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Title: **Refractory Gout: A Potential Sign of a Life-Threatening Disease**

Objective(s): Refractory gout is characterized by flares despite appropriate therapy. In case of inadequate response to standard treatment in the setting of acute gout, it is crucial to exclude alternate diagnoses. Here, we describe a case of recurrent gout uncovering a life-threatening disease.

Method(s): We report an 86-year-old male known for hypertension, dyslipidemia, chronic kidney disease and atrial fibrillation. Prior to admission, four episodes of acute oligoarticular gout occurred within three months. Involved sites were his MCP joints, right knee and first MTP joint. Urate crystals were identified from a tophus in his left thumb and initial serum urate levels were 554 µmol/L. During each of these four initial episodes, he was treated with tapering doses of prednisone. Increasing doses of allopurinol were introduced by the second flare along with colchicine prophylaxis.

The patient was admitted to our institution for a fifth flare while under prednisone 10 mg/day with serum urate levels of 341 µmol/L. Involved sites were identical, but he had new onset of synovitis in his left ankle. Intracellular urate crystals were identified under polarized microscopy in his left ankle and right knee. Cultures were negative. Allopurinol was maintained and several treatments were used, including prednisone up to 45 mg/day, intra-articular steroids, colchicine and anakinra.

Result(s): A slow improvement was noted; except for his left ankle. A review of his blood work revealed monocytosis since his first gout flare. By the second flare, the patient had developed mild thrombocytopenia and normocytic anemia. Blood smear showed chronic myelomonocytic leukemia. Chest and abdominal computed tomography revealed mild splenomegaly. Bone marrow biopsy was done and confirmed transformation to acute myeloid leukemia. Given persistent left ankle synovitis, a flow cytometry was performed on the synovial fluid revealing 1% blasts and 18% dysplastic monocytes. A diagnosis of leukemic infiltration of the synovium was made in addition to the already confirmed gout. The patient began hydroxyurea but deceased of pneumonia thereafter.

Conclusion(s): Acute gout flare refractory to adequate therapy including high-dose steroids is unusual and should warrant the search for other diagnoses. Our case of an elderly man with abnormal blood count raised the suspicion for a hematologic malignancy. In addition to the refractory gout in the setting of untreated hematologic malignancy, our patient presented with leukemic infiltration of the synovium which explained the absence of response to standard therapy. Clinicians should be aware that leukemia-associated arthritis needs to be diagnosed promptly and may mimic refractory gout.