

Gait Disturbance and Polyarthralgia as a Manifestation of Scurvy in a Pediatric Patient. Case Report.

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ABSTRACT

Vitamin C or ascorbic acid is essential for the correct functioning of the organism. As it cannot be synthesized by humans, it is obtained from external food sources. Deficiency of ascorbic acid produces scurvy, which includes symptoms as fatigue, myalgia and polyarthralgia, associated with skin hemorrhage and bleeding gums. Scurvy is a rare entity. Most of the reported cases involve children with food restrictions due to neurodevelopmental disorders. The early detection of the clinical signs of this condition would avoid unnecessary complementary tests, and early treatment would help reverse symptoms and prevent complications. Case Report: a 13-year-old male patient presented with pain in both hips radiating to the knees associated with loss of strength and hematomas in the lower limbs. Objective: to highlight the importance of a complete nutritional assessment to avoid a late approach with multiple interventions.

Keywords: Scurvy; vitamin C; polyarthralgia.

Level of Evidence: IV

Alteración de la marcha y poliartralgia como manifestación de escorbuto en un niño. Presentación de un caso

RESUMEN

La vitamina C o ácido ascórbico es imprescindible para el correcto funcionamiento del organismo. Los seres humanos no pueden sintetizarla; en consecuencia, dependen estrictamente de su aporte exógeno. Su déficit causa escorbuto, un cuadro que se manifiesta con fatiga, mialgias y poliartralgias, hemorragias en la piel y sangrado de las encías. Es una enfermedad infrecuente. La mayoría de los casos publicados corresponden a niños con restricciones alimentarias por trastornos del neurodesarrollo. La respuesta satisfactoria al aporte de ácido ascórbico confirma el diagnóstico. La sospecha de esta enfermedad evitaría exámenes complementarios innecesarios y el tratamiento temprano ayudaría a revertir los síntomas y prevenir complicaciones. Se presenta el caso de un varón de 13 años que consulta por dolor en ambas caderas con progresión hacia las rodillas, sumado a pérdida de la fuerza y hematomas en los miembros inferiores. El objetivo de esta presentación es resaltar la importancia de la anamnesis alimentaria completa y evitar un abordaje tardío con múltiples intervenciones.

Palabras clave: Escorbuto; poliartralgia; vitamina C.

Nivel de Evidencia: IV

INTRODUCTION

Vitamin C or ascorbic acid is essential for the proper functioning of the body. Human beings cannot synthesize it; therefore, they strictly depend on exogenous contribution through the consumption of various fruits and vegetables. Its deficiency causes scurvy. This disease manifests with asthenia, fatigue, myalgia and polyarthralgia, predominantly in the lower limbs and often with skin hemorrhages, oral disease with bleeding gums and loss of teeth.¹ Its diagnosis is clinical and can be confirmed with a biochemical analysis.

In pediatrics, this condition is often misdiagnosed, confusing it with osteomyelitis, septic arthritis, bone tumors, leukemia, bleeding disorders, and rheumatic diseases.²

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A case is presented with the goal of emphasizing the importance of conducting a complete dietary assessment together with a multidisciplinary approach in order to suspect, early and effectively, these types of alterations that typically lead to a late diagnosis with multiple unnecessary interventions.

CLINICAL CASE

A 13-year-old male was taken by his parents to the Orthopedics and Traumatology Service in March 2021. One week earlier, the patient had begun to feel pain in both hips, with progression to both knees, without previous trauma, associated with loss of strength, gait disturbance, and small bruises on both lower limbs. After several consultations and due to the increase in symptoms, he was hospitalized. During the anamnesis, the mother reported that the child had lost 2.500 kg of weight in the last three months and that he had a severe food selectivity (diet without fruits, meats, and vegetables). She stated that he was a full-term newborn with a birth weight of 3300 g, negative serologies, and no allergies, and that there were no maternal perinatal disorders.

The physical examination revealed a regular general state, generalized skin and mucous pallor, symmetrical lower limbs, grade 2 edema (depression up to 4 mm and disappearance in 15 minutes), abundant petechiae and bruises of various evolutionary stages, slightly painful lower limb mobility, mobile joints without signs of phlogosis, and marked muscle weakness. The neurological examination was consistent with his age; he had a negative Romberg's sign, 3/5 bilateral strength, a gait with increased support polygon, and he rose up with difficulty and assistance. The biochemical analysis upon admission yielded the following results: normocytic and hypochromic anemia (hematocrit 23%; hemoglobin 7.5 g/dl; leukocytes 5,500/mm³; mean corpuscular volume 75.4 fl; mean corpuscular hemoglobin 24.6 pg, platelet count 306,000/mm³, C-reactive protein 0.8 mg/l). Anteroposterior long bone radiographs were taken (Figures 1 and 2).

