Case report

Lucio's Phenomenon mimicking vasculitis in an elderly patient: a Hansen's reaction

Reação hansênica em padrão de fenômeno de Lúcio mimetizando vasculite em idoso

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ABSTRACT

Lucio's phenomenon is a subtype of Virchowian leprosy characterized by necrotizing vasculitis of small vessels, which can mimic other vasculitides, particularly in the elderly. We describe the case of a 74-year-old man with a 12-month history of distal painful paresthesias and purpuric lesions on his legs and feet that progressed to necrotic ulcers. He also presented with nasal septum perforation with crusted lesions associated with madarosis and hypertrophy of the earlobes. Initial diagnostic hypotheses favored possible vasculitides. However, Lucio's phenomenon was defined based on biopsies of skin lesions and a smear of elbows which revealed a high bacillary load. Immunosenescence can alter the clinical expression of leprosy, making this diagnosis more challenging. Nonetheless, it should always be remembered before the introduction of immunosuppressive therapies.

Headings: Leprosy/Immunology; Vasculitis; Aged; Case Reports.

RESUMO

O fenômeno de Lúcio é um subtipo de hanseníase virchowiana caracterizada por uma vasculite necrosante de pequenos vasos, a qual pode mimetizar outras vasculites, particularmente em idosos. Descrevemos o caso de um homem de 74 anos com história de 12 meses de parestesias dolorosas distais e lesões purpúricas nas pernas e pés que progrediram para úlceras necróticas, além de apresentar uma perfuração do septo nasal com lesões crostosas associada a madarose e hipertrofia do lobo auricular. As hipóteses diagnósticas iniciais privilegiaram eventuais vasculites, no entanto o fenômeno de Lúcio foi definido com base em biópsias das lesões na pele e na baciloscopia de cotovelos que revelou alta carga bacilar. Sabe-se que a imunossenescência pode alterar a expressão clínica da hanseníase tornando este diagnóstico mais desafiador, todavia ele deve ser sempre lembrado antes da introdução de terapias imunossupressoras.

Descritores: Hanseníase; Reações Hansênicas; Vasculite; Idoso; Relato de Caso.

INTRODUCTION

Leprosy is a chronic infectious disease characterized by skin lesions and peripheral nerve involvement. It is caused by acid-fast bacilli (AFB) belonging to the genus *Mycobacterium leprae* and *M. lepromatosis*[1]. In Brazil, this disease remains a public health challenge due to the population's low socioeconomic level and poor health literacy, considering it is a curable disease. However, when diagnosed late, leprosy can lead to severe physical disabilities[2].

The immune response against the bacillus may be altered in the elderly, facilitating infection and the emergence of unusual

manifestations[3]. In some cases, acute tissue inflammation called Hansen's reaction[4] may occur, which includes Lucio's phenomenon. Lucio's phenomenon is described as a rare Hansen's reaction with a high bacillary load related to patients with untreated or inadequately treated Virchowian leprosy[4,5]. Particularly in the elderly, the diagnosis of this phenomenon can be difficult, as its nonspecific symptoms often overlap with other conditions, such as degenerative diseases, malignancies, and vasculitis[6,7].

When a cutaneous manifestation is mistakenly interpreted as primary autoimmune vasculitis, the patient may inadvertently undergo immunosuppression, which in turn can lead to progression of the bacillary load, worsening of skin lesions, and increased risk of systemic complications[6,8].

This case report aims to illustrate the clinical challenges faced in diagnosing and treating Lucio's phenomenon, including possible differential diagnoses commonly attributed to this Hansen's reaction.

