

Gouty Panniculitis: A Case Report and Review of the Literature

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Gouty panniculitis, with deposits of urate crystals in the subcutaneous tissue, is a rare dermatologic sequela of gout. We report a case of a 37-year-old Hispanic man who presented with ulcerating nodules on the posterolateral aspect of his legs. An elevated serum uric acid level along with the findings of the histopathologic examination supported a diagnosis of gouty panniculitis. The clinical features, histology, and therapy of this rare manifestation of gout are reviewed.

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Case Report

A 37-year-old Hispanic man presented with nodules of the lower extremities that had been increasing in both size and number for approximately 4 years. Tender malodorous ulcers that drained an opaque amber liquid developed on the nodules on the posterolateral aspects of the patient's legs (Figure 1). The patient had been diagnosed with multiarticular gouty arthritis 6 years prior. His medical history also included osteoarthritis and hypercholesterolemia. The patient was being treated with indomethacin 25 mg twice a day for gouty arthritis. He had no known drug allergies. Family medical history revealed that the patient's father also had gout. The patient did not smoke and drank alcohol occasionally.

Results of a physical examination revealed multiple, tender, indurated, ulcerated plaques with serous drainage on the posterior aspects of the legs. There were firm, nontender nodules over the anterior border of the shins as well. The patient exhibited degenerative changes of the distal interphalangeal joints of his hands.

Results of laboratory studies revealed an elevated serum uric acid level of 12.5 mg/dL (reference range, 3.0–7.0 mg/dL), an elevated erythrocyte sedimentation rate of 48 mm/h (reference range, 0–11.0 mm/h), an elevated blood urea nitrogen level of 24.0 mg/dL (reference range, 8.0–20.0 mg/dL), and an elevated serum creatinine level of 2.0 mg/dL (reference range, 0.6–1.4 mg/dL). The results of the rest of the physical and laboratory examinations were within reference range. Results of the histopathologic evaluation of an ulcerated subcutaneous nodule showed feathery and amorphous grainy material surrounded by a few histiocytes and giant cells (Figure 2).

Indomethacin was discontinued because of increasing blood urea nitrogen and serum creatinine levels. The patient was prescribed colchicine 0.6 mg twice a day and allopurinol 100 mg once a day. The patient's serum uric acid level was returning to normal, and no new skin lesions formed.

Comment

To our knowledge, 3 previous case reports of panniculitis of the legs with urate crystal deposition have been described in the literature. In one report, tender ulcerating nodules that drained an opaque fluid developed on the anterior aspects of the legs of a 69-year-old woman being treated with furosemide, digoxin, and spironolactone for congestive heart failure.¹ The patient had an elevated serum uric acid level of 9.9 mg/dL, as well as elevated serum amylase and lipase concentrations. Results of a skin biopsy showed extensive subcutaneous fat necrosis with surrounding palisading fibroblasts and histiocytes. Examination of a skin sample under polarized light revealed negatively birefringent, needlelike crystals, consistent with urate deposits. The patient had no other manifestations of gout. The patient was told to follow a low-protein, low-purine diet, and she was treated with allopurinol 300 mg/d and probenecid 500 mg/d. Furosemide, digoxin, and spironolactone were continued. Within 6 weeks, the serum lipase, amylase, and uric acid levels returned to reference range.¹

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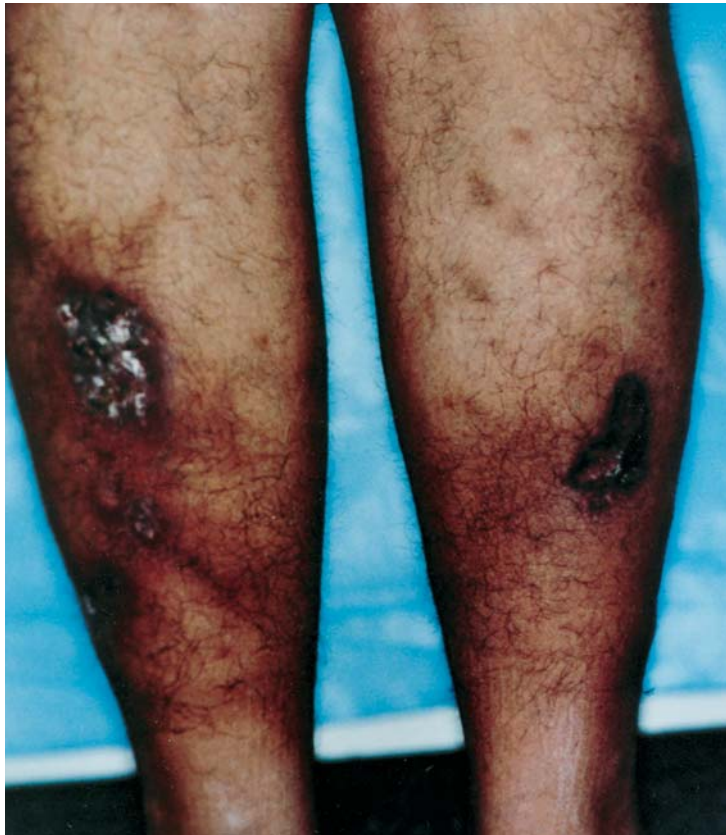


Figure 1. Ulcers on the posterolateral aspect of the lower extremities of a 37-year-old man.

