

# Scurvy, a forgotten disease but still a reality: case report

## Escorbuto, uma doença pouco lembrada, mas ainda uma realidade: relato de caso

Omar Algazal<sup>1a</sup>, Gabriela Tomasi-Batiston<sup>1b</sup>, Gabriela F. Montebello<sup>1</sup>, João R. Antonio<sup>1</sup>,  
and Eduardo C.N. Constantino<sup>2</sup>

<sup>1</sup>Department of Dermatology; <sup>2</sup>Department of Pathology. Hospital de Base, Faculdade de Medicina de São José do Rio Preto. São José do Rio Preto, São Paulo, Brazil

ORCID: <sup>a</sup>0000-0002-2683-7816; <sup>b</sup>0000-0001-7514-0233

### Abstract

Scurvy is an uncommon disease nowadays but still presents in specific groups with hypovitaminosis. This article reports the case of an adolescent patient who started with non-specific symptoms and evolved with important systemic manifestations. The diagnosis of scurvy was not initially suspected and it was evaluated by several specialties. Several laboratory tests, imaging tests, myelograms, and biopsies were performed to exclude the differential diagnoses, until then, a serum vitamin C dosage was performed and its deficit was reported with subsequent replacement and resolution of the condition. This case demonstrates how important it is to remember this diagnosis, especially with the fundamental clues of cutaneous manifestations, such as perifollicular purpura, which are found in this disease.

**Keywords:** Scurvy. Vitamin C. Perifollicular purpura.

### Resumo

O escorbuto é uma doença incomum atualmente, mas ainda presente em grupos específicos com hipovitaminose. Esse artigo relata o caso de uma paciente adolescente que iniciou com sintomas inespecíficos e evoluiu com importantes manifestações sistêmicas. O diagnóstico de escorbuto não foi suspeitado inicialmente e a mesma foi avaliada por diversas especialidades. Vários exames laboratoriais, exames de imagem, mielograma e biópsias foram realizadas para excluir os diagnósticos diferenciais, até que então foi realizada dosagem sérica de vitamina C e reportado seu déficit com posterior reposição e resolução do quadro. Esse caso demonstra o quão importante é lembrarmos desse diagnóstico principalmente com as pistas fundamentais das manifestações cutâneas, como as púrpuras perifoliculares, que são encontradas nesta doença.

**Palavras-chave:** Escorbuto. Vitamina C. Púrpura perifolicular.

#### \*Correspondence:

Gabriela Tomasi-Batiston

E-mail: gabriela\_tomasi@hotmail.com

2795-501X / © 2023 Portuguese Society of Dermatology and Venereology. Published by Permanyer. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

**Received:** 27-06-2023

**Accepted:** 29-12-2023

DOI: 10.24875/PJDV.23000056

Available online: 06-03-2024

Port J Dermatol and Venereol. 2024;82(1):49-53

[www.portuguesejournalofdermatology.com](http://www.portuguesejournalofdermatology.com)

## Introduction

Scurvy is a pathology caused by vitamin C deficit, currently uncommon when it is compared to other nutritional disorders<sup>1,2</sup> and it is rarely suspected leading to delay in its diagnosis<sup>3,4</sup>.

Scurvy is one of humanity's oldest diseases. It was first described in the Ebers papyrus, written approximately 1500 BC. Seeing whole groups of people in monasteries, within families, aboard ships, and armies afflicted with the disease, ancient writers developed multiple and varying theories regarding its etiology. Sailors were among the most affected victims, mainly in the 15<sup>th</sup> century with the beginning of long journeys<sup>5</sup>.

British navy doctors assumed that citrus fruits such as lemons and oranges treated the disease<sup>6</sup>, but it was not until 1931 that biochemist Albert Szent-Gyorgyi accidentally discovered a substance in lemons and oranges called "hexuronic" acid<sup>5,6</sup>. This was later related to the treatment of scurvy<sup>6</sup>.

Vitamin C (L-ascorbic acid or ascorbate) is an essential nutrient for all human beings and is closely related to the maintenance of intercellular connective tissues, osteoid, dentin, and collagen. It can regulate the inflammatory response, apart from the influencing of iron absorption<sup>4</sup>.

The clinical spectrum of scurvy is quite varied, including bone, hematological, dental, and dermatological manifestations such as petechiae and/or perifollicular purpura and follicular hyperkeratosis. The diagnosis is essentially clinical with detailed history, radiography, and laboratory tests to aid. Treatment consists of micro-nutrient replacement and dietary changes<sup>1,3</sup>.

In this case, we report a patient with poor eating habits with serious clinical repercussions who was later diagnosed with scurvy.

## Case report

A 13-year-old female caucasian patient with a previous history of persistent ductus arteriosus treated as a newborn was admitted to the emergency room at "Hospital da Criança e Maternidade," in São José do Rio Preto due to pain in the right hypochondrium, hypermenorrhea, and spots in the upper and lower limbs present for 3 weeks. Continued use of medications or allergies was denied. The patient is in good general condition, active, with adequate vital signs, and without alterations in the cardiopulmonary, abdominal, or neurological physical examination.

