CASE REPORT

Miliarial gout: a rare presentation of extensive cutaneous tophi

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Abstract

Gout is a systemic disorder characterized by hyperuricemia and recurrent arthritis, most involvement of ankles, midfoot joint and first metatarsophalangeal joint, with monosodium urate crystals deposition in synovial fluid and other tissues. We present a case of 53-year-old male, who had several nontender, white-yellow papules and plaques over his elbows, knees and arms with chalk-like substances and crust on inflammatory base wax and wane in the past 2 years. Upon histopathology examination of the skin lesions, it reported as intradermal urate tophi and miliarial gout was diagnosed. This case highlights the importance of considering unusual cutaneous tophi in the differential diagnosis of deposition disorders.

Learning point for clinicians

Miliarial gout is extremely rare and usually presents as multiple milia-like papules containing a chalk-like substance on the forearms, shins, and inner thighs. Further workup for hyperuricemia or history of gout should be performed, and treatment should be aggressive to avoid further complications.

Case presentation

A 53-year-old Taiwanese man presented with a 2-year history of multiple nontender, white-yellow papules and plaques on the elbows, knees, and upper arms. Over the preceding week, several of the papules on the upper arms had become tender, inflamed, and ulcerated with crust, and contained a chalk-like substance on a violaceous base (Fig. 1A). The patient reported occasional arthralgia of bilateral wrists and the right ankle over the past 7 years. His medical history included gout, cerebrovascular accident, alcoholic liver cirrhosis, gastroesophageal reflux disease, and pulmonary tuberculosis. His gout previously had been treated with benzbromarone and colchicine, but he had not taken any medication for 3 years prior to this presentation. Physical examination revealed joint deformity of bilateral elbows and knees as well as right hemiparesis due to previous stroke. Upon further investigation, his serum uric acid level was elevated at 10.7 mg/dl (normal range, 2.3–7.0 mg/dl), while a complete metabolic panel and blood cell count were normal. A wound culture from one of the ulcerations revealed presence of Staphylococcus aureus. Subsequently, excisional biopsy of a 2-mm papule with surrounding area of induration on the left elbow was performed. Histopathology demonstrated deposition of amorphous pink material in the reticular dermis and subcutaneous tissue with focal lymphohistiocytic infiltration (Fig. 1B). Given these clinical and laboratory findings, diagnosis of miliarial gout was made. The patient was referred to a rheumatologist for management, but was lost to follow-up.

Three months later, he was admitted to the infectious disease ward for cellulitis of the right ankle and wrist. A blood
culture revealed presence of *S. aureus* and *Escherichia coli*. He succumbed to sepsis and died due to metabolic acidosis and multiple-organ failure later.

**Discussion**

Cutaneous tophi commonly present as firm, pink nodules with overlying vascularity around joints, olecranon bursae, finger pads, tendons (e.g. Achilles), and ear helices several years after onset of gouty arthritis. In 2007, Shukla *et al.* coined the term ‘miliarial gout’, which involves multiple milia-like papules containing a chalk-like substance on areas of erythema, as seen in our patient. Miliarial gout is extremely rare, and only 5 cases have been reported in the English literature. The lesions usually are located on the forearms, shins, and inner thighs. Histopathology reveals a palisaded granuloma surrounding amorphous gray material with a feathery appearance, while specimens fixed in alcohol demonstrate doubly refractile monosodium urate crystals.

In 1999, Vázquez-Mellado *et al.* reported that cases with intradermal urate tophi appeared to have advanced disease. In the present case, the patient had long-term undertreated gout and hyperuricemia complicated by cellulitis and sepsis. Allopurinol alone or in combination with colchicine has been used to treat miliarial gout. Nonsteroidal anti-inflammatory drugs, colchicine and steroids are options during an acute attack. These tophi occur in ~30% of patients who are untreated for 5 years. However, with aggressive treatment, these tophi may dissolve. The differential diagnosis includes eruptive xanthoma and granuloma annulare. Eruptive xanthomas usually are transient and associated with severe hypertriglyceridemia. On the other hand, granuloma annulare may occur in patients with diabetes mellitus or thyroid disease, and histopathology reveals dermal interstitial histiocytic infiltration with variable mucin deposition.

Miliarial gout should be considered in cases of deposition disorder. We recommend that clinicians consider miliarial gout in patients with a known history of hyperuricemia or gout, and ask the histopathologist for a fixation technique that facilitates proper diagnosis.

**Conflict of interest:** None declared.

**References**