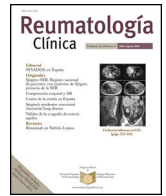




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Case Report

Scurvy. A forgotten pseudovasculitis



Noelia Cabaleiro-Raña,^{a,*} Diego Santos-Álvarez,^a Lucía Romar de las Heras,^a Carmen Álvarez-Reguera,^a Evelin Cecilia Cervantes Pérez,^a Rosa María Hernández Cancela,^b Susana Romero-Yuste^a

^a Servicio de Reumatología, Complejo Hospitalario Universitario de Pontevedra, Pontevedra, Spain

^b Servicio de Anatomía Patológica, Complejo Hospitalario Universitario de Pontevedra, Pontevedra, Spain

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ABSTRACT

Scurvy is a nutritional disease caused by ascorbic acid (vitamin C) deficiency. Although currently it is a rare disease, we should consider it in the differential diagnosis of purpura and arthritis in patients with restrictive diets.

We present the case of a 49-year-old man with a history of a nutritional disorder presented to our hospital with generalized purpura and hemarthros. Following the anamnesis and laboratory findings, rheumatological, infectious and hematological etiologies were excluded. Finally, the diagnosis of scurvy was made upon demonstration poor levels of vitamin C and a spectacular response to nutritional supplements. We compare this case with 19 similar cases reported in the medical literature.

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Escorbuto. Una pseudovasculitis olvidada

RESUMEN

El escorbuto es una enfermedad nutricional causada por el déficit de ácido ascórbico (vitamina C). Aunque actualmente es una enfermedad rara, debe tenerse en cuenta en el diagnóstico diferencial ante púrpura y artritis en pacientes con dietas restrictivas.

Presentamos el caso de un varón de 49 años con antecedentes de trastorno de la conducta alimentaria que presenta púrpura generalizada y hemartros. Tras la anamnesis y los hallazgos analíticos, se excluyeron enfermedades de etiología reumatológica, infecciosa y hematológica. Finalmente, se confirmó el diagnóstico de escorbuto tras objetivar niveles deficientes de vitamina C y una espectacular respuesta a los suplementos nutricionales. Comparamos nuestro caso con otros 19 similares, reportados en la literatura médica.

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Palabras clave:

Púrpura

Artritis

Escorbuto

Vitamina C

Dieta restrictiva

Introduction

Scurvy is a nutritional disease caused by vitamin C deficiency that was epidemic on sailing voyages from the 15th to the 18th centuries and is now rare in developed countries.¹

Vitamin C is a water-soluble vitamin that acts as a reducing agent and is necessary for collagen synthesis. Humans rely on diet and foods high in vitamin C include tomatoes, potatoes, and citrus fruits. The recommended dose is 90 mg/day for men and 75 mg/day for women.² When vitamin C levels fall to less than 0.15 mg/dL, the typical symptoms of scurvy can develop, characterised by asthenia, joint pain, and vascular fragility, which can lead to petechiae, bleeding gums, haematomas, or hemarthrosis.^{3,4}

* Corresponding author.

E-mail address: noeliamedicalcr@gmail.com (N. Cabaleiro-Raña).

Case report

A 49-year-old male with a history of an eating disorder during adolescence was referred to rheumatology for purpura in his lower extremities and bilateral knee arthritis of one month’s duration. During the anamnesis, the patient reported asthenia and episodes of epistaxis. In recent years, his diet had consisted primarily of dairy products, biscuits, and cereals.

On examination, he appeared cachectic, pale, bradypsychic, oedema with pitting of the lower limbs, and purpuric lesions on his extremities and abdomen. Furthermore, he exhibited arthritis in both knees, for which arthrocentesis was performed and haematic fluid was obtained. In addition, dermatology confirmed perifollicular haemorrhage by dermoscopy and biopsied one of the purpuric lesions (Fig. 1A), the pathology examination of which revealed chronic superficial dermatitis and perifollicular extravasation of blood without vasculitis (Fig. 1C).