Upon dermatological examination, there were diffuse petechiae on the limbs, upper gingiva hypertrophy, and



**Figure 1.** Patient's face showing petechiae, follicular pustules and inflammatory gingivitis.

rough brownish punctiform papules disseminated on the face, limbs, and abdomen (Figs. 1-3). An incisional biopsy performed on the petechiae displayed a slight extravasation of red blood cells and hemosiderin deposits on the dermis and a mild lymphocytic inflammatory infiltrate around the vessels of the superficial plexus, compatible with non-inflammatory purpura (Figs. 4 and 5).

Complementary tests highlighted only hypochromic microcytic anemia and increased fibrinogen without any changes in platelets, coagulation or inflammatory parameters, liver and kidney function, and autoantibodies. A chest X-ray and an abdominal ultrasound showed no alterations.

The patient developed pain, ankle edema, and difficulty wandering, and bone X-ray showed tenuous rarefactions in the distal metaphysis of the tibia and fibula bilaterally and more subtle changes in the femur. Ultrasound of the ankles was suggestive of an edematous/inflammatory process of the skin and subcutaneous tissue.

The hematology team performed a myelogram to exclude a lymphoproliferative disease, which showed



**Figure 2.** Oral cavity showing upper gingiva hypertrophy.

megakaryocytic hyperplasia suggestive of peripheral platelet destruction.

After a few days of hospitalization, the patient reported pain when eating and refusal of hospital food. On this occasion, the mother reported that the patient had an inadequate daily diet based on instant noodles and soft drinks. The nutritional assessment revealed an eutrophic child, but at nutritional risk with a very low serum dose of vitamin C: 0.08 mg/dL for the normal value of 0.50-1.50 mg/dL), thus diagnosing scurvy.

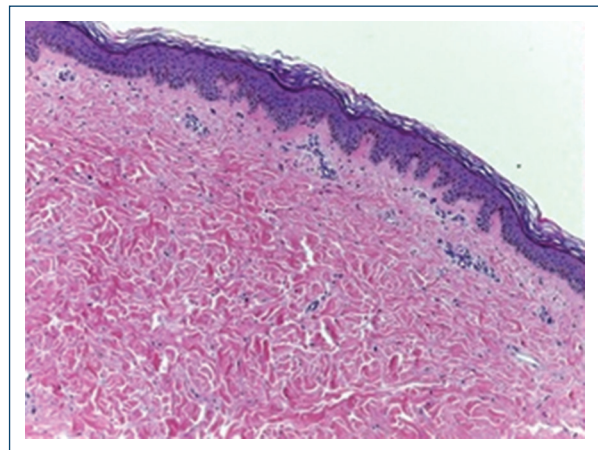
With vitamin C replacement, there was a gradual and complete resolution of the condition. In the first 2 weeks, cutaneous symptoms and almost all systemic symptoms cleared, whereas gingival hyperplasia showed partial improvement in the 1<sup>st</sup> month and resolution in 2 months. The patient continues to be monitored by the dermatology, nutrition, and pediatrics teams, with an improvement in dietary quality.

## Discussion

Scurvy is a cutaneous and systemic disease caused by vitamin C deficiency, extremely rare nowadays, but it is one of the oldest diseases of humanity, with the first reports in ancient Egypt<sup>6</sup>.

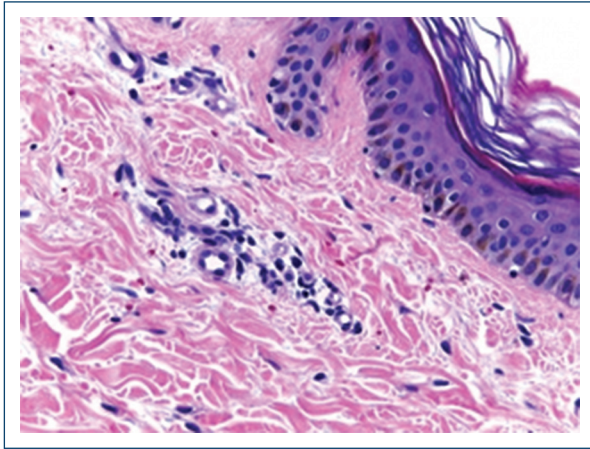


**Figure 3.** Multiple petechiae and perifollicular purpura on the left lower limb.



**Figure 4.** Perivascular and superficial lymphocytic inflammatory infiltrate (H&Ex40).

L-ascorbic acid is an essential nutrient in the diet, found in vegetables and fruits, mainly in citrus fruits,



**Figure 5.** Extravasation of red blood cells and perivascular lymphocytic infiltrate (H&Ex100).

green vegetables, potatoes, tomatoes, and cabbage. A daily intake of 10 mg/day of vitamin C is enough to keep body stores above 300 mg<sup>1,3</sup>. This nutrient participates in several physiological processes and its deficit can lead to inadequate wound healing, petechiae, follicular purpura that predominate in the lower limbs, corkscrew and curved hair, subungual hemorrhages, dental defects, and osteoblast function. It may lead to pseudoparalysis in children<sup>1,7</sup>.

