

Lucio's phenomenon presenting as retiform purpura and diffuse cutaneous necrosis with a fatal outcome: a case report

Fenômeno de Lúcio apresentado como púrpura retiforme e necrose cutânea difusa com desfecho fatal: relato de caso

Orivaldo Alves Barbosa¹ , Sergio Saldanha Freire Simões² , André Luís Coutinho de Araújo Macedo¹ , Francisco Tomaz da Costa Filho² , José Walter Correia¹ , Karina Aguiar de Freitas³ , Eliseu Sousa do Amaral Júnior¹ 

1. Hospital Dr. César Cals (HGCC), Fortaleza, CE, Brasil. 2. Residente em Dermatologia, Hospital Dr. César Cals (HGCC), Fortaleza, CE, Brasil. 3. Centro de Dermatologia Dona Libânia, Fortaleza, CE, Brasil.

Abstract

Lucio's phenomenon is a rare and severe leprosy-associated reaction, characterized by erythema, painful macules, and hemorrhagic bullae that progress to ulcerations. This case report details a patient with leprosy complicated by Lucio's phenomenon, where delayed diagnosis and treatment contributed to a fatal outcome. The report underscores the critical importance of early diagnosis and prompt intervention to prevent severe complications and improve clinical outcomes.

Keywords: Lucio's phenomenon; leprosy; retiform purpura; cutaneous necrosis.

Resumo

O fenômeno de Lúcio é uma reação rara e grave associada à hanseníase, caracterizada por eritema, máculas dolorosas e bolhas hemorrágicas que progridem para ulcerações. Este relato de caso detalha um paciente com hanseníase complicada pelo fenômeno de Lúcio, em que o diagnóstico e o tratamento tardios contribuíram para um desfecho fatal. O relato ressalta a importância crítica do diagnóstico precoce e da intervenção imediata para prevenir complicações graves e melhorar os resultados clínicos.

Palavras-chave: Fenômeno de Lúcio; hanseníase; púrpura retiforme; necrose cutânea.

INTRODUCTION

Leprosy diagnosis primarily occurs in primary care and relies on clinical assessment, and early detection is critical to prevent long-term effects and reduce disease transmission. However, the broad clinical spectrum of leprosy complicates diagnosis, especially for non-dermatologists. Lucio's phenomenon, characterized by severe skin ulcerations and vascular thrombosis due to *Mycobacterium leprae* invasion, further challenges diagnostic efforts¹. Immediate recognition and treatment of these complications are vital to prevent serious outcomes like secondary infections and death, highlighting the need for specialized dermatological knowledge.

Retiform purpura, often linked to underlying vascular damage from conditions like vasculitis or hypercoagulable states, can indicate serious diseases requiring urgent care. Diagnosing retiform purpura involves differentiating between vessel wall damage and lumen obstructions². Lucio's phenomenon, a severe variant of leprosy with extensive necrosis, exemplifies the importance of accurate diagnosis and quick intervention³.

CASE REPORT

M.J.P., a 65-year-old widow from Mombaça, Ceará, Brazil,

presented with bullous lesions on her right foot in April 2024. Initially painless and without other symptoms, the lesions rapidly spread from her foot to her thighs within 10 days. She was given Ivermectin, Amoxicillin-Clavulanate, and Mupirocin at a local clinic for suspected parasitic and bacterial infection.

Her condition worsened within a day, with lesions spreading to her limbs and abdomen, yet remaining painless. Upon hospital admission, she displayed ulcerated, erythematous lesions, some necrotic, notably affecting her extremities and earlobe (Figure 1). Initial treatment included broad-spectrum antibiotics, antiparasitics, and steroids. Diagnostic tests for various causes of retiform purpura, including vasculitis and coagulopathies, yielded negative results (Table 1). Blood tests showed anemia and high inflammatory markers, with no bacterial growth in cultures. A skin biopsy confirmed a Type 2 leprosy reaction and vasculitis (Figure 2), and a slit-skin smear identified *Mycobacterium leprae*. She began multidrug therapy, corticosteroids, and debridement of necrotic tissue. Despite lesion improvement, she developed sepsis of pulmonary origin, leading to shock and death after 35 days.