Laboratory tests identified normocytic anaemia with associated iron deficiency and indirect evidence of malnutrition. The autoimmunity tests, coagulation study, serology, and radiographic studies were normal and the joint fluid culture was negative (Table 1).

In view of the high suspicion of scurvy, intravenous vitamin C was administered, and suppressed levels of vitamins C, A, K1, and zinc were confirmed in the following days (Table 1).

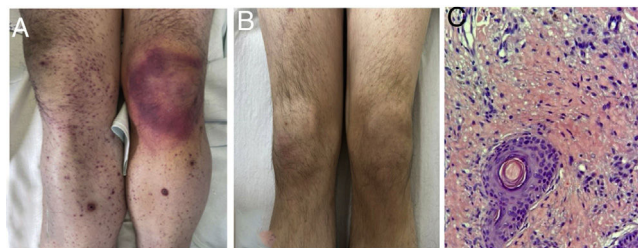


Fig. 1. A. Lower extremities at the time of diagnosis. B. Lower extremities following treatment. C. Pathology study of the purpuric lesion biopsied.

After two weeks of treatment, the patient improved clinically and analytically and was therefore discharged with vitamin complexes and remains asymptomatic at present (Fig. 1B).

Discussion

While scurvy is rare in developed countries, cases are still reported among individuals at risk for malnutrition. Vitamin C deficiency alters vascular collagen and leads to bruising, purpura, arthritis, or arthromyalgia that may mimic vasculitis.

A review of the literature revealed 19 cases of scurvy in adults published in the 21st century (Table 2). Of these, 63% were male

Table 1
Laboratory test results.

Laboratory results at the time of diagnosis	
Parameter	Value
Serology: <i>Clostridium tetani</i> , HAV, HBV, HCV, HIV, rubeola, varicella zoster, parvovirus B19, paramyxovirus, measles virus, Quantiferon, <i>Rickettsia coronii</i> , <i>Treponema pallidum</i>	Negative
Autoimmunity: ANA (ELISA), ANCA-antimyeloperoxidase, ANCA-antiproteinase 3, anti-CCP, anti-cardiolipin antibodies, anti-streptolysin O, anti-β2-glycoprotein antibodies, cryoglobulins C3 and C4 complements	Negative
Tumour markers: alpha-fetoprotein, carcinoembryonic antigen, CA 19.9, PSA, squamous cell carcinoma-associated antigen	138 mg/dL (VR 88–201 mg/dL), 22 mg/dL (VR 10–40 mg/dL) Negative
PCR	1.3 mg/dL (VR 0–0.5 mg/dL)
ESR	26 mm/h (VR 0–10 mm/h)
Haemoglobin, MCV	8.7 g/dL (VR 13.5–17.5 g/dL), 89.3 fl. (VR 80–98 fl.)
Peripheral blood smear	No significant morphological alterations
Direct Coombs	Negative
Haemostasis: INR, fibrinogen, prothrombin time, activated partial thromboplastin time, factor II, factor V, factor VII, factor IV, factor X, factor XI, factor XII	Within range
Factor VIII	200.8% (VR 50%–150%)
ADP aggregation	64 s (VR 68–121 s)
Epinephrine aggregation	73 s (VR 84–160 s)
Folic acid	4.4 ng/mL (VR 4–20 ng/mL)
Vitamin B ₁₂	337 pg/mL (VR 180–414 pg/mL)
Vitamin K1	<0,05 µg/L (VR 0.13–1.5 µg/L)
Vitamin A	0.04 mg/L (VR 0.3–1 mg/L)
Vitamin C	<0.10 mg/dL (VR 0.4–2 mg/dL)
Vitamin D (D2 + D3)	20 ng/mL (VR 10–30 ng/mL: deficiency)
Albumin, prealbumin	3.4 g/dL (VR 3.5–5.2), 11 mg/dL (VR 18–45 mg/dL)
Faecal occult blood	<30 (VR < 75: negative)
Laboratory results of the articular fluid of the left knee	
Parameter	Value
Red blood cells	550,706 mm ³
Nucleated cells	428 mm ³
Polynuclear	27%
Mononuclear	73%
Glucose	80 mg/dL
Crystals	No crystals observed
Appearance	Haemorrhagic

