

Paraneoplastic Arthritis: Acute Myeloid Leukemia presenting as Calcium Pyrophosphate Crystal Arthritis

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Introduction:

Acute calcium pyrophosphate (CPP) crystal arthritis results from CPP deposition in joints causing acute synovitis, clinically resembling the attack of urate gout, hence called pseudogout. It is usually associated with older age, joint trauma, family history, endocrine conditions, and metabolic disorders. Acute myeloid leukemia (AML) comprises clonal expansion of hematopoietic precursor cells in the bone marrow, interfering with the production of normal blood cells. We present a rare presentation of pseudogout in a patient with AML.

Case Presentation:

An 84-year-old male with a past medical history of Parkinson's disease presented with worsening pain and swelling of multiple joints for two weeks. It started on both knees and progressed to both ankles and wrists. He also complained of intermittent fever with night sweats, decreased appetite, and unintentional weight loss of more than 10 pounds over the past few weeks. Vital signs were significant for a fever of 102° F. On physical examination, both knees, ankles, and wrist joints were tender, swollen, and erythematous. Laboratory analysis revealed WBC 22800/mL, hemoglobin 9 mg/dL, platelets 116/mL with differentials showing 23% blast cells. ESR was 112 mm/hr. and CRP 31.18 mg/dL.

Laboratory analysis	Results
Rheumatoid factor	Negative
Uric acid	Negative
Lyme antibody	Negative
Cyclic citrullinated peptide antibody	Negative
Antinuclear antibody (ANA)	Negative
Anti ds-DNA antibody	Negative
Anti-Smith antibody	Negative
Anti SSA antibody	Negative
Anti SSB antibody	Negative

X-ray of the left knee showed severely narrowed joint space with subchondral sclerosis and marginal osteophytes with chondrocalcinosis in the lateral meniscus. Synovial fluid analysis of the left knee showed cloudy fluid, WBC of 21000, with 97 % segmented cells and negative for malignant cells on cytology. Crystal analysis was positive for calcium pyrophosphates diagnosing pseudo gout. Peripheral blood smear showed leukocytosis with approximately 20% blasts. Bone marrow core biopsy revealed 33% CD34 positive blast cells confirming the diagnosis of AML. The patient was started on intravenous steroids for pseudogout with significant joint pain and swelling improvement.

Discussion:

Even though metabolic abnormalities including hyperphosphatemia and hyperuricemia, are the known complications of AML, pseudogout is not one of the known complications. Even though leukemic arthritis (LA) can be one of the uncommon complications of AML usually caused by the infiltration of malignant in the joint space or autoimmune arthritis, there is no sufficient literature to clarify the mechanisms behind the association of pseudogout with hematological malignancies, including AML. A few cases in the literature propose the likely cause of pseudogout in leukemia as paraneoplastic syndrome. Thus, further research must explore pseudogout as a paraneoplastic manifestation of hematological malignancies such as AML.

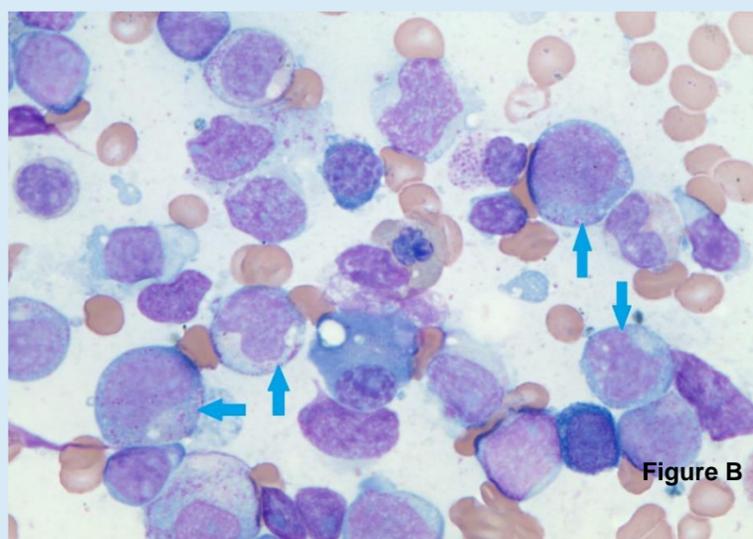
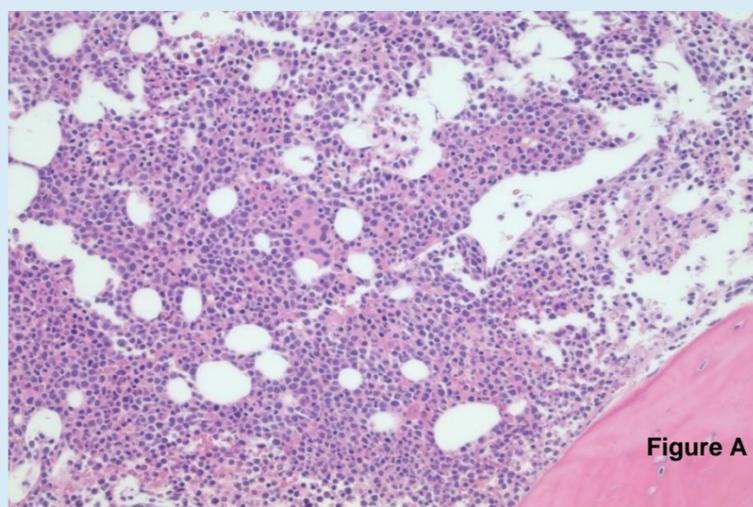


Figure A(non-magnified view) and Figure B (magnified view) of bone biopsy showing blast cells with Auer rods.



Xray of left knee (Figure C) and right knee (Figure D) with chondrocalcinosis.