Correspondence: Orivaldo Alves Barbosa. Endereço: Avenida do Imperador, 545, Centro, Fortaleza/Ceará. E-mail: orivaldo.alves.barbosa@gmail.com

Received 2025 Feb 4; Revised 2025 Dec 29; Accepted 2026 Jan 8

Conflict of interesse: There is no conflict of interest on the part of any of the authors

2 Lucio's Phenomenon with Retiform Purpura and Fatal Necrosis

Figure 1. Necrotic, painless, polygonal lesions with a livedoid pattern on the lower limbs, consistent with retiform purpura secondary to Hansen's disease.



Figure 2. Skin biopsy shows a blood vessel completely obstructed by numerous macrophages containing bacilli (arrow) (Virchow cells)

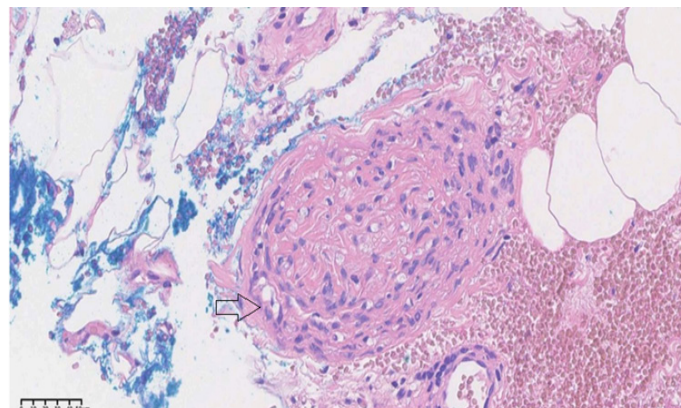


Table 1. Laboratory Values and Reference Ranges.

Test	Patient Value	Reference Value
Hemoglobin (Hb)	9.0	12.0-16.0 g/dL
Leukocytes (Total)	8,060	4,000-11,000/mm ³
Platelets	392,000	150,000-450,000/mm ³
Erythrocyte Sedimentation Rate (ESR)	116	0-20 mm/h
C-Reactive Protein (CRP)	94.34	<5 mg/L
INR	1.2	0.8-1.2
aPTT	1.13	25-35 sec
Procalcitonin	0.46	<0.5 ng/mL
Total Bilirubin (BT)	0.46	0.1-1.2 mg/dL
Albumin	1.96	3.5-5.0 g/dL
Creatinine (Cr)	0.6	0.5-1.2 mg/dL
Alkaline Phosphatase (FA)	106	30-120 U/L
Gamma-Glutamyl Transferase (GGT)	105	9-48 U/L
AST (TGO)	22	10-40 U/L
ALT (TGP)	22	10-40 U/L
VDRL	NR	Negative
HIV	NR	Negative
Blood Culture	No bacterial growth	No growth
Anti-Cardiolipin IgG	NR	Negative
Anti-Cardiolipin IgM	NR	Negative
Lupus Anticoagulant	NR	Negative
Rheumatoid Factor	NR	Negative
C3	115	90-180 mg/dL
C4	35	10-40 mg/dL
ANA	NR	Negative
ANCA	NR	Negative
Cryoglobulins	NR	Negative

DISCUSSION

Retiform purpura presents a diagnostic challenge because it is associated with a range of severe conditions, including infections, vasculitis, and hypercoagulable states. Accurate diagnosis is essential as misinterpretation can lead to fatal outcomes. A comprehensive evaluation, including histopathological examination and laboratory tests, is critical for identifying the exact cause⁴.