HAV, HBV, HCV: hepatitis A, B, and C virus; HIV: human immunodeficiency virus; ANA: antinuclear antibodies; ELISA: enzyme-linked immunosorbent assay; ANCA: antineutrophil cytoplasmic antibodies, Anti-CCP: anti-cyclic citrullinated peptide; CRP: C reactive protein, ESR= erythrocyte sedimentation rate; MCV: mean corpuscular volume.

Table 2
Review of scurvy cases in the 21st century.

Author, year	Cases	Country	Sex	Age	History	Symptoms	Biopsy	Vitamin C treatment
Martínez et al. ⁶ (2004)	1	Spain	F	90	Dependent for BADL	Haematomas Perifollicular rash Bleeding of the gums	No	ID: 1000 mg/24 h (<i>per os</i>)
Francescone and Levitt ⁷ (2005)	1	USA	F	59	Low socioeconomic level	Hematomas Perifollicular rash Bleeding of the gums Corkscrew hairs Polyarthralgia	Yes	ID: 1000 mg/12 h (<i>per os</i>)
Roé et al. ⁸ (2005)	1	Spain	F	45	Machado–Joseph disease	Osteopenia sacrum Ecchymosis Perifollicular rash Bleeding of the gums Corkscrew hairs Polyarthralgia	Yes	ID: 500 mg/12 h (<i>per os</i>) MD: 500 mg/week (<i>per os</i>)
Olmedo et al. ⁹ (2006)	1	USA	F	77	Food allergies	Hematomas Perifollicular rash Bleeding of the gums	No	ID: 100 mg/8 h (<i>per os</i>) MD: 100 mg/day (<i>per os</i>)
Léger ¹⁰ (2008) Léger ¹⁰ (2008)	1	Canada	F	47	Alcoholism	Hematomas Perifollicular rash Bleeding of the gums Corkscrew hairs	Yes	NE
Mertens and Gertner ¹¹ (2011)	3	USA	F	26	Low socioeconomic level	Ecchymosis Perifollicular rash Corkscrew hairs Knee hemarthrosis General syndrome	Yes	ID: 1000 mg/24 h
			F	22	CP	Ecchymosis Perifollicular rash Ankle hemarthrosis	No	ID: 1000 mg/24 h
			F	74	Deliriums about food sensitivities	Perifollicular rash Bleeding of the gums Arthritic ankles	No	ID: 1000 mg/24 h
Núñez Fernández et al. ¹² (2001)	1	Spain	F	67	Alcoholism	Dyspnoea (PHTN) Hematomas Perifollicular rash Bleeding of the gums	No	NE
Abou Ziki et al. ¹³ (2015)	1	USA	F	MA	NE	Hematomas Perifollicular rash Bleeding of the gums Corkscrew hairs Hemarthrosis	No	NE
Mintsoulis et al. ³ (2016)	1	Canada	F	68	Food allergies	Perifollicular rash Hemarthrosis – ankle Bleeding of the gums Epistaxis Panniculitis	Yes	ID: 100 mg/12 h (iv) MD: 250 mg/day (<i>per os</i>)
Loureiro-Amigo et al. ¹⁴ (2016)	1	Spain	F	28	Depression	Ecchymosis Perifollicular rash Bleeding of the gums	No	ID: 1000 mg/24 h (<i>per os</i>)

Table 2 (Continued)