Populations at risk of nutritional risk of vitamin C deficiency include the elderly, alcoholics, patients on restrictive diets, a total parenteral diet without supplementation, undergoing intestinal resections, or people who have malabsorption syndromes<sup>8,9</sup>.

The clinical diagnosis of scurvy is confirmed by the reduction of plasma levels of vitamin C below 0.2 mg/dL. Treatment consists of oral vitamin C replacement, with doses of 300 mg/g daily, until the resolution of the clinical picture<sup>1</sup>.

In a study by Blee et al., patients in the hospital or undergoing surgery may have borderline levels of vitamin C that can further decrease due to a lack of oral intake post-surgery or critical illnesses such as pancreatitis, sepsis, or multiple organ failure<sup>10</sup>. Furthermore, seven out of 12 patients who experienced widespread bleeding had poor oral nutrition before surgery.

Acute lameness, found in the pediatric population, maybe the musculoskeletal manifestation presented by scurvy due to severe malnutrition<sup>11</sup>, as in our patient. A systematic review conducted by Trapani et al. on scurvy in the pediatric population revealed that 90% of children suffered from musculoskeletal complaints such as arthritis and lower limb pain, whereas about

33% had a limp and/or refused to walk<sup>11,12</sup>. Ceglie et al. also reported three cases that began with leg pain, refusal to walk, and worsened over months. Two presented gingival hyperplasia and petechiae, another reported night sweats and gingival bleeding, but after the deficit was discovered and ascorbic acid was supplemented, there was an improvement in days with further improvement within weeks<sup>13</sup>, as in the present case.

In the current context, where consumption of ultra-processed foods with low nutritional value is increasing, scurvy is still a reality. It is a rare condition, but it must be remembered, especially if the risk factors are listed in the clinical history. Therefore, this report aims to recall the clinical and dermatological picture of scurvy. Classic findings in dermatological examination can help us with clinical reasoning, in addition to reinforcing the importance of questioning nutritional aspects in daily anamnesis.

## Funding

None.

## Conflicts of interest

None.

## Ethical disclosures

**Protection of human and animal subjects.** The authors declare that no experiments were performed on humans or animals for this study.

**Confidentiality of data.** The authors declare that they have followed the protocols of their work center on the publication of patient data.

**Right to privacy and informed consent.** The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

**Use of artificial intelligence for generating text.** The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

## References

1. Belda Junior W, Di Chiacchio N, Criado PR. Tratado de Dermatologia. 2<sup>nd</sup> ed. São Paulo: Atheneu; 2014.
2. Fulgencio-Barbarin J, Montero-Menárguez J. Manifestaciones mucocutáneas del escorbuto. Med Fam Semerg. 2022;48:e15-6.

3. Loureiro-Amigo J, López-Corbeto M. Un caso de escorbuto en un joven del siglo XXI. *Rev Clín Esp.* 2016;216:337.
4. Bursali A, Gursu S, Gursu A, Yildirim T. A case of infantile scurvy treated only with vitamin C: a forgotten disease. *Acta Orthop Belg.* 2009;75:428-30.
5. Stewart CP, Cuthrie D. *Lind's Treatise on Scurvy. A Bicentenary Volume Containing a Reprint of the First Edition of a Treatise of the Scurvy by James Lind.* Edinburgh: Edinburgh University Press; 1953.
6. Pimentel L. Scurvy: historical review and current diagnostic approach. *Am J Emerg Med.* 2003;21:328-32.
7. UpToDate. Available from: [https://www.uptodate.com/contents/overview-of-water-soluble-vitamins?search=escorbuto&source=search\\_result&selectedTitle=1-53&usage\\_type=default&display\\_rank=1#H54](https://www.uptodate.com/contents/overview-of-water-soluble-vitamins?search=escorbuto&source=search_result&selectedTitle=1-53&usage_type=default&display_rank=1#H54) [Last accessed on 2023 Sep 02].
8. Saavedra MJ, Aziz J, San Román NC. Scurvy due to restrictive diet in a child with autism spectrum disorder: case report. *Arch Argent Pediatr.* 2018;116:e684-7.
9. Golriz F, Donnelly LF, Devaraj S, Krishnamurthy R. Modern American scurvy - experience with vitamin C deficiency at a large children's hospital. *Pediatr Radiol.* 2016;47:214-20.
10. Blee TH, Cogbill TH, Lambert PJ. Hemorrhage associated with vitamin C deficiency in surgical patients. *Surgery.* 2002;131:408-12.
11. Thiemann S, Cimorelli V, Bajwa NM. Case report: uncommon cause of limp in the 21<sup>st</sup> century. *Front Endocrinol.* 2023;13:968015.
12. Trapani S, Rubino C, Indolfi G, Lionetti P. A narrative review on pediatric scurvy: the last twenty years. *Nutrients.* 2022;14:684.
13. Ceglie G, Macchiarulo G, Marchili MR, Marchesi A, Aufiero LR, Di Camillo C, et al. Scurvy: still a threat in the well-fed first world? *Arch Dis Child.* 2018;104:381-3.