



Spontaneous ecchymoses

The patient's lifestyle was undoubtedly to blame for the appearance of her skin. The loss of her beloved pet may have been a tipping point.

A 65-YEAR-OLD WOMAN was brought into the emergency department by her daughter for spontaneous bruising, fatigue, and weakness of several weeks' duration. She denied taking any medications or illicit drugs and had not experienced any falls or trauma. On a daily basis, she smoked 5 to 7 cigarettes and drank 6 or 7 beers, as had been her custom for several years. The patient lived alone and was grieving the death of her beloved dog, who had died a month earlier. She reported that since the death of her dog, her diet, which hadn't been especially good to begin with, had deteriorated; it now consisted of beer and crackers.

On admission, she was mildly tachycardic (105 beats/min) with a blood pressure of 125/66 mm Hg. Physical examination revealed

a frail-appearing woman who was in no acute distress but was unable to stand without assistance. She had diffuse ecchymoses and perifollicular, purpuric, hyperkeratotic papules and plaques on both of her legs (FIGURES 1A and 1B). In addition, she had faint perifollicular purpuric macules on her upper back. An oral examination revealed poor dentition.

A punch biopsy was performed on her leg, and it revealed noninflammatory dermal hemorrhage without evidence of vasculitis or vasculopathy.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

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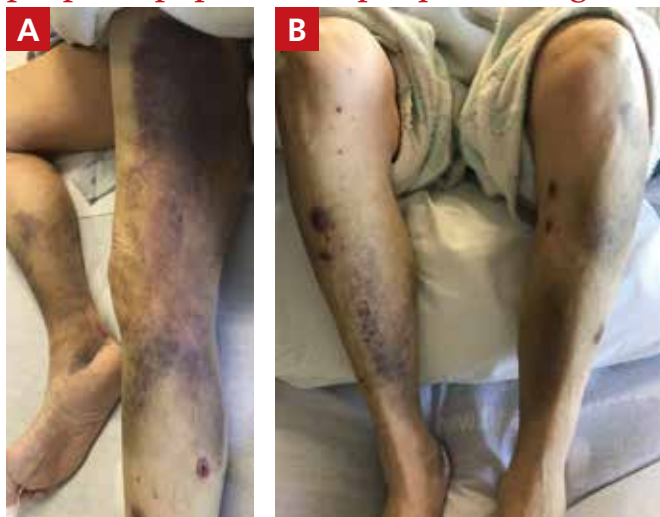
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FIGURE 1

Diffuse ecchymoses and perifollicular, purpuric papules and plaques on legs



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➤ Patients with scurvy may initially experience malaise and irritability. Dermatologic findings include hyperkeratotic lesions, gingival swelling, petechiae, and corkscrew hairs.

Diagnosis: Scurvy

Based on the patient’s appearance and her dietary history, we suspected scurvy, so a serum vitamin C level was ordered. The results took several days to return. In the meantime, additional lab work revealed hyponatremia (sodium, 129 mmol/L; normal range, 135-145 mmol/L), hypokalemia (potassium, 3 mmol/L; normal range, 3.5-5.2 mmol/L), hypophosphatemia (phosphorus, 2.3 mg/dL; normal range, 2.8-4.5 mg/dL); low serum vitamin D (6 ng/mL; normal range, 20-40 ng/mL); and macrocytic anemia (hemoglobin, 7.4 g/dL; normal range, 11-18 g/dL) with a mean corpuscular volume of 101.1 fL (normal range, 80-100 fL). Her iron panel showed normal serum iron and total iron binding capacity with a normal ferritin level (294 ng/mL; normal range, 30-300 ng/mL). A peripheral blood smear test uncovered mild anisocytosis and polychromasia, with no schistocytes. A fecal immunochemical test was negative.

■ **Several days after admission**, the results of the patient’s vitamin C test came back. Her levels were undetectable (< 5 µmol/L; normal range, 11-23 µmol/L), confirming that the patient had scurvy.

A health hazard to mariners that is still around today

Scurvy is a condition that arises from a deficiency of vitamin C, or *ascorbic acid*. The first known case of scurvy was in 1550 BC.¹ Hippocrates termed the condition “ileos ematitis” and stated that “the mouth feels bad; the gums are detached from the teeth; blood runs from the nostrils ... ulcerations on the legs ... skin is thin.”¹ Scurvy was a major health hazard of mariners between the 15th and 18th centuries.² Today, the deficiency is uncommon in industrialized countries because there are many sources of vitamin C available through diet and vitamin supplements.³ In the United States, the prevalence of vitamin C deficiency is approximately 7%.⁴

■ **An essential nutrient in humans**, vitamin C is required as a cofactor in the synthesis of mature collagen.³ Collagen is found in skin, bone, and endothelium. Inadequate collagen levels can result in poor dermal support of vessels and tissue fragility, leading to hemor-

rhage, which can occur in nearly any organ system.

■ **Vitamin C deficiency** occurs when serum concentration falls below 11.4 µmol/L, at which point noticeable manifestations of scurvy can begin.^{1,4} Alcohol use, tobacco use, poverty, male sex, and poor nutrition are risk factors.^{1,4}

■ **Scurvy manifests after 8 to 12 weeks** of inadequate vitamin C intake.¹ Patients may initially experience malaise and irritability. Anemia is common. Dermatologic findings include hyperkeratotic lesions, ecchymoses, poor wound healing, gingival swelling with loss of teeth, petechiae, and corkscrew hairs. Perifollicular hemorrhage is a characteristic finding of scurvy, generally seen on the lower extremities, where the capillaries are under higher hydrostatic pressure.³ Patients may also have musculoskeletal involvement with osteopenia or hemarthroses, which may be seen on imaging.^{3,5} Cardiorespiratory, gastrointestinal, ophthalmologic, and neurologic findings have also been reported.³

Differential is broad; zero in on patient’s history

The differential diagnosis for hemorrhagic skin lesions is extensive and includes scurvy, coagulopathies, trauma, vasculitis, and vasculopathies.

■ **The presence of perifollicular hemorrhage** with corkscrew hairs and a dietary history of inadequate vitamin C intake can differentiate scurvy from other conditions. Serum testing revealing low plasma vitamin C will support the diagnosis, but this is an insensitive test, as values increase with recent intake. Leukocyte ascorbic acid concentrations are more representative of total body stores, but impractical for routine use.⁶ Skin biopsy is not necessary but may help to rule out other conditions.

Ascorbic acid will facilitate a speedy recovery

Treatment of scurvy includes vitamin C replacement. Response is rapid, with improvement to lethargy within several days and disappearance of other manifestations within

several weeks.³ Recommendations on supplementation doses and forms vary, but adults require 300 to 1000 mg/d of ascorbic acid for at least 1 week or until clinical symptoms resolve and stores are replenished.^{3,5,7}

■ During our patient's hospital stay, she remained stable and improved clinically with vitamin supplementation (ascorbic acid 1 g/d for 3 days, 500 mg/d after that) and physical therapy. She was counseled on a healthy diet,

which would include citrus fruits, tomatoes, and leafy vegetables. The patient was also advised to refrain from drinking alcohol and was given information on an alcohol abstinence program.

At her 1-month follow-up, her condition had improved with near resolution of the skin lesions. She reported that she had given up cigarettes and alcohol. She said she'd also begun eating more citrus fruits and leafy vegetables. **JFP**

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