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Case Report

Lingual necrosis as a sentinel ischemic manifestation of giant cell arteritis: a case report

Running title: Lingual giant cell arteritis

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Statement of Clinical Significance

Lingual necrosis occurs in a small proportion of giant cell arteritis cases and may represent a sentinel ischemic manifestation. Its nonspecific clinical presentation can mimic a wide range of conditions, potentially leading to diagnostic delays, particularly in the absence of classical cranial symptoms.

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Abstract

Giant cell arteritis (GCA) is the most common systemic vasculitis affecting individuals aged ≥50 years and is characterized by granulomatous inflammation of large- and medium-sized arteries, which may lead to ischemic complications. Lingual necrosis is a rare but severe manifestation and is often associated with diagnostic challenges. We report the case of a 52-year-old woman who presented with rapidly progressive, painful ulceration of the tongue. Within 72 hours, the lesion evolved into a large necrotic ulcer, resulting in significant functional impairment. Clinical examination revealed scalp and temporal tenderness and an ischemic-appearing ulcer. Additional findings included new-onset temporal headache, tongue claudication, and morning stiffness of the shoulders and neck. Laboratory findings were unremarkable. Systemic corticosteroid therapy led to rapid clinical and symptomatic improvement. Complete healing was achieved within two months, with full resolution of signs/symptoms after four months. To the best of our knowledge, this is the first documented case of GCA-associated lingual necrosis reported in Venezuela.

Keywords: Case report, Giant cell arteritis, Ischemia, Oral mucosa, Vasculitis.

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Introduction

Giant cell arteritis (GCA) is the most common systemic vasculitis in individuals aged ≥50 years and is characterized by granulomatous inflammation of medium- and large-sized arteries, particularly involving the cranial branches of the carotid artery and the aorta [1,2]. This inflammatory process leads to arterial wall thickening, luminal narrowing, and ischemia. The 2022 American College of Rheumatology/European Alliance of Associations for Rheumatology (ACR/EULAR) classification criteria, based on a weighted integration of clinical, laboratory, imaging, and histopathological findings, have improved diagnostic accuracy [2]. Clinically, GCA typically presents with new-onset temporal headache, scalp tenderness, constitutional symptoms, and tongue or jaw claudication, whereas visual complications (e.g., amaurosis fugax and irreversible vision loss) remain the most feared outcomes [3,4].

Although the clinical spectrum of GCA is well established, atypical ischemic manifestations may occur and pose significant diagnostic challenges. Among these, lingual ischemia and necrosis are rare, reported in approximately 2-4% of cases, likely owing to the rich collateral vascular supply of the tongue through branches of the external carotid artery [4,5]. Lingual necrosis was reported by Howard and Cremin in 1959 and was subsequently linked to *temporal arteritis* [6]. Previous case-based evidence suggests that lingual necrosis may represent the initial presentation in up to one-third of patients, underscoring its role as a potential sentinel sign of underlying vasculitis [4].

Lingual involvement often begins with glossodynia or tongue claudication and may progress rapidly to ulceration, discoloration, and necrosis, frequently resulting in significant functional impairment. However, these findings are nonspecific and may mimic infectious, traumatic, or neoplastic conditions, often leading to misdiagnosis or delayed recognition

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[4,5]. Importantly, lingual necrosis may occur in the absence of classical cranial symptoms. Early diagnosis is critical, as prompt initiation of high-dose glucocorticoids remains the cornerstone of therapy and is essential to prevent irreversible ischemic complications [2,3]. Reports of GCA-associated lingual necrosis from South America are scarce, with three cases from Brazil and two from Argentina [4]. We herein report an additional case of lingual necrosis secondary to GCA in a middle-aged woman from Venezuela, representing the first report from our country.

Case report

This case report was prepared in accordance with the CARE guidelines [7], and written informed consent for publication was obtained from the patient. A 52-year-old woman with a history of active smoking (pack-year index: 2.65) presented to the Oral and Maxillofacial Surgery Service of the University Hospital of Caracas, Venezuela, with a painful lingual ulcer of 3 days' duration. The condition initially manifested as moderate pain localized to the left lateral border of the tongue, associated with a small ulcerative lesion measuring less than 1.0 cm. Within 72 hours, the lesion rapidly enlarged, accompanied by a marked increase in pain intensity, progressing to severe pain that significantly impaired mastication and oral intake. Additional clinical history revealed new-onset temporal headache, scalp tenderness, tongue claudication, and morning stiffness involving the shoulders and neck.

On clinical examination, mild facial asymmetry was observed due to swelling in the left temporal region, which was tender on palpation. No cervical lymphadenopathy was detected, and mouth opening was preserved. Intraoral examination revealed an irregular, crater-like ulcer on the left lateral border of the tongue, measuring approximately 3.0 × 1.5

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cm. The lesion exhibited erythematous margins with peripheral violaceous halos and a base covered by yellowish-white exudate **(Figure 1A-B)**. Palpation elicited marked tenderness.