Author, year	Cases	Country	Sex	Age	History	Symptoms	Biopsy	Vitamin C treatment
Brandy-García et al. ¹⁵ (2017)	1	Spain	F	42	Schizophrenia	Perifollicular rash Gingivitis Knee hemarthrosis	Yes	NE
Regehr et al. ¹⁶ (2021)	1	USA	F	18	CP	Hematoma Perifollicular rash Corkscrew hairs Bleeding of the gums	No	ID: 1000 mg/24 h (iv) MD: 250 mg/24 h (per os)
Lanes Iglesias et al. ¹⁷ (2020)	1	Spain	F	55	Dementia	Hematomas Perifollicular rash Bleeding of the gums	No	Enteral nutrition
Thomas and Burtson ¹⁸ (2021)	1	USA	F	69	Depression	Ecchymosis Bleeding of the gums Arterial hypertension General syndrome	No	Multivitamin complex
Rodríguez Falabella et al. ¹⁹ (2023)	1	Argentina	F	48	Parkinson's disease	Hematomas Perifollicular rash Bleeding of the gums Corkscrew hairs Oligoarthritic ankles	Yes	ID: 500 mg/12 h (per os)
Pope and Elder ²⁰ (2023)	1	USA	F	55	Alcoholism	Hematomas Perifollicular rash Arthritic knee Arterial hypertension	No	ID: 250 mg/24 h (per os)
Lu et al. ²¹ (2023)	1	China	F	25	NS	Hematomas Oligoarthritis	No	ID: 200 mg/8 h (per os)
Cabaleiro Raña et al. (2024)	1	Spain	F	49	ED	Perifollicular rash Knee hemarthrosis	Yes	ID: 500 mg/24 h (iv) MD: multivitamin complex

BADL: basic activities of daily living; ID: initial dose; MD: maintenance dose; PHTN: pulmonary hypertension; iv: intravenous; F: female; MA: median age; NS: not specified; CP: cerebral palsy; ED: eating disorder; M: male; per os: by mouth.

and had a mean age of 50 years. In almost all cases, the person had some medical or psychiatric history, and in one case, vitamin C deficiency was reported as a complication of enteral nutrition.¹⁷ The most frequent clinical manifestations were dermatological, including haematomas or ecchymosis, rash with perifollicular distribution, gingival bleeding, and the characteristic “corkscrew” hairs. Approximately 60% of all cases presented with articular manifestations, the most commonly observed ones being hemarthrosis in the large joints of the lower limbs (mainly knees and ankles) and polyarthralgias. In the cardiorespiratory system, several patients had dyspnoea on minimal exertion secondary to anaemia and/or heart failure.^{3,11} Other less frequent symptoms were pulmonary hypertension,¹¹ arterial hypotension, and presyncopal episodes that might be attributable to the greater resistance of the blood vessels to the action of adrenaline.^{18,20} As an atypical manifestation of vitamin C deficiency in connective tissue, Francescone and Levitt reported a case of a 59-year-old male with osteopenia of the sacrum.

In our case, the history of an eating disorder, hemarthrosis, and desmoscopic findings enabled us to guide the diagnosis. Vitamin C levels are not routinely tested for in laboratory analyses and waiting for the result would delay diagnosis/treatment.

Differential diagnosis is made with purpura-related conditions (vasculitis, infections, idiopathic thrombocytopenic purpura, Ehlers–Danlos) or bleeding (coagulation disorders). Given that it is a pseudovasculitis, a biopsy is useful to rule out vascular inflammation.³

As regards treatment, the asthenia and skin lesions improved with vitamin C administration, whereas it took the arthritis several weeks to resolve. The anaemia disappeared after one month.⁵

Conclusion

Despite being an extremely rare deficiency disease in Western countries nowadays, scurvy continues to present in isolation in certain patients. The present case is a reminder of the importance of including this pseudovasculitis in the differential diagnosis of any patient with purpuric lesions or hemarthrosis.

Conflict of interests

The authors have no conflict of interests to declare.

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