

# Unusual Presentation of Bilaterally Symmetrical Gout Tophi on Elbows

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## ABSTRACT

Gout is a crystal deposition rheumatic disease. It is a more common inflammatory arthritis in men, characterized by formation of monosodium urate crystals in the synovial fluid of joints and in other tissues. It commonly deposits in the feet, ankles, knees, hands, wrists, and elbows. A 54-year-old male presented with big symmetrical masses developed gradually on both the elbows over the last 4 years. Radiographs of both the elbows showed soft tissue swellings with no involvement of bones. Masses were of intermediate signal intensity on T1-weighted magnetic resonance images and high signal intensity on T2-weighted images. Fine needle aspiration cytology was performed in masses on both the elbows. Light microscopy of the Giemsa- and Papanicolaou-stained smears demonstrated abundant granular amorphous material and scattered stacks of slender needle-shaped crystals, associated with chronic inflammatory infiltrate. Based on the above findings, a diagnosis of gout tophi was made. After informed consent with the patient under general anesthesia, marginal resection of tophi were performed in the same session with clear margins. We describe the treatment of a patient with long-standing chronic gout tophus located bilaterally at the elbow joint complicated by bursal deposit with rapid progression during the last 4 years. To the best of our knowledge, our case presentation may be the first case report where huge tophi were symmetrical and bilaterally presented on both the elbows.

**Keywords:** Gout, elbow, tophi

## INTRODUCTION

Gout is a crystal deposition rheumatic disease. It is an inflammatory arthritis which is characterized by the formation of monosodium urate (MSU) crystals in the synovial fluid and in other tissues, and is more common in men (1). It commonly deposits in the feet, ankles, knees, hands, wrists, and elbows. Generally disease progresses through four clinical stages if left untreated. These stages are asymptomatic hyperuricemia, acute gout, intercritical or interval gout, and chronic tophaceous gout (2). The major risk factors for gout are high purine consumption, ethanol use, and elevated body weight (3). In this report, we described the rare presentations of symmetrical, bilateral, extensive, and neglected tophi on both elbows.

## CASE PRESENTATION

A 54-year-old male presented with big symmetrical masses on both elbows which had developed gradually over the last 4 years (Figure 1). Physical examination revealed limited range of motion of both elbow joints; approximately 15 degrees both in flexion and extension. These masses were firm, semimobile, and nontender. The patient refused to refer to a specialist before, as the masses were painless. Radiographs of both the elbows showed soft tissue swellings without involvement of bony cortex. Masses

were of intermediate signal intensity on T1-weighted magnetic resonance (MR) images and high signal intensity on T2-weighted MR images (Figure 2). Tru-cut biopsy was performed on both the elbows, and light microscopy of the Giemsa- and Papanicolaou-stained smears demonstrated abundant granular amorphous material and scattered stacks of slender needle-shaped crystals, associated with chronic inflammatory infiltrate (Figure 3). In the light of these findings, gut disease “tophi” was diagnosed. Blood count was in normal ranges. Serum uric acid was 6.0 mg/dL (2.5–7 mg/dL). Serum electrolytes, thyroid and parathyroid hormones, and renal function tests (albumin, creatinin, and urea) were within normal limits. A 24-hour urine analysis was done to rule out other pathologies. Different tests to exclude connective tissue diseases (ANA, antinuclear antibody) were performed.

After written informed consent was obtained from the patient, under general anesthesia, marginal resection of tophi were performed bilaterally in the same session with clear margins (Figure 4). No wound problem or recurrence was recorded in the postoperative period. The patient had painless range of motion of 120 degree flexion at the first week of surgery. At the third year of operation, he had no pain or motion limitation in his elbows and no recurrence was noted.

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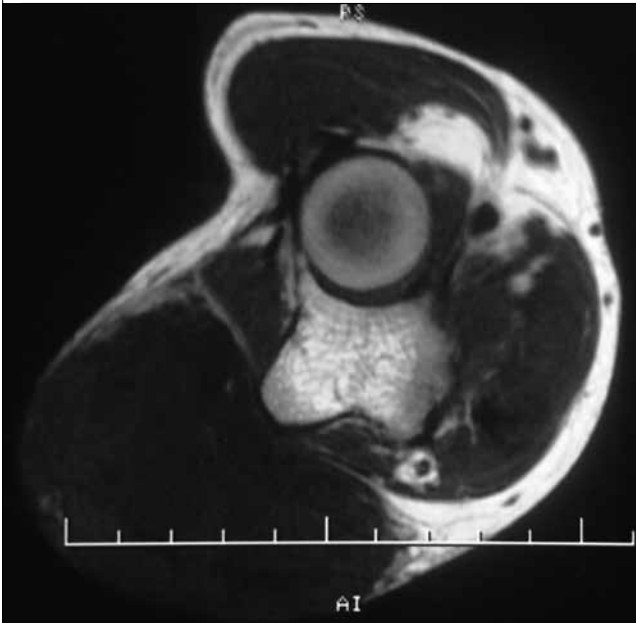
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Figure 1. Clinical presentation of the patient with bilateral symmetric elbow masses



Figure 2. Axial T1-weighted MRI scan revealing extensive tophus extending ventrally



## DISCUSSION

In this case report, treatment of a patient with long-standing chronic gout tophus located bilaterally at the elbow joints, which was complicated by bursal deposit and rapid progression during the last 4 years, was reported.

