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WHEN BONE PAIN AND BLEEDING MEAN MORE THAN LEUKEMIA: THE CASE OF NUTRITIONAL DEFICIENCIES

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February 2, 2023

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Word count: 498

Figure: 1

Running Title: Nutritional deficiencies

Key Words: Scurvy, vitamin D deficiency, bone pain, bleeding, nutritional deficiencies

Conflict of Interest: The authors have disclosed no financial relationships relevant to this article. This commentary does not contain a discussion of an unapproved/investigative use of a commercial product/device.

WHEN BONE PAIN AND BLEEDING MEAN MORE THAN LEUKEMIA:

THE CASE OF NUTRITIONAL DEFICIENCIES

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To the Editor

Bone pain and bleeding are among the most common symptoms of leukemia. Vitamin deficiencies are more commonly seen in developing countries where the access to healthy food is difficult. In resource-rich countries severe vitamin deficiencies are rarely seen and not always considered in the differential diagnosis[1]. In developed countries, severe vitamin deficiencies are associated with restricted diets secondary to developmental or psychiatric problems[1]. Both deficiencies can cause significant bone pain, which may mimic other diseases, including leukemia.[1,2,3] Here we report two cases that presented with bone pain and/or bleeding and were found to have severe vitamin deficiencies.

CASE 1: 3-year-old Caucasian female with a history of autistic spectrum disorder (ASD) and developmental delay presented with a four-week history of worsening bilateral lower extremity pain and refusal to bear weight. X-rays of the pelvis and lower extremities showed lumbosacral spinal dysraphism and no other abnormalities. MRI of the spine was suggestive of an infiltrating marrow process. A dietary history uncovered a very restrictive diet consisting of almond milk and mashed potatoes. Complete blood cell count and bone marrow biopsy and aspirate were normal. 1-25-dihydroxy vitamin D and vitamin C levels were low. A follow up bone survey showed changes consistent with scurvy but not rickets.

CASE 2: A 4-year-old African-American female with history of ASD and severe developmental delay presented with an eight-week history of worsening bilateral lower extremity pain and decreased mobility with mild edema and bruising on her left ankle. On examination the patient was smaller for her age and her weight was $< 1\%$ile. She was in severe pain and barely tolerated palpation. She had gum bleeding and bruises in her legs. CBC informed hypochromic microcytic anemia. Inflammatory markers, ESR and CRP were elevated. Bone marrow biopsy was normal. 1-25-hydroxy vitamin D level was low at 18 ng/dL. A bone survey showed metaphyseal radiolucencies to varying degrees, concerning for scurvy. Dietary history informed of a restrictive diet of mashed potatoes.

Both patients were started on vitamin C and D supplementation with resolution of bone pain, bleeding and recovery of motor function and overall wellbeing.

In children, vitamin D deficiency can lead to muscle pain, skeletal defects, and osteopenia.[4] Scurvy or vitamin C deficiency is a rare and mostly a forgotten disorder in modern times.[1,2]Classical signs of scurvy include gingival lesions with inflammation, hypertrophy and bleeding resulting in loosened teeth. The deficiency worsens in stages. Mucocutaneous manifestations appear in the second stage including dry skin, folliculitis, vascular purpura and painful hematomas. Third stage symptoms are of musculoskeletal nature, involving

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osteoporosis, bone growth abnormality, and subperiosteal or intraosseous hemorrhagic lesions. In the final fourth stage the general physical condition worsens with asthenia which perpetuates food selectivity.

Radiographic findings suggestive of scurvy have been previously described and were seen in both cases (Figure 1).[5,6]

These cases of advanced scurvy and vitamin D deficiency highlight the importance of recognizing the clinical manifestations and radiographic findings of the disorder to avoid extensive hospitalization and expensive work-up, and provide prompt supplementation.

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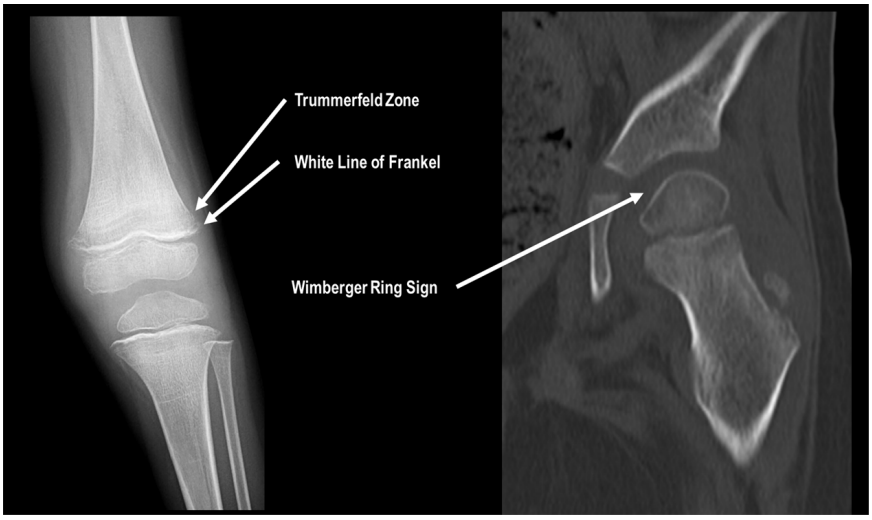

FIGURE 1. Patient exhibited radiographic signs of scurvy on X-ray of the left knee and on a CT of the left hip, and showed similar findings in other long bones on a skeletal scurvy. Demineralization of the cortex of metaphyses results in a characteristic radiographic "ground glass" appearance, alternating radiolucent (Trümmerfeld zone) and radiopaque (White line of Frankel) bands, which represent defective bone matrix formation and poor resorption respectively. Wimberger Ring Sign was more subtle in our cases.

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FIGURE 1. Patient exhibited radiographic signs of scurvey on X-ray of the left knee and on a CT of the left hip, and showed similar findings in other long bones on a skeletal survey: Demineralization of the cortex of metaphyses results in a characteristic radiographic "ground glass" appearance, alternating radiolucent (Trümmerfeld zone) and radiopaque (White line of Frankel) bands, which represent defective bone matrix formation and poor resorption respectively. Wimberger Ring Sign was more subtle in our cases.