

# Childhood Leukemia Mimicking Arthritis

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Family physicians frequently care for children with vague and varying musculoskeletal complaints. Rarely such complaints represent serious malignant hematologic processes. Certain clinical and laboratory clues will help the physician avoid delays in making the diagnosis, as occurred in the following case.

## Case Report

A 12-year-old girl complained of pain in her right upper arm shortly after removal of a cast for a radial fracture. At the initial physical examination she had some limited range of motion at the shoulder. Radiographic findings were within normal limits. She was prescribed a nonsteroidal anti-inflammatory medication and had some initial improvement. She then returned 1 month later complaining of dizziness as well as persistent right arm discomfort. Findings on her physical examination were unchanged. A complete blood cell count at that time showed a white cell count of  $3200/\mu\text{L}$  with 63 percent segmented cells and 37 percent lymphocytes. The hemoglobin was  $15.3\text{g/dL}$ , and the platelet count was  $94,000/\mu\text{L}$ . The patient was told that she most likely had a viral illness and was sent home with no additional treatment.

She returned 4 weeks later unable to move her shoulder. At that time she was referred to an orthopedist, who thought her disability was more neurologic in origin. An electromyogram was obtained, the results of which were within normal limits. The patient was then referred to a pediatric neurologist, who thought the problem was musculoskeletal in origin and recommended further nonsteroidal anti-inflammatory medication.

She improved somewhat only to return to her family physician 2 months later with increasing arthralgias associated with a painful right knee effusion.

At that time her temperature was  $100.2^\circ\text{F}$ . She had a questionable palpable spleen tip and a tender, swollen, warm knee. Repeat laboratory studies

included a white cell count of  $3800/\mu\text{L}$ , including a normal differential. A platelet count was  $114,000/\mu\text{L}$ , and her sedimentation rate was  $54\text{ mm/h}$ .

The patient was admitted to the hospital with a tentative diagnosis of juvenile rheumatoid arthritis. On consultation, the rheumatologist was immediately suspicious that her problem was an acute leukemia. A bone marrow biopsy confirmed that she had acute lymphoblastic leukemia.

## Discussion

This case contains distinctive features—disabling bone pain and leukopenia—that should alert physicians to a nonrheumatic malignant condition.<sup>1</sup> Bone pain causing nighttime awakening is a classic feature of a leukemic process. Leukemic arthritis occurs in 12 to 65 percent of childhood leukemia.<sup>2</sup> Classic hematologic findings, such as lymphadenopathy and hepatosplenomegaly, are surprisingly present equally in juvenile rheumatoid arthritis and leukemia.<sup>3</sup>

Leukopenia is the most discriminating laboratory feature of leukemia. In one series all cases of juvenile rheumatoid arthritis had leukocytosis, whereas 40 percent of leukemic arthritis cases showed a leukopenia.<sup>3</sup> Many other laboratory abnormalities, including thrombocytosis and elevated sedimentation rates, are similar in both groups of patients.<sup>3</sup>

A bone marrow examination is necessary for a definitive diagnosis and should be repeated if the first aspiration proves negative.<sup>1</sup>

## Summary

Physicians who take care of children must consider the differential diagnosis of acute leukemia with any unexplained musculoskeletal symptom. A mild leukopenia could be the first laboratory abnormality associated with early symptoms.

## References

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