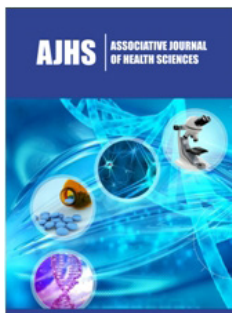


# Cold and Constipated: Beyond Hypothyroidism

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## Abstract

A 62-year-old woman with a history of hypothyroidism and reflux presented to her primary care clinic to establish care and work-up chronic fatigue and constipation. Initial work-up showed a normal TSH, and no other lab abnormalities. Screening colonoscopy was completed which was normal. Further history revealed the patient had bleeding gums, without easy bleeding and bruising, and she was eating rice and olive oil almost exclusively. Additional testing showed an undetectable vitamin C level. She was treated with vitamin C supplementation, advised to increase intake of fruits and vegetables, but was lost to follow-up. Scurvy can present with a myriad of symptoms, from the classic mucocutaneous bleeding, bruising and corkscrew hairs, to depression, anxiety, and fatigue, and even seizures. Scurvy should be considered in elderly patients, and those with mental health and substance use disorders, as well as poor access to food. A dietary history can be helpful in elucidating the etiology of otherwise puzzling symptoms.

**Keywords:** Scurvy; Dietary history; Vitamin C; Constipation

## Introduction

Scurvy, arising from a lack of dietary vitamin C, can present with a varied constellation of symptoms. It is considered a disease of antiquity, being reported as early as 1500 BC. This illness, with an initially elusive etiology, plagued many for centuries. Symptoms of scurvy can overlap with various illnesses including neurologic, vascular, and mental health disorders. With an understanding of its etiology, and with the advent of widespread shipping and refrigeration of fruits and vegetables, scurvy is not as common as it once was. However, it still should be considered, even in the developed world, and detailed clinical and dietary history is key to making the diagnosis.

## Case Presentation

A sixty-two year old woman from Saudi Arabia, with a history of hypothyroidism and gastroesophageal reflux disease presented to a primary care clinic to establish care and workup chronic fatigue and constipation. She was complaining of six months of predominantly left sided intermittent abdominal pain which had been getting worse over the course of the last several weeks. The pain was worse after eating, and better when fasting; eating small meals was more tolerable. She had a bowel movement only once weekly, and usually needed stool softeners to assist with this. She also complained of cold intolerance, fatigue, poor appetite and weight loss. Her hair was thinning and falling out, and she reported dry skin. She had no nausea, emesis, cough, hemoptysis, hematemesis, and no numbness, tingling or focal weakness.

Medications included levothyroxine 75mcg daily, esomeprazole 20mg daily, and an over-the-counter laxative as needed for constipation. Past medical history was significant for hypothyroidism, gastroesophageal reflux disease, and osteoporosis. She had gone through menopause at age forty-seven. Surgical history included remote appendectomy, cholecystectomy, and hernia repair.

She was married, the mother of eight children, working as a homemaker in Saudi Arabia; she was in the United States visiting family. She had never smoked and reported no alcohol or

illicit drug use. She had no known family history of cancer or heart disease. On review of systems, she was hard of hearing, and had cataracts, but was otherwise negative except as noted in history of present illness.

Initial workup at an outside facility for the same complaints included abdominal plain films and computed tomography scan of the abdomen and pelvis done six months prior. They both showed significant stool burden but were otherwise unremarkable.

Workup for abdominal pain and severe constipation at the time of her presentation included thyroid-stimulating hormone with reflex to levothyroxine, and given obesity and risk for metabolic disease, glycosylated hemoglobin and lipid panels were drawn. These all came back within the normal range. Colonoscopy was ordered to evaluate for further bowel pathology. Colonic preparation was adequate and the colonoscopy revealed only a few polyps which were removed and found to be tubular adenomas on pathology. After the colonoscopy, the patient reported more regular bowel movements, though still not daily, and needing stool softeners.