Gout is a metabolic disease affecting 0.3% of the population in Europe and North America (4). It is characterized by an elevated serum urate concentration and recurrent attacks of arthritis and MSU crystals in synovial fluids (5). In chronic tophaceous gout, MSU is deposited in articular cartilage, the periarticular soft tissue, synovium, and joint capsule. The period for the formation of tophi following the first episode of the acute gout arthritis is estimated at an average of 11.6 years (6). Tophi are seen in approximately 50% of 10-year cases (7). If the hyperuricemia is left untreated for many years, painless subcutaneous or bursal deposits of aggregated crystals of MSU or tophi form, and the pa-

Figure 3. Histologic examination revealed abundant granular amorphous material and scattered stacks of slender needle-shaped crystals, associated with chronic inflammatory infiltrate

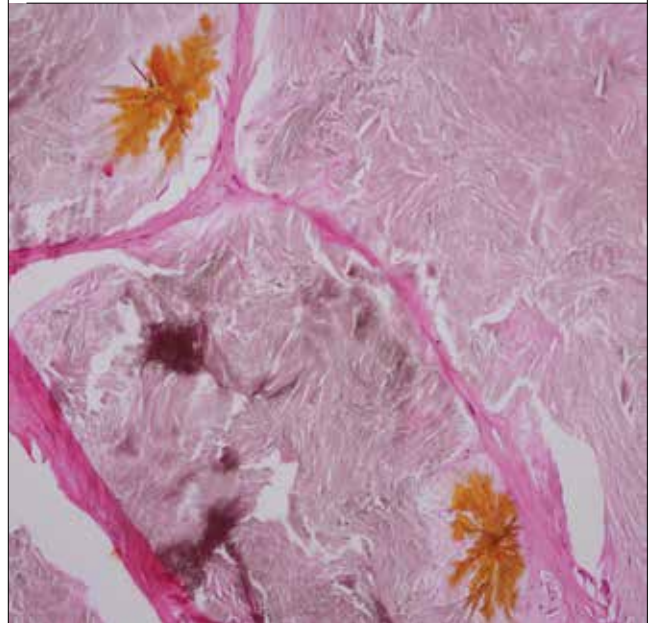
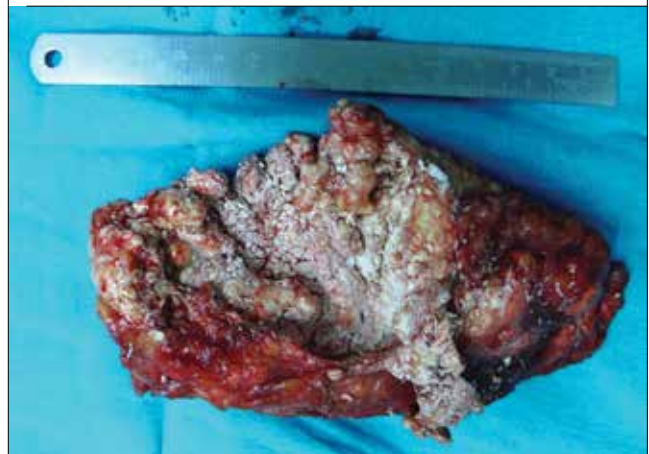


Figure 4. Macroscopic appearance showing bursal deposition of gout tophi in the resected specimen after surgery



tient develops nephropathy and urolithiasis. The essential lesion of tophaceous gout is the deposition of crystals in cartilage, synovial membrane, periosteum, subchondral bone, bone marrow, tendons, ligaments, bursae, subcutaneous fat, and skin (8-10). In the upper extremity, tophi are usually located in the subcutaneous tissues, more commonly around the elbow and proximal interphalangeal joints (11).

Gouty arthritis has characteristic radiographic manifestations. Although plain radiographs are less sensitive than other imaging techniques, they remain the imaging technique of choice for initial evaluation of gouty arthritis. The use of MR imaging and Computed Tomography, and ultrasound is seldom necessary; however, occasionally a tophus has an unusual presentation

mimicking a neoplasm or infection (12). In 2005, Carnero et al. (13) reported a case report of a malignant fibrous histiocytoma arising in a gouty tophus at the second metacarpophalangeal joint. Although its radiological findings strongly suggest the gout tophus, we performed open biopsy before the surgical treatment to eliminate any probable malignancy. In gout, most relevant lesions are near the skin surface (14) like our presented case. Bilateral symmetrical elbow involvement as in our case is very uncommon and review literature revealed no reports of symmetrical and huge gout tophi manifestations in either adolescents or adults.

The articular spaces are usually preserved for a long time, before destruction is caused by crystal deposition in the hyaline cartilage and synovial membrane, which lead to degeneration and ankylosis (11). In our patients there were no joint degeneration or ankylosis but limited range of motion that was resolved after surgery with physiotherapy, which was probably because of the mass that stretched the joint capsule.

## CONCLUSION

Gout tophi can reach large size when neglected and can cause painless joint limitation. To the best of our knowledge, our case presentation may be the first case report where huge tophi were symmetrical and bilaterally presented on both the elbows.

**Informed Consent:** Written informed consent was obtained from patient who participated in this study.

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**Conflict of Interest:** The authors have no conflicts of interest to declare.

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