146-54. [PMID: 22522111].
6. Lam G, Ross FL, Chiu ES. Nonhealing ulcers in patients with tophaceous gout: a systematic review. *Adv Skin Wound Care*. 2017; 30:230-237. [PMID: 28426572].
7. Xu J, Lin C, Zhang P, Ying J. Risk factors for ulceration over tophi in patients with gout. *Int Wound J*. 2017; 14:704-707. [PMID: 27723248].

Potential conflicts of interest

The authors declare no conflicts of interests.