CASE REPORT

The patient was a 74-year-old man from the state of Goiás, married, a retired carpenter. His medical history included bilateral hearing loss for five years, heavy alcohol and tobacco use up to about a year prior, and no other known comorbidities. His initial complaint was painful paresthesias in his lower limbs, which evolved over a year with the appearance of purpuric skin lesions, accompanied by a loss of approximately 10% of his body weight. Two months earlier, he had an episode of epistaxis and was evaluated on an outpatient basis at otolaryngology and rheumatology services. They identified nasal septum perforation with associated crusted lesions, raising the hypothesis of systemic or paraneoplastic vasculitis. A biopsy of the nasal ulcer was scheduled; however, on the day of the procedure, the patient presented with acute confusion, tachycardia, fever, and tachypnea. He was admitted with a diagnosis of sepsis with a probable skin focus. After clinical stabilization and completion of antibiotic therapy, it was decided to keep him hospitalized due to his socioeconomic vulnerability and difficulty in accessing outpatient consultations. He was transferred to the geriatrics ward for continuity of diagnostic and therapeutic investigation, where he remained hospitalized for 22 days. On this occasion, in addition to weight loss, madarosis and hypertrophy of the earlobes were observed. The skin lesions (Figure 1) presented as erythematous plaques ranging from 1 to 3 cm in diameter, with central ulcerated areas covered by necrotic tissue and crusts with peeling on the periphery, mainly located on both knees. Around these lesions, reddish-to-purplish spots compatible with livedo reticularis were noted. Purpuric lesions, some palpable with central ulceration and also covered with crusts, distributed in a star-like pattern were identified on the plantar region and dorsum of the feet. There was also marked xeroderma with atrophic skin, especially on the plantar regions, where superficial tactile sensitivity to the dry cotton test was bilaterally reduced. No thickening or changes suggestive of neuritis were noted on palpation of the main peripheral nerve pathways, including the ulnar, radial, fibular, and posterior tibial nerves. The main initial diagnostic hypotheses raised were some type of local or systemic vasculitis, hypersensitivity reactions to drugs, or even paraneoplastic causes, in addition to possible infectious causes such as tuberculosis and

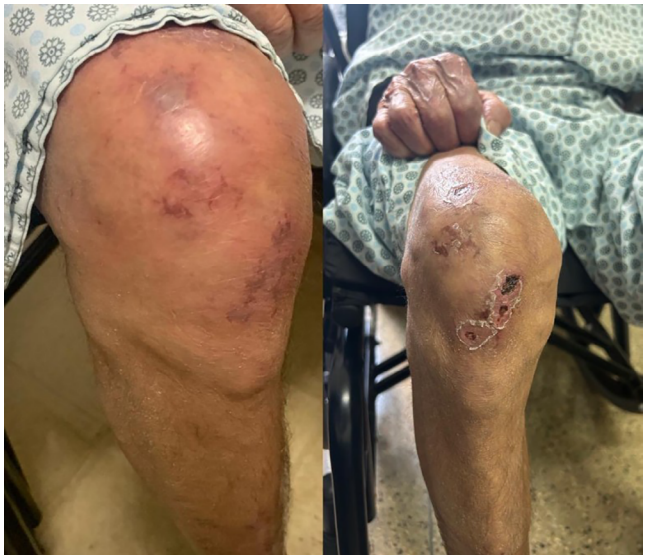

Figure 1A. Livedo reticularis on the knee that evolved into ulcerated lesions covered by crusts with peeling on the periphery.

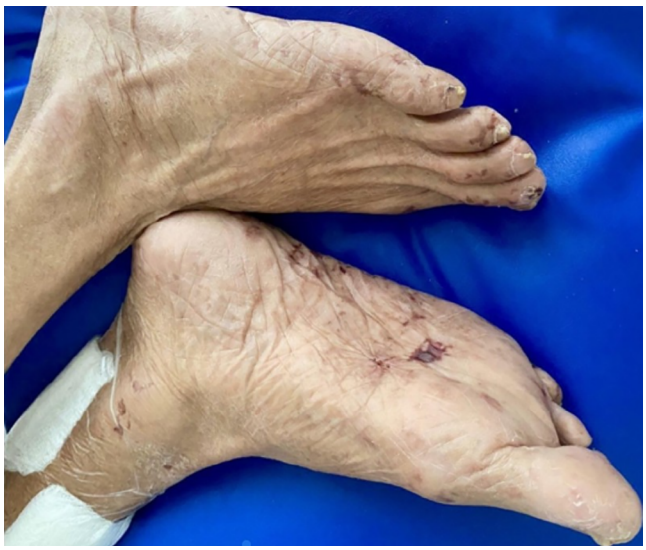

Figure 1B. Livedo reticularis in a star-shaped pattern on the plantar regions.

tegumentary leishmaniasis. Being an elderly patient, computed tomography scans of the chest and abdomen were performed, which did not reveal changes compatible with solid neoplasms or occult lymphoma. In laboratory terms, the entry hemogram showed microcytic anemia (hemoglobin of 8.9g/dL) without atypia or cytopenias. Other examinations of interest were erythrocyte sedimentation rate (ESR) of 125 mm/h for a reference value (RV) between 0 and 25mm/h, non-reactive antinuclear factor (ANF), rheumatoid factor of 46 IU/ml (RV between 0 and 20 IU/ml), protein electrophoresis within normal limits and with no evidence of monoclonal peaks, anti-neutrophil cytoplasmic autoantibodies (ANCA) and anti-myeloperoxidase and anti-proteinase 3 negative, normal serum dosage of prostate-specific antigen (free PSA of 0.16 ng/ml for a VR between 0 and 0.5ng/ml and total PSA of 0.65 ng/ml for VR of 0 to 4 ng/ml), negative search for occult blood in the stool, negative GeneXpert™ in sputum and negative serologies for leishmaniasis, syphilis, paracoccidioidomycosis, human immunodeficiency virus, hepatitis B and C. Thus, biopsy of the lesions was indicated.