During follow up, upon further questioning, she also reported bleeding gums without easy bleeding or bruising otherwise. Dietary history was taken by the primary care physician and revealed that she was eating almost exclusively white rice and olive oil. Vitamin C level was checked, and vitamin C level came back well below normal at less than  $5.0\mu\text{mol/L}$  (reference range  $23\text{-}114\mu\text{mol/L}$ ). She started on Vitamin C supplementation, a multivitamin, and we discussed the importance of eating a balanced diet, especially with ample fruits and vegetables. She was, unfortunately, lost to follow up.

Scurvy was first described in 1500 BC in what has been named Eber's Papyrus [1-3]. This disease was studied extensively in the eighteenth-century AD by Dr. James Lind. Finding that the administration of citrus to scorbutic sailors alleviated the symptoms, concluding after his famous Salisbury experiments, "I shall here only observe that the result of all my experiments was that oranges and lemons were the most effectual remedies for this distemper at sea" [4]. The disease is characterized initially by fatigue, irritability, weakness, myalgias and arthralgias. As the deficiency progresses, after a month or more of inadequate intake, other more specific manifestations appear, including petechiae, corkscrew hairs, perifollicular hemorrhage (often seen in lower extremities first), hyperkeratosis; easy bruising, delayed wound healing, and anemia. Gingival swelling, bleeding, and loosening of teeth are common. Other symptoms include worsening fatigue and depression or anxiety. In later stages of scurvy, often after inadequate intake of vitamin C for longer than a few months, patients can present with generalized edema, jaundice, hemolysis, spontaneous bleeding, and even cardiac arrhythmias, neurologic deficits, seizures and, if left untreated, can be fatal [3,5,6].

Humans, all primates, and several other mammals cannot produce vitamin C [7] and stores last only for 1-3 months [8]. As such, to prevent this deficiency and its attendant symptoms, one

must consume vitamin C from fresh fruit and vegetables, and fortified foods. With the advent of refrigeration, food transportation and the fortification of foods, the incidence of scurvy has declined in the modern world compared to the pre-industrial world. While not viewed as common in the developed world, it still has a prevalence of about 5-7% in the US as of 2018. Those at higher risk for developing scurvy include the elderly, children with developmental disorders, [9,10] those who abuse drugs and alcohol [11] patients with malabsorption disorders, including IBD [12] and those following a strict diet, post bariatric surgery patients, or with limited access to and intake of fresh food, or patients with an eating disorder [13-16]. Many case reports have been recently written about the modern occurrences of scurvy, especially in children and picky eaters, and those with diseases of malabsorption such as celiac disease, or on restrictive diets. Many patients present with non-specific symptoms, from anorexia [17] and fatigue, to neurologic deficits [18] with or without the classic dermatologic and hematologic findings, often delaying diagnosis and treatment [19-24]. Other patients have presented with dramatic dermatologic findings, masquerading as a deep soft tissue infection [25]. It can also complicate and concomitantly occur with hematologic disorders such as thalassemia [26]. Of note, the author witnessed another case of scurvy in an elderly man eating a diet consisting entirely of canned foods. In most cases, a high index of suspicion and a good dietary history was key in establishing the diagnosis, confirmed by low serum levels of vitamin C.

The treatment is supplementation with vitamin C, typically 250-300mg per day until levels are replete and symptoms improved, followed by adequate intake of 60mg per day through diet and supplementation if needed. In addition, the clinician should undertake evaluation and treatment of other suspected concomitant deficiencies and co-morbid medical conditions which may pre-dispose patients to this preventable and treatable disease.

## Conclusion

Scurvy, a common plague of a past age, has not disappeared from the world. The initial presentation can be vague, and often the neurologic and constitutional manifestations overshadow the more classic skin findings and hematologic abnormalities. Scurvy should remain on the differential in these cases, especially among high-risk populations, and a dietary history can be key in revealing the etiology of a seemingly complex case.

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## Conflicts of Interest

None

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