

LETTERS AND CORRESPONDENCE

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Anemia Related to Ascorbic Acid Deficiency

To the Editor: I have read the paper by Phatak et al. entitled "Unusual Anemias" in the March issue of the *Journal* with great interest [1]. In this context, a hematologist can easily encounter nutritional anemia as an unusual anemia even in this century.

We have recently seen a patient who was admitted to our hematology clinic for the evaluation of anemia, gingival edema, and perifollicular hemorrhages. His hemoglobin level was 5.6 g per dl, and hematocrit was 17.1% with microcytic, hypochromic indices. The peripheral smear revealed small red cells with pale cytoplasm and polychromasia; basophilic stippling and hypersegmented polymorphonuclear leukocytes were also observed. His ferritin, vitamin B12, and folate levels were within normal limits, and we did not observe any abnormalities in coagulation studies

related to perifollicular hemorrhages. Bone-marrow aspiration showed erythroid hyperplasia with a normal differential count of the myeloid line. A punch biopsy showed extravasations of red cells and focally scattered perivascular deposits of hemosiderin in the upper dermis, and intrafollicular keratotic plugs and coiled hair sections.

On questioning about his dietary habits, for the past 10 months the patient had consumed sandwiches, tea, chocolate, beer, and fast foods but had rarely eaten fresh fruits or vegetables. We found that his serum ascorbic acid level was 0.2 mg per dl (normal, 0.2–2.0 mg per dl), leading to a diagnosis of scurvy [2].

His hemoglobin level rose to 14.5 g per dl, and the hematocrit to 44.1% after vitamin C supplementation without any transfusion.

A major function of ascorbic acid is its involvement in the synthesis of collagen fibers from proline via hydroxyproline. Most of the clinical manifestations of scurvy result from a defect in metabolism of collagen.

The anemia in scurvy is multifactorial and may relate to blood loss in the gastrointestinal tract, dietary deficiencies, reduced intracellular iron availability, and altered metabolism of folate and iron. Ascorbic acid deficiency leads to rapid, irreversible oxidation and a decrease of synthesis and excretion of the metabolically active form of folate, 5-formyl-tetrahydrofolate. Ascorbic acid enhances iron absorption by reducing the dietary iron from the ferric to the ferrous form [3].

It should be kept in mind that even in this century, nutritional anemias can be seen as unusual anemias, especially in food faddists, alcoholics, and elderly individuals.

A. UGUR URAL

Memorial Sloan Kettering Cancer Center, New York, New York

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3. Morrison SD: Clinical nutrition cases. Scurvy in an old man. *Nutr Rev* 41:152–154, 1983.