The second case report described a 37-year-old black man with diabetes mellitus, hypertension, chronic renal failure, and polycythemia who presented with painful nodules of the legs.² His medications included metaxalone, furosemide, propranolol, clonidine, and insulin. Laboratory findings included an elevated serum uric acid level of 12.6 mg/dL. Biopsy results showed necrosis with a polymorphonuclear leukocytic infiltrate in the fat lobules of the superficial fascia. Aggregates of fine, negatively birefringent, needlelike crystals were also present. Subsequently, gouty arthritis developed. Treatment with colchicine and allopurinol effectively relieved the arthritis manifestations. Serum uric acid levels normalized, and no new subcutaneous lesions developed.²

The third, and most recent, case report described a 34-year-old white man with gout and hypertension who exhibited multiple, firm, asymptomatic nodules and ulcers on his extremities.³ The only medication he was taking was atenolol. Results of laboratory examination revealed an elevated serum uric acid level of 9.3 mg/dL and an elevated erythrocyte sedimentation rate of

105 mm/h. Biopsy results of a subcutaneous nodule revealed a foreign body granuloma; polariscopy showed long needlelike crystals radially arranged in clusters. The patient started treatment with allopurinol 600 mg/d and in 2 months noted complete remission of his skin lesions.³

Gout is a disease in which crystals of monosodium urate from supersaturated extracellular fluids are deposited in tissues.⁴ The classic presentation is an acute lower extremity peripheral monoarthritis. Incidence of gout peaks in the fifth decade of life, and 95% of cases are seen in men. The usual dermatologic manifestations of acute gout are erythema and swelling over involved joints. In chronic gout, cutaneous deposits of urate crystals called tophi are common. Tophi, the most characteristic lesions of gout, are deposits of monosodium urate crystals with inflammation in the surrounding tissue. Areas most commonly affected are the ears, tongue, vocal folds, fingertips, cartilage, and tendons.⁴

Gouty panniculitis, with deposits of urate crystals in the subcutaneous tissue, is a rare dermatologic manifestation of gout; a review of the literature showed only 3 previous clinical case reports.¹⁻³ In all cases, the initial manifestations were nodules on the lower extremities. In 2 of the reported cases, these lesions were the first symptom of gout. All 3 patients also had an elevated serum uric acid level. Microscopic examination of biopsy specimens revealed deposits of urate crystal in the subcutaneous fat, with or without an inflammatory response or necrosis.¹⁻³ Fixation in ethanol or freezing is required for preservation of crystals in histologic preparations.³ In all cases, examination of lesion samples with polarized light showed negatively birefringent needlelike crystals.¹⁻³

The etiology of gouty panniculitis relates to the underlying cause of the elevated serum uric acid level. In primary gout, there are no underlying diseases or predisposing medications. Secondary gout can occur with hemopoietic disorders and the use of drugs such as spironolactone and furosemide, which are known to cause an elevation in serum uric acid. Antecedent fat damage caused by elevated serum amylase or lipase levels, as well as circulatory stasis in the legs secondary to varicosities and heart failure, probably contribute to the deposition of urates in the skin. In 2 reported cases of

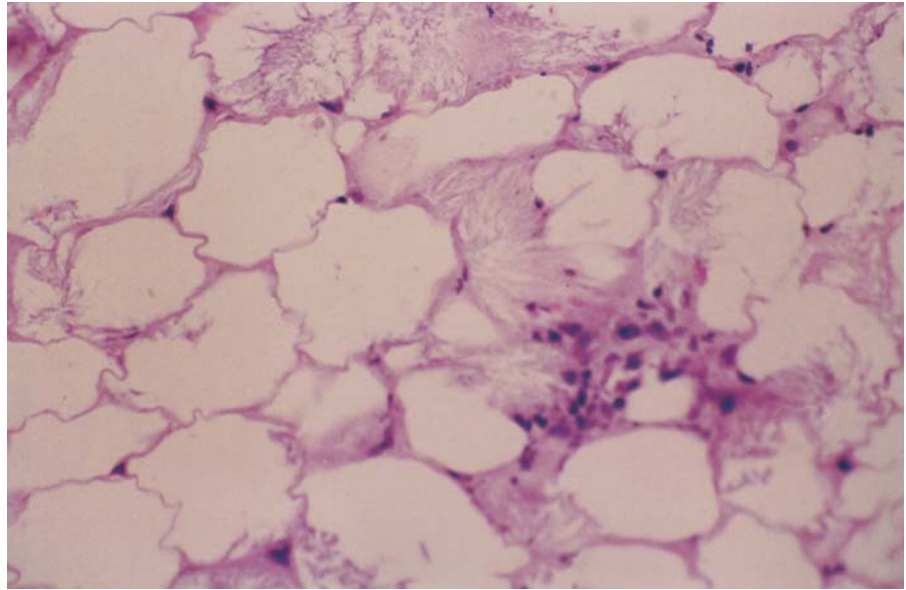


Figure 2. Feathery and amorphous grainy material surrounded by a few histiocytes and giant cells in ulcerated subcutaneous nodule (H&E, original magnification $\times 40$).

gouty panniculitis, patients were taking the above-mentioned medications, which block renal secretion of uric acid; these findings may provide an explanation for the elevated serum uric acid.

The differential diagnosis of lobular panniculitis containing crystals includes sclerema neonatorum, subcutaneous fat necrosis of the newborn, post-steroid panniculitis, factitial panniculitis, and hemorrhagic panniculitis.² Treatment of gouty panniculitis requires the use of medications such as allopurinol, colchicine, and probenecid to decrease serum uric acid levels.

Conclusion

Deposits of urate crystals in the subcutaneous fat are rare manifestations of gout. Gouty panniculitis

presents as subcutaneous nodules on the lower extremities as the result of a primary or secondary increase in serum uric acid levels.

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