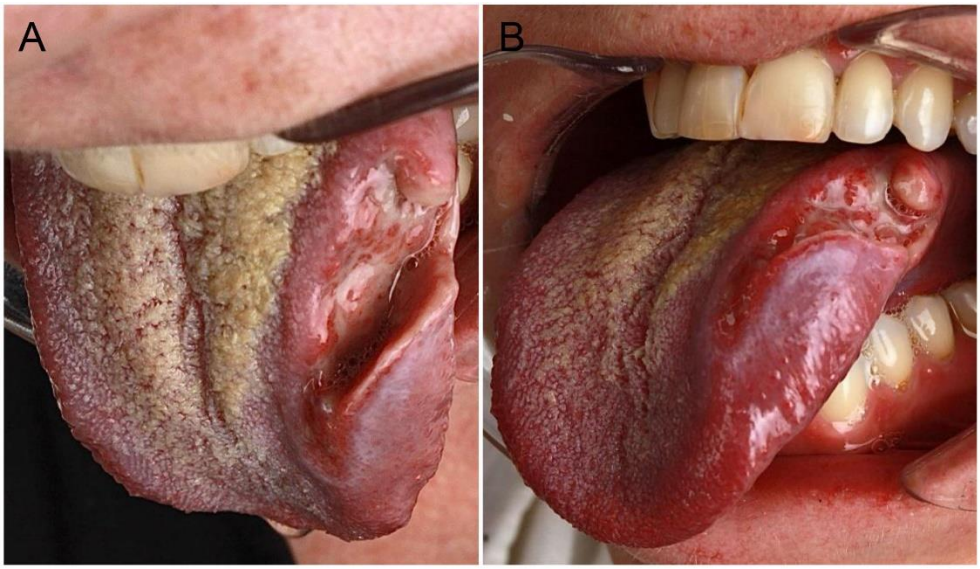


Figure 1. Initial clinical presentation of lingual necrosis associated with giant cell arteritis. (A) Extensive ulcerative-necrotic lesion involving the left lateral border of the tongue, characterized by irregular margins, fibrinous slough, and areas of tissue loss, associated with a coated dorsal surface. **(B)** A crateriform ulcer with violaceous borders and central necrotic areas is observed, consistent with vascular compromise of the lingual artery. Note the ischemic appearance, with pallor and surrounding erythema.

Laboratory investigations, including complete blood count and serum biochemistry, were within normal limits. Coagulation parameters were unremarkable. Serological tests for HIV and VDRL were non-reactive. Inflammatory markers showed an erythrocyte sedimentation rate (ESR) of 5 mm/h and a C-reactive protein (CRP) level of 3.2 mg/L.

Given the rapid progression of the lesion, its ischemic appearance, and the associated cranial symptoms, GCA was clinically suspected. The differential diagnoses included granulomatosis with polyangiitis and polyarteritis nodosa.

Systemic corticosteroid therapy was promptly initiated with oral prednisone using a tapering regimen (20 mg/day for 4 days, followed by 10 mg/day for 4 days, and 5 mg/day for 4 days, administered as a single morning dose). Adjunctive topical therapy consisted of a compounded mouthwash containing borax honey, dexamethasone, cetirizine, and lidocaine, applied five times daily.

An ophthalmologic evaluation was performed to exclude ocular involvement. The examination revealed presbyopia, compound myopic astigmatism in the left eye, cataract in the left eye, and hyperopic astigmatism in the right eye, with no evidence of active inflammatory or ischemic ocular disease.

Although histopathological confirmation and vascular imaging were unavailable, assessment using the 2022 ACR/EULAR classification criteria [2] yielded a score of eight points, exceeding the minimum threshold of six.

At the 72-hour follow-up, marked clinical improvement was observed, characterized by reduced pain and peripheral edema, as well as a color transition from erythematous to pale pink **(Figure 2A-B)**. As an adjunct to tissue repair, topical hyaluronic acid gel was introduced. At 10 days, the lesion showed continued improvement, with resolution of peripheral erythema and progressive contraction of its margins **(Figure 2C-D)**. After one month, approximately 90% re-epithelialization was achieved, with restoration of mucosal color and integrity. Oral hygiene instructions were reinforced, particularly regarding tongue dorsum care, to prevent coating formation.

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At two months, complete healing was observed, with restoration of normal tissue appearance and no biofilm accumulation. At the four-month follow-up, the patient remained asymptomatic, reporting no spontaneous or stimulus-induced pain. Clinical examination showed a normochromic, eutrophic scar harmoniously integrated with the surrounding mucosa, confirming a favorable clinical outcome **(Figure 2E)**. The patient remains under close follow-up with a rheumatologist.

