Chronic tophaceous gout in a woman with extensive allergic history to gout medications

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A 73-year-old woman with a history of chronic tophaceous gout, hypertension, chronic kidney disease, heart failure, and hypothyroidism presented to the hospital for allopurinol desensitization. She was diagnosed with gout more than 10 years ago when she presented with acute arthritis in her hands, elbows, and feet. She was started on multiple urate-lowering therapies in the past but could not tolerate allopurinol (generalized rash), febuxostat (generalized rash), and pegloticase (difficulty swallowing). Given her allergic response to the therapy, she has not been taking any urate-lowering drugs for the past 10 years. Physical examination showed multiple tophi at both hands, fingers, elbows, and toes (Figures 1–3). She had pain on palpation at the metacarpophalangeal joints in both hands and pain at the metatarsal joints in both feet. There was limited motion with flexion and extension in her right elbow.

Laboratory on admission showed a uric acid level of 11.3 mg/dL (ref 2.4–7.0 mg/dL), erythrocyte sedimentation rate 7 mm/hr (ref 0–30 mm/hr), C-reactive protein 0.6 mg/dL (ref 0–0.5 mg/dL), creatinine 1.7 mg/dL, and eGFR 29.5. The patient was started on an allopurinol desensitization protocol starting with 50 mcg/day, increasing to 100, 200, 500, and 1000 mcg/day over the course of 10 days in the hospital. Her joint pain improved while on allopurinol. The patient was discharged home with allopurinol 5 g/day and was instructed to titrate the dose to 10 g/day for 2 days and then 25 g/day for one month and follow up in the rheumatology clinic. The uric acid level at discharge was 9.0 mg/dL.

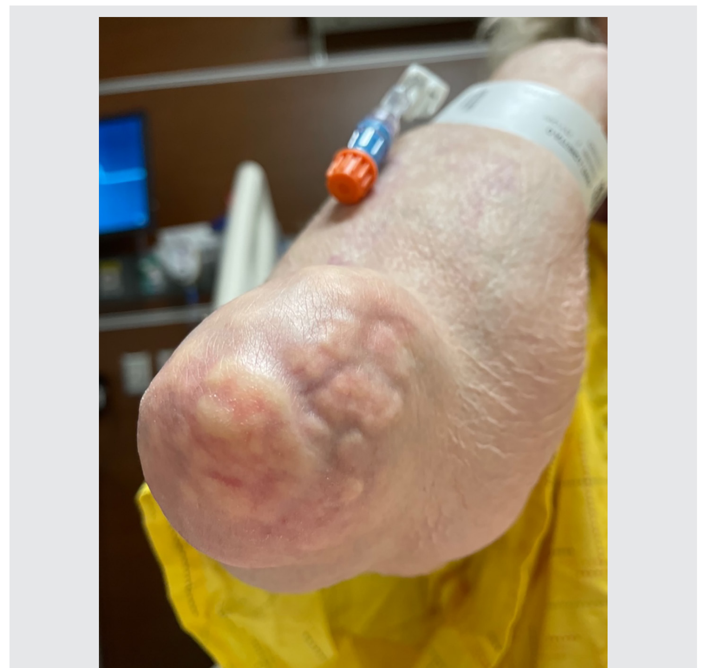

Figure 1. A tophus measures 10 cm × 5 cm in the right elbow.

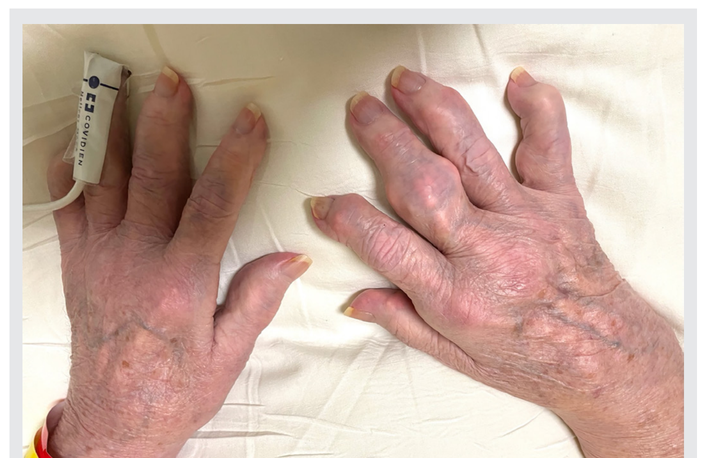

Figure 2. Tophi in both hands-prominent at the right middle proximal interphalangeal joint.