The histological study of the ulcer in the nasal septum mucosa revealed acute inflammatory infiltrate without identification of fungi or parasites. In the lesions of the plantar region, an epidermis with a central necrotic area and acute vasculitis in the superficial dermis was observed, characterized by endothelial necrosis, deposition of fibrinoid material, and leukocytoclasia. In the superficial and deep dermis, there was also intense inflammatory infiltrate predominantly histiocytic, whose cytoplasm contained broad globules that, upon special staining, corresponded to fragments of AFB also observed inside endothelial cells. The biopsy of the lesion on the knee showed similar findings to those of the plantar region, except for the absence of epidermal necrosis, maintaining the pattern of histiocytic infiltrate and positivity for AFB (Figure 2). The histopathological results of these biopsies thus defined the diagnosis of leprosy in the pattern of Lucio's phenomenon. The dermatology service also proceeded with smears of skin scrapings collected from the earlobes and elbows, which revealed a bacilloscopic index of 4+, corresponding to an estimated bacillary load between 10 and 100 bacilli per microscopic field, characterizing the patient as a carrier of multibacillary leprosy.

Treatment with single multidrug therapy (MDT-U) scheduled for 12 months was instituted, defined by a monthly supervised dose of rifampicin 600 mg + clofazimine 300 mg + dapsone 100 mg, in addition to daily self-administered doses of clofazimine 50 mg + dapsone 100 mg, associated with prednisone at a dose of 20 mg/day. The search for household contacts was carried out, without identifying other cases. In outpatient follow-up, 21 days after the start of treatment, worsening of anemia was observed and it was decided to replace dapsone with ofloxacin 400 mg, reaching normalization of hemoglobin levels (12.6g/dL) after one month of this change. There was progressive improvement in the cutaneous lesions throughout the treatment, with total regression of ulcers, purpuric reticular livedo, and erythema after five months. The bilateral loss of tactile sensitivity in the feet remained, without deformities. The functional assessment by the so called "OMP" score[2] (eyes, hands, and feet) was 2, scoring only for the feet.

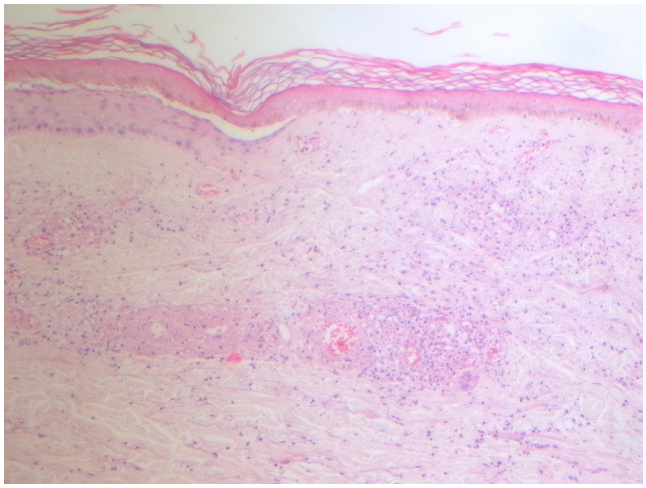

Figure 2A. Histological section stained with hematoxylin and eosin (HE) showing necrosis in the epidermis, vasculopathic alterations, infiltrate of histiocytes and neutrophils with leukocytoclasia.

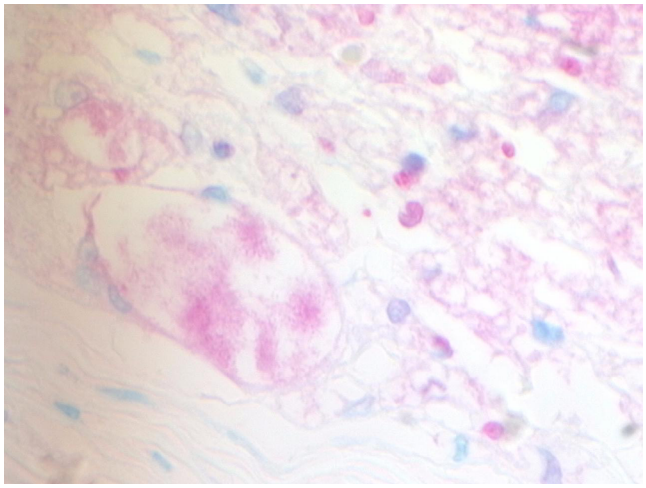

Figure 2B. Histological section stained with Fite-Faraco showing fragmented bacilli in the endothelium and in the perivascular region.

