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Case Report Open Access

Scurvy: An overlooked and easily treated cause of bleeding

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ABSTRACT

A 50-year-old male prisoner was hospitalized with petechial rash, ecchymosis and subcutaneous hemorrhage in both lower extremities. He was diagnosed with malnutrition-related scurvy, as evidenced by vitamin C deficiency confirmed by a laboratory test, following the exclusion of other potential causes through a medical history, clinical examination, laboratory tests and a skin biopsy. The patient's clinical symptoms improved dramatically with ascorbic acid treatment. In conclusion, taking a good nutritional history is critical for suspecting and diagnosing vitamin C deficiency in prisoners, as this can have serious consequences.

Keywords: Capillary fragility, hemorrhage, malnutrition, scurvy, vitamin C deficiency.

Vitamin C is required for the production of collagen, which is found in the structures of bones, teeth, cartilage, blood vessels and skin. It is also a powerful antioxidant which protects against the oxidative effects of toxins, and it has a positive effect on the immune system and iron absorption.[1]

Scurvy is a rare form of hypovitaminosis which can manifest in various ways. Scurvy caused by a lack of vitamin C impairs collagen production, leading to disruption in the structure of capillaries, as well as to the appearance of petechiae, purpura and ecchymosis. It can also cause bleeding and hypertrophy of the gums, as well as intra-articular bleeding, arthralgia, myalgia and limited joint movement. It also causes anemia, pulmonary hypertension and inflammation, as well as impairing prostaglandin metabolism and increasing inflammatory markers.[2] Scurvy is a rare disease which does not usually come to mind in medical practice. It causes complications and hemorrhages that can lead to death if left untreated. It can also be confused with many other diseases and plays a mimetic role.[3]

In this article, we present a case of scurvy in a 50-year-old male prisoner and emphasize the importance of adequate nutritional provision and routine monitoring in institutionalized settings.

CASE REPORT

A 50-year-old male prisoner was admitted to the emergency outpatient clinic due to difficulty walking, joint pain, as well as red rashes on the inside of the left ankle and bruised areas on the lower left leg, which appeared one week earlier. He reported that he was in closed prison as a prisoner for two years and that he recently experienced loss of appetite, weakness, fatigue, and weight loss. There was no known history of disease, trauma or drug use. He smoked 15 pack/year and did not drink alcohol. On physical examination, he was conscious, oriented and cooperative with a body temperature of 37.8°C, pulse rate of 108/min, and arterial blood pressure of 110/60 mmHg. Conjunctivae were pale and gingival hypertrophy was present. There were ecchymotic areas and petechial eruptions on both lower extremities, more intense on the left leg (Figures 1 and 2). Other system examinations were normal. Laboratory results are shown in Table 1.

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Tissue transglutaminase antibody (immunoglobulin (Ig) A and Ig G) was negative, procalcitonin was 0.2 ng/mL, factor 7 and factor 13 level was normal. Urine analysis was negative for protein, erythrocytes and leukocytes. Antinuclear antibody was negative, antiphospholipid antibodies, rheumatoid factor, antineutrophil cytoplasmic antibodies and cryoglobulins were negative.

Chest radiography and echocardiographic findings were all normal. Abdominal ultrasonography was also normal, and there was no splenomegaly. Bilateral X-ray radiographs of the lower extremities were normal. Lower extremity computed angiography and Doppler ultrasonography revealed no vascular pathology. Infection, malignancy and vasculitis were excluded, as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) were elevated on admission. There was no low platelet count and factor deficiency that could cause bleeding. Vitamin C level (ascorbic acid) was 0.1 mg/dL (reference range: 0.4 to 2.1 mg/dL). Skin biopsy revealed perifollicular hemorrhage.

Figure 1. Gingival hypertrophy.

Figure 2. Ecchymoses in both lower extremities.

Based on the patient's history of malnutrition, the presence of clinical findings such as gingival hypertrophy and bleeding, and the evaluation of laboratory and biopsy results, a rare scurvy was diagnosed. In addition, B12 and folate deficiency was thought to be secondary to nutritional deficiency. The patient was initiated on ascorbic acid 500 mg/day b.i.d. After one week, 500 mg/day was prescribed. At the end of two weeks, clinical complaints decreased and hemorrhagic lesions in the legs regressed almost completely (Figure 3). Written informed consent was obtained from the patient.

DISCUSSION

Vitamin C is a water-soluble vitamin, the enolic form of alpha-ketolactone. The recommended daily intake of ascorbic acid is 90 mg/day for men and 75 mg/day for women.[4] In the human diet, 90% of vitamin C comes from citrus fruits and vegetables such as sweet peppers, broccoli, cauliflower and tomatoes. Vitamin C is vital for

Figure 3. Complete disappearance of bleeding signs after treatment.