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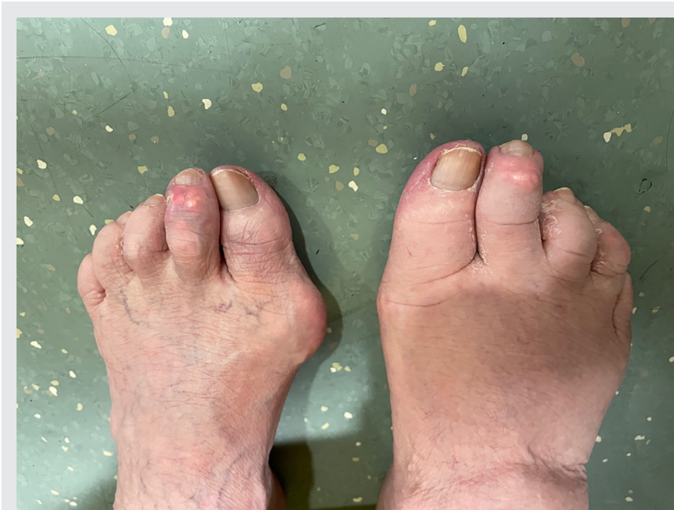

Figure 3. Tophi at both proximal interphalangeal joints of the second toes and tophi and a 4 cm × 3 cm tophus at the first left metatarsophalangeal joint.

How should this patient with uncontrolled chronic tophaceous gout and an allergic history to allopurinol be treated? A study by Fam demonstrated that slow desensitization with oral allopurinol resulted in a 78% success rate; the maintenance dosage of allopurinol in this study in 25 patients ranged from 50 mg/day to 300 mg/day.[1] The study by Mandell included 66 adult patients with chronic refractory gout who were treated with pegloticase every 2 weeks and reported a 34.8% complete resolution of all photographed tophi and 69.6% complete resolution of at least one tophus without development of new tophi or progressive enlargement of any other tophus. The median time to resolution was 162 days.[2] In addition to cosmetic purposes, the indication of surgery is usually limited to the complications of tophaceous disease, such as nerve compression, joint deformity, intractable pain, or infection.[3]

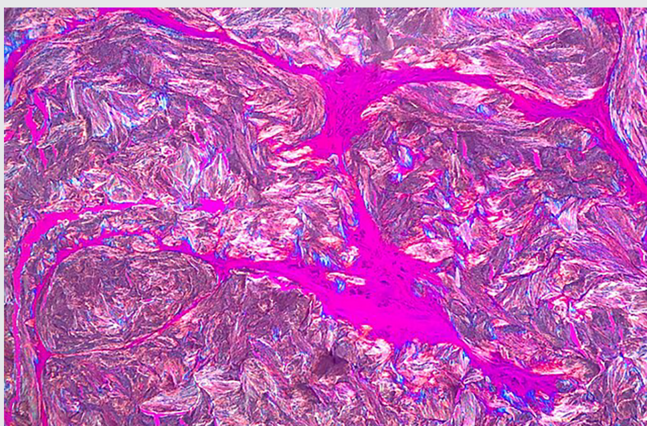

Figure 4. Light microscopy of the gout tophi shows monosodium crystals surrounded by a thin wall of fibrous tissue dividing the tophus into multiple compartments. Photo obtained from https://commons.wikimedia.org/w/index.php?search=tophaceous+gout+&title=Special:MediaSearch&go=Go&type=image. Accessed 12-16-2023.

Tophi consist of monosodium urate (MSU) crystals surrounded by a thin wall of fibrous tissue dividing the tophus into multiple compartments. Some tophi were encapsulated. Light microscopy reveals a crystalline center, i.e., an acellular (‘necrotic’) collection of MSU crystals (Figure 4).

Keywords: gout, tophi, allopurinol allergy

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