A non-contrast skull computed tomography was requested. The images showed a cisterna magna as an anatomical variant, without other alterations. Magnetic resonance images of the spine, skull, and lower limbs revealed no alterations. The echocardiogram and abdominal ultrasound did not present particularities.



Figure 1. Anteroposterior radiographs of the right and left legs. No alterations are observed.



Figure 2. Anteroposterior radiographs of the right and left femurs. No alterations are observed.

After consultation with the Hematology Department, a smear test was performed that revealed sickle cell disease with normal electrophoresis. Sickle cell anemia was ruled out, and a bone marrow aspiration was performed, the result of which was normal cell tissue for the age, with a predominance of red cells without hierarchical maturational abnormalities. The doctors from the Rheumatology Service ruled out dermatomyositis and polymyositis, after which a biopsy of the skin and muscle lesions was taken, with normal results. The patient was evaluated by doctors from the Dermatology Service who, based on the symptoms and history, suggested the diagnosis of scurvy. A vitamin C analysis was requested, which returned a value of 1.5 mg/dl.

Given this presumed diagnosis, 100 mg of ascorbic acid were administered every 24 hours (h). After 48 h, the patient's symptoms and laboratory values improved (hematocrit 29%; hemoglobin 9.9 g/dL; mean corpuscular volume 82.3 fl). The patient was discharged seven days later, with complete symptom remission. He was instructed to continue the treatment for two weeks and to introduce changes in the diet guided by a nutritionist.

At the first outpatient orthopedic and pediatric follow-up seven days later, the evolution was good. During the second follow-up visit, 15 days after discharge, the mother reported that the child continued with his bad eating habits, so it was decided to prolong the treatment with daily ascorbic acid. A month later, after the third and last follow-up visit, and with normal laboratory tests, he was discharged.

DISCUSSION

Currently, scurvy is a rare disease in pediatrics that is caused by an exogenous nutritional deficiency of ascorbic acid. Cases of iron overload due to hematological diseases, infants fed boiled cow's milk, and, more frequently, children with dietary restrictions due to neurodevelopmental abnormalities have been documented in the literature.³

The deficiency of vitamin C or ascorbic acid produces defects in the formation of collagen and alterations in the production of chondroitin sulfate.⁴ The musculoskeletal manifestations, which were the reason for our patient's consultation, may be generalized pain, polyarthralgia and edema predominantly in the lower limbs, together with the refusal to walk. This condition is usually associated, as our patient presented, with hemorrhagic lesions on the skin, such as ecchymosis and petechiae of different sizes and stages of evolution.⁵

Signs and symptoms of scurvy have been reported to develop after one to three months of inadequate vitamin C intake (<10 mg/day).⁶ The diagnosis is clinical, although several supplementary testing can help. The complete blood count usually reveals, as in our patient, mild anemia and slightly elevated acute phase reactants (erythrocyte sedimentation rate and C-reactive protein).

Currently, given the low index of suspicion for scurvy, patients undergo many complementary studies to rule out, primarily, oncohematological, rheumatological, or neurological illnesses, according to documented cases.⁷

The satisfactory response to the contribution of ascorbic acid constitutes diagnostic confirmation. In published studies, between 100 and 300 mg are recommended every 24 hours for a month. According to case reports, the general condition improves within the first 24 hours of treatment, pain relief occurs after two or three days, and musculoskeletal symptoms resolve within a few weeks.⁸ In this case, the clinical status and laboratory parameters improved 48 hours after starting treatment.

A low value of ascorbic acid can support the diagnosis, the normal value is 0.5-1.5 mg/dl, and a value <0.2 mg/dl is considered a deficiency. According to published studies, patients with scurvy in whom ascorbic acid was measured had values of 0.2 mg/dl, 0.5 mg/dl, 1.2 mg/dl and 31.9 ng/dl (>30 ng/dl as a normal parameter), some were lower than those found in our patient (1.5 mg/dl). However, the signs and symptoms developed and the prompt response to treatment with vitamin C confirmed the diagnostic suspicion.

CONCLUSION

The evaluation of nutritional characteristics should be part of the routine health control. The diagnosis of scurvy should be considered when a patient presents with unexplained polyarticular pain, refuses to ambulate, and has petechiae, ecchymosis, or gingival hypertrophy, even if laboratory values are within normal parameters. Persistent suspicion of this disease would avoid unnecessary additional tests and early treatment would help reverse symptoms and prevent complications.

Conflict of interest: The authors declare no conflicts of interest.

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