DISCUSSION

Brazil ranks second in the number of leprosy cases in the world, with a detection rate of 8.59 per 100,000 inhabitants[9]. In this scenario, there is an increase in the proportion of multibacillary cases (80.5%) and cases in the elderly (25.1%)[2,10], with a higher proportion in men (60.1%).

Immunological changes related to age, such as the functional decline of T cells and the chronic low-grade inflammatory state described in the literature as "inflammaging", may favor a dysregulated and ineffective immune response against *Mycobacterium leprae*[3,10-13], contributing to a higher bacillary load and vascular aggression observed in our reported Lucio's phenomenon case.

Lucio's phenomenon corresponds to necrotizing vasculitis in dermal vessels in the context of a Hansen's reaction[4,5]. The clinical expression of leprosy depends on the host's immune response[14,15]: In the Virchowian pole, there is an absence of specific cellular immunity and a predominance of Th2 immune response with expression of cytokines such as IL-4, IL-6, and IL-10[16]. The production of autoantibodies such as rheumatoid factor (increased in our case) is common in Virchowian leprosy, and predisposing factors are older age, more prolonged disease, and recurrent erythema nodosum leprosum[3]. The diagnostic suspicion of Lucio's phenomenon is based on the clinical picture[14], and the skin lesions usually begin on the feet and progress to the legs, arms, and face[6,14]. Erythematous-violet macules or spots may appear, evolving with infiltration, necrosis, painful ulcerations, and atrophic stellate scars[5,11,14], translating the distal livedoid vasculopathy that evolves into necrotizing vasculitis by macrophage infiltration of the vascular wall[5]. The confirmation of Lucio's phenomenon, therefore, depends on the lesion biopsy, demonstrating epidermal necrosis with involvement of subpapillary vessels, scarcity of neutrophils, and the presence of numerous AFB[11,16,17], as was the case described here. This chronic and insidious reactive vasculopathy associated with progressive cutaneous ulceronecrosis is well described in the literature and represents an increased risk of unfavorable outcomes, especially in immunosenescent patients[12,13,17].

The differential diagnoses that can also present with constitutional symptoms, livedoid lesions, and ulcerations (in addition to having epidemiology compatible with the age range of our patient)[7,8,17] considered in this case were mainly infectious etiologies (especially tegumentary leishmaniasis, tuberculosis, and syphilis) and organ-specific cutaneous vasculitis. These diagnoses were progressively ruled out by integrated analysis of clinical, laboratory, and histopathological data: negative ANCA and absence of involvement of the lower respiratory tract made granulomatosis with polyangiitis unlikely; the absence of seroreactivity for hepatitis B and C contributed to ruling out, respectively, the diagnoses of cutaneous nodosa polyarteritis and cryoglobulinemic vasculitis[7,8]; there was no use of medications to explain drug hypersensitivity vasculitis; and occult neoplasms were not found to justify paraneoplastic vasculitis.

Regarding treatment, the scheme adopted in this case was standardized by the Brazilian Ministry of Health for multibacillary leprosy[2,5]. The association of MDT-U with corticosteroids aims to reduce vascular inflammation and limit the extent of cutaneous necrosis, in addition to helping control pain and prevent sequelae[2,14]. The use of anticoagulants has also been described in some reports with the aim of reducing the thrombotic component of the vasculitis typical of Lucio's phenomenon[5]. However, attention should be paid to the increased possibility of drug interaction due to polypharmacy and the consequent risk of adverse effects in the elderly.

CONCLUSION

This report reinforces the importance of considering infectious etiologies in the differential diagnosis of vasculitis in the elderly before initiating potentially inappropriate treatments. The differentiation between inflammatory vasculitis and the infectious vasculopathy of Lucio's phenomenon in this case was not only academic but directly impacted the patient's safety and prognosis. We dare to recommend that, in endemic regions for leprosy, every elderly patient with necrotic cutaneous vasculitis should undergo skin smear and/or biopsies, especially before the introduction of immunosuppressive therapies.

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