Table 1
Laboratory results of the patient

Parameter (unit)	Result	Reference interval
WBC (µL)	4650	4000-10000
Neutrophils (µL)	3380	2000-7000
Lymphocytes (µL)	950	800-4000
Hemoglobin (g/dL)	6.4	12-16
MCV (fL)	107	80-100
Platelets (µL)	237000	100000-400000
Urea (mg/dL)	39	17-45
Creatinine (mg/dL)	0.9	0.5-0.95
Total bilirubin (mg/dL)	2.1	0.3-1.2
Direct bilirubin (mg/dL)	0.3	0-0.2
AST (U/L)	6	0-50
ALT (U/L)	3	0-50
LDH (U/L)	164	0-248
Creatine kinase (U/L)	79	30-200
Total protein (g/L)	6.2	6.6-8.3
Albumin (g/L)	3.7	3.5-5.2
ESR (mm/h)	66	0-20
CRP (mg/L)	37	0-5
APTT (s)	33.6	26-40
PT (s)	13.6	10-13.5
INR	1.18	0.8-1.2
Fibrinogen (mg/dL)	382	200-400
Direct Coombs test	Negative	NA
Corrected reticulocyte (%)	1.32	0.3-3
Haptoglobulin (g/L)	1.6	0.3-2
Vitamin B12 (pg/mL)	175	211-911
Folate (ng/mL)	1.57	>5.3
Ferritin (ng/mL)	128	20-320
TSH (IU/mL)	1.7	0.5-4.7

WBC: White blood cell; MCV: Mean corpuscular volume; AST: Aspartate aminotransferase; ALT: Alanine aminotransferase; LDH: Lactate dehydrogenase; ESR: Erythrocyte sedimentation rate; CRP: C-reactive protein; aPTT: Activated partial thromboplastin time; PT: Prothrombin time; INR: International normalized ratio; TSH: Thyroid stimulating hormone; NA: Not available.

wound healing, immune system functioning, production of neurotransmitters such as dopamine and prostaglandins, nitric oxide synthesis, osteoblast and fibroblast growth.[1] Scurvy can occur as a result of a lack of vitamin C in the diet or impaired absorption from the gastrointestinal tract. Clinical scurvy occurs when the total body pool of vitamin C is less than 300 mg and the plasma level is <0.2 mg/dL (11 umol/L).[4] In our patient, the plasma ascorbic acid level was <0.1 mg/dL, consistent with the literature.

The rare nature of the disease and the non-specific clinical presentation can lead to a delay in diagnosis after a thorough diagnostic workup, often including radiological imaging.[5,6]

Case reports in the literature suggest that patients are frequently misdiagnosed with hematological, rheumatological, autoimmune or bone diseases, as well as infectious diseases such as deep vein thrombosis, meningitis, meningococcal infection or syphilis.[7] In a study by Amogne et al.[8] in a prison in Ethiopia, 118 prisoners had leg pain, swelling, petechiae, oral lesions, severe anemia (<6 g/dL), leukopenia and elevated acute phases and were treated for deep vein thrombosis, arthritis, sexually transmitted disease or vasculitis, but later found that this was due to vitamin C deficiency. In a study conducted by Bennett and Coninx,[9] in prisoners in East Africa, a previously undiagnosed disease called "wooden leg" by local people, which did not respond to various treatments and usually manifested as edema and stiffness in the lower extremities, attracted attention. In the evaluations of these prisoners, serum ascorbic acid levels were found to be significantly low and scurvy was diagnosed based on these findings. A significant improvement in clinical symptoms was observed with oral ascorbic acid treatment. In addition, these individuals had inadequate dietary habits in terms of vitamin C. These findings suggest that scurvy is a diagnosis that should not be ignored even today in communities where malnutrition is widespread. Our case had a clinic similar to those in the literature, with leukopenia, severe anemia and acute phase elevation. This case has prompted clinicians to perform extensive further investigations to explain the present clinic. Our study is an exemplary study which would contribute to the literature and may be an example for early diagnosis of diseases related to easy-to-treat nutritional deficiencies such as scurvy by taking a good anamnesis about nutrition and making anthropometric measurements, especially in prisoner patients.

In conclusion, scurvy is rarely seen due to inadequate ascorbic acid intake currently. The rarity of the disease, its clinical features affecting many systems, and its ability to mimic diseases such as vasculitis may cause delays in diagnosis, thereby leading the clinician to perform further investigations, which results in increased financial burden. It is of utmost importance for clinicians to consider scurvy, which can lead to serious consequences, in the differential diagnosis of patients presenting with bleeding symptoms and at risk of malnutrition, such as prisoners.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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