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"Joint Pain: Keeping ALL Differentials in Mind"

Introduction: Acute lymphoblastic leukemia (ALL) results from the clonal proliferation of lymphoblasts. ALL is the most common pediatric cancer, accounting for one more than 25% of all pediatric malignancies. It primarily affects children between the ages of 1 and 5, with males being slightly more affected than females. A definitive diagnosis of ALL is made by the presence of ≥20% blasts on bone marrow biopsy. The prodromal stage of ALL may last from weeks to months and presents with nonspecific symptoms such as fever and fatigue. Infiltration of the bone marrow leads to decreased production of other cell lines, leading to anemia, bruising and bleeding, lymphadenopathy, and hepatosplenomegaly. In addition, musculoskeletal manifestations are common, and can even be the isolated presenting symptom as seen in 15-30% of ALL-associated bone pain cases. We describe such a case of ALL presenting with repeated episodes of unilateral joint pain.

Case Presentation: A 3-year-old female presented with left hip pain and limping on two separate occasions. The patient was afebrile with elevated CRP each time. While normal MRI and joint aspirate led to a diagnosis of transient synovitis on initial presentation, MRI on subsequent presentation was concerning for septic arthritis. Infectious workup was unremarkable, but the patient was discharged with oral antibiotics. Three months later, the patient presented for similar symptoms, now on the right. Periosteal thickening on X-ray was worrisome for an infiltrative process. A CBC with elevated WBC and 57% lymphoblasts lead to the diagnosis of ALL.

Discussion: Acute lymphoblastic leukemia often proceeds with an indolent course over several weeks to months, eventually leading to the classic symptoms of fever, fatigue, and bruising. ALL may also manifest as musculoskeletal signs and symptoms, including bone pain, an inability to bear weight, and the presence of joint effusions on imaging. In rare cases, as presented above, musculoskeletal complaints are the only presenting finding of ALL. Patients can have normal blood counts and the absence of physical exam findings such as hepatosplenomegaly and lymphadenopathy. Repeated visits over months for the evaluation of limb pain are common in these situations, with no definitive diagnosis being made until blasts are finally discovered on CBC.

Conclusion: Due to the potential for delay in diagnosis and treatment, physicians should keep ALL high on their differential in a pediatric patient presenting with aseptic joint effusion. Additionally, providers should refrain from using steroids as this can mask leukemia and increase resistance.