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When Crystal Arthropathy Presents as Blood Poisoning

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Abstract Gout, or monosodium urate crystal deposition, is a common presentation in adults usually affecting the great toe. Gout is caused by an elevated level of uric acid in the blood, which leads to painful crystal deposition in the joints. Common causes of gout are Hypertension (HTN), Chronic Kidney Disease (CKD), Diabetes Mellitus (DM), alcohol use, diuretics, and high purine meals such as red meat or seafood. Gout flares present with sudden onset pain, warmth, and swelling in a single joint. These symptoms are very similar to an acute septic joint presentation. This case will demonstrate the workup required to differentiate between the two pathologies.

Keywords: *septic arthritis, crystal arthropathy, sepsis, gout, gout-flare*

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1. Introduction

Gout is common in adults, usually affecting the hallux. It is caused by elevated level of uric acid in the blood leading to painful crystal deposition in the joints [1]. Common causes of gout are hypertension, chronic kidney disease, diabetes mellitus, alcohol use, diuretics, and a high purine diet [2]. Gout flares usually present with pain, warmth, and swelling in a single joint. It can be difficult to distinguish between crystal arthropathy and infection, which can lead to delayed treatment and further damage to the joint [3]. The two pathologies should be differentiated with arthrocentesis when suspected [3].

2. Case Description

A 69-year-old male presented with left knee pain for 3 days. He denied fever, chills, or trauma to the knees, however endorsed increased urinary frequency. He had history of hypertension, hyperlipidemia, and chronic kidney disease. Labs significant for leukocytosis of 17.16 K/uL and urinalysis with positive nitrites. On exam, patient with left knee warmth, tenderness, with additional swelling in right knee. X-ray of both knees showed bilateral osteoarthritis. He was admitted for UTI management. The next day, patient had new fever to 102.7F rectal. Labs showed ESR of 105 mm/hr and a CRP of 31 mg/dl. There was concern for septic arthritis and antibiotics were broadened to vancomycin and zosyn. Synovial fluid studies showed left knee with positive monosodium urate crystals, 17,900 cell count, 500,000 red blood cells, monocyte 5%, no white blood cells or organisms. The right knee showed positive monosodium urate crystals, 101,000 cell count, 2000 red blood cells, monocyte 6%, no white blood cells or organisms. Antibiotics were discontinued after 24 hours of negative blood and synovial fluid cultures. The patient was diagnosed with gout and started on colchicine with resolution of symptoms.

3. Discussion

Gout affects the first metatarsophalangeal joint in 73% of cases and one single joint in 90% of cases [1]. In this case, the patient showed atypical bilateral knee involvement. This patient's flare may have been exacerbated by his alcohol use or UTI. During gout flare, macrophages phagocytize monosodium urate crystals leading to release of inflammatory markers such as interleukin-6, tumor necrosis factor, and cyclooxygenase [4]. This same inflammatory process occurs with septic arthritis. Gout flare and septic arthritis both present with similar exam findings, elevated inflammatory markers, and non-specific imaging. Although this patient did not have infection, it is important to recognize that septic arthritis can occur concurrently with an acute gout flare and should be ruled out with a negative synovial fluid gram stain and culture.

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