Leprosy, or Hansen's disease, is a chronic infection caused by *Mycobacterium leprae* and *M. lepromatosis*, primarily affecting the skin and nerves. Reactions to the disease, such as Lucio's phenomenon, disrupt the typical disease course and often lead to severe deformities. Lucio's phenomenon, typically seen in untreated diffuse lepromatous leprosy, is life-threatening and requires urgent medical attention due to its association with high bacillary loads^{5,6}.

The phenomenon was first described by Lucio and Latapi as a diffuse skin infiltration without nodules, with distinct characteristics like complete alopecia and skin ulceration. Its definition rests on three criteria: cutaneous ulceration, vascular thrombosis, and bacillary invasion of blood vessels by *M. leprae*.

This case met all the above criteria.

A recent review of 49 cases of Lucio's phenomenon, primarily in leprosy-endemic areas like Brazil and India, highlighted the complexity of managing the condition even with modern multidrug therapy³. Though treatments such as steroids, anticoagulants, and surgical interventions are used, mortality remains around 25% for patients with this severe manifestation^{6,7,8}.

CONCLUSION

This case underlines the grave complications associated with Lucio's phenomenon in leprosy patients. The delay in diagnosis and treatment in this case demonstrates the need for heightened clinical awareness, particularly in regions with high leprosy prevalence. Early detection and intervention in patients with retiform purpura and necrotic lesions are essential, as prompt treatment can be lifesaving despite the high associated mortality rate. Clinicians should remain vigilant for Lucio's phenomenon in leprosy patients with cutaneous necrosis and systemic symptoms, as rapid response is critical to survival.

REFERENCES

1. Yang HM, Liu SW, Li YF, Wang YC. Lucio's phenomenon. *J Microbiol Immunol Infect.* 2023 Jun; 56(3): 647-8. doi: 10.1016/j.jmii.2022.12.010.
2. Georgesen C, Fox LP, Harp J. Retiform purpura: A diagnostic approach. *J Am Acad Dermatol.* 2020 Apr; 82(4): 783-96. doi: 10.1016/j.jaad.2019.07.112.
3. Frade MA, Coltro PS, Bernardes F Filho, Horácio GS, Neto AA, Silva VZ, et al. Lucio's phenomenon: A systematic literature review of definition, clinical features, histopathogenesis and management. *Indian J Dermatol Venereol Leprol.* 2022 May; 88(44): 464-77. doi: 10.25259/IJDVL_909_19.
4. Wysong A, Venkatesan P. An approach to the patient with retiform purpura. *Dermatol Ther.* 2011 Mar-Apr; 24(2):151-72. doi: 10.1111/j.1529-8019.2011.01392.x.
5. Sharma P, Kumar A, Tuknayat A, Thami GP, Kundu R. Lucio Phenomenon: A Rare Presentation of Hansen's Disease. *J Clin Aesthet Dermatol.* 2019 Dec; 12(12): 35-
6. Curi PF, Villaroel JS, Migliore N, Albertengo A, Aquino ML, Ceccato F, et al. Lucio's phenomenon: report of five cases. *Clin Rheumatol.* 2016 May; 35(5): 1397-401. doi: 10.1007/s10067-014-2683-2.
7. Rocha RH, Emerich PS, Diniz LM, Oliveira MB, Cabral AN, Amaral AC. Lucio's phenomenon: exuberant case report and review of Brazilian cases. *An Bras Dermatol.* 2016; 91(5 suppl 1): 60-3. doi: <https://doi.org/10.1590/abd1806-4841.20164370>.
8. Kaur C, Thami GP, Mohan H. Lucio phenomenon and Lucio leprosy. *Clin Exp Dermatol.* 2005 Sep; 30(5): 525-7. doi: 10.1111/j.1365-2230.2005.01860.x.

Como citar este artigo/ How to cite this article:

Barbosa OA, Simões SSF, Macedo ALCA, Costa FT Filho, Correia JW, Freitas KA, et al. Lucio's Phenomenon Presenting as Retiform Purpura and Diffuse Cutaneous Necrosis with a Fatal Outcome: A Case Report *J Health Biol Sci.* 2026; 14(1): e5722.