Scurvy, or hypovitaminosis C, is caused by prolonged and severe deficiency of ascorbic acid. Cutaneous manifestations include follicular hyperkeratosis, perifollicular petechiae, corkscrew hair, and ecchymosis. Inaccurately believed to be of historical interest, this disease remains current and relevant. Scurvy has been reported in patients with substance abuse, cirrhosis, AIDS, metastatic cancer, peritoneal dialysis, liver transplant, cerebral palsy, autism, schizophrenia, anorexia nervosa, depression, food faddism, and food allergy.

Humans cannot synthesize ascorbic acid de novo, and must rely on dietary sources of vitamin C, which include fruits and vegetables. Potatoes, tomatoes, berries, citrus, and green vegetables are particularly rich in vitamin C. Inadequate vitamin C intake is the most common cause of scurvy. Increased vitamin C loss may be seen in patients with peritoneal dialysis. It is a water-soluble vitamin and depletion of body stores only takes one to three months.

Vitamin C acts as an antioxidant and a cofactor in several processes, which include prostaglandin metabolism, fatty acid transport, norepinephrine synthesis, and collagen biosynthesis. Vitamin C is required as a reducing cofactor for prolyl hydroxylase in order to convert proline to hydroxyproline on procollagen. Inappropriate collagen biosynthesis is the basis for many cutaneous manifestations of scurvy.

**CLINICAL CASE**

We report a case of a 59-year-old homeless man presenting to the emergency department in a state of alcoholic intoxication, with icterus, ascites, and lower extremity petechiae (Figure 1). He had no relevant known past medical history and was taking no medication. He admitted to active alcohol abuse but did not consume other drugs. Our dermatology service was consulted to rule out vasculitis in this patient. Physical examination revealed icterus, extremely poor dental hygiene, and lower extremity perifollicular petechiae with follicular hyperkeratosis. Complete blood count revealed normocytic normochromic anemia and a platelet count within normal limits. Coagulation studies revealed a prolonged INR of 2.0. On the basis of a clinical suspicion of scurvy, serum ascorbic acid levels were ordered and a skin biopsy was performed. Skin biopsy revealed dystrophic hair and perifollicular hemorrhage, with absence of vasculitis (Figure 2). A Turnbull Blue stain further highlighted the extent of hemosiderin deposition (Figure 3). Scurvy was diagnosed. The patient suffered from concurrent alcoholic cirrhosis, which explained his prolonged INR. Ascorbic acid repletion was performed immediately. Ascorbic acid 200 mg po daily was prescribed, as multivitamins only contain about 60 mg of ascorbic acid. Serum vitamin C levels were 14 mg/L.

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The prevalence of tattoos in the US population is estimated to be 25 percent, but recent studies have indicated that 17-20 percent of these people regret their decision to permanently tattoo their bodies. The rising popularity of tattoos nationwide is in turn leading to a rise in the number of patients presenting for tattoo removal through laser surgery. Led by a group of forward-thinking dermatologists, scientists created a semi-permanent tattoo ink that boasts removal with only one laser treatment. Freedom-2, based in New York, engineered a clear, nontoxic plastic polymer microcapsule that contains a biocompatible pigment and energy-absorbing target that reacts to laser light. Upon exposure to laser light, the bead ruptures and releases the pigment, which is then phagocytized after several days. With the merger of Freedom-2 and Nuvilex in 2009, a new tattoo ink was born and ironically named Infinitink. The new ink is packaged and applied in the same manner as other tattoo inks. Only black and red pigments are currently available.

It has been reported that some tattoo artists are skeptical regarding the utility of Infinitink. During phone interviews with local tattoo parlors in the second largest city in Georgia, seven of eight admitted that they were simply unaware of the product. When asked about using a tattoo pigment that is easily removed with cosmetic lasers, the majority of tattooists expressed definite disinterest. Most referred to themselves as artists and their tattoos as works of art. “A tattoo is forever,” said one owner, “so when people get tattoos, they shouldn’t be thinking about how easy it is to remove them.” The only tattooist familiar with Infinitink felt the color was not as brilliant or as easy to apply. However, he did admit that this product may be useful for tattooing names since those are the ones most frequently regretted. Future studies from a consumer standpoint may help determine whether offering this easily removed ink would cause more people seeking new tattoos to opt for Infinitink.

Dr. Mary Glover and Dr. Loretta Davis are with the Georgia Health Sciences University, Division of Dermatology.


Figure 1: The CEO of Freedom-2 (now known as Nuvilex) demonstrates the first Infinitink tattoo that was removed with one laser treatment.

Figure 2: Before and after photographs of a tattoo after one laser treatment. The left half of the tattoo was created with Infinitink and the right half with conventional ink.

Figure 3: A. Tattoo on posterior neck before and after 8 treatments with Q-switched laser. B. Tattoo on upper back before and after 9 treatments with Q-switched laser.
A 27-year-old Hispanic male presented to our dermatology clinic with a five-year history of burning pain of the left auricle, which started as an insect bite and spread to the remainder of his ear. He had failed various oral and topical medications, including cephalaxin, trimethoprim-sulfamethoxazole, acyclovir, nystatin cream, and fluocinonide cream. He denied any systemic or constitutional symptoms, any affected family members, and any recent travel. He denied any involvement of the nose or contralateral ear.

He admitted to emigrating from Mexico a year prior to the onset of his rash. He works at a supermarket and has no pets. On physical exam, erythematous crusted plaques were noted on the left helical rim extending to the lobule of the ear with warmth and edema. He had no nasal involvement and no lymphadenopathy. Differential diagnoses included New World Leishmaniasis (chiclero ulcer), atypical mycobacteria, deep fungal infection versus non-bullous impetigo, and relapsing polychondritis. Diagnostic workup included bacterial and AFB cultures, which were negative. However, a fungal culture revealed growth of Exophiala jeanselmei. A skin biopsy revealed pseudoeighborhood hyperplasia, giant cells, and the presence of sclerotic bodies, consistent with the diagnosis of chromoblastomycosis. Interestingly, there have only been five reported cases of auricular chromoblastomycosis in the literature, all of which have occurred outside of the United States (Cuba, Brazil, Japan) and in elderly males. Chromoblastomycosis more commonly affects the lower extremities through contact with soil via traumatic inoculation. Here, I report the first case of auricular chromoblastomycosis in the United States. The patient was treated with oral terbinafine and was referred to Infectious Disease for follow up.

Dr. Jennifer Channual has no relevant financial interests to disclose.

Dr. Channual earned both her Bachelor of Science degree in Neurobiology and her medical degree (MD) from the University of California, Irvine. She completed her preliminary internship at Kaiser Permanente Los Angeles Medical Center. She is currently a third-year dermatology resident at the University of California, Irvine. Her research interests are in psoriasis and its comorbidities.

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Levels are considered deficient when below 75 mg/L. The skin biopsy result was available 14 days prior to the lab results and allowed for earlier appropriate therapy. Cutaneous lesions eventually healed completely.

CONCLUSION

The differential diagnosis of lower extremity petechiae is wide. In appropriate patient populations, clinicians must keep a high index of suspicion to diagnose scurvy. Follicular hyperkeratosis, perifollicular petechiae, corkscrew hair, ecchymosis and dental disease are further clues to establishing diagnosis. Skin biopsy is a helpful diagnostic tool and may allow even faster diagnosis than dosing serum ascorbic acid levels.

Dr. Vincent Richer has no financial interests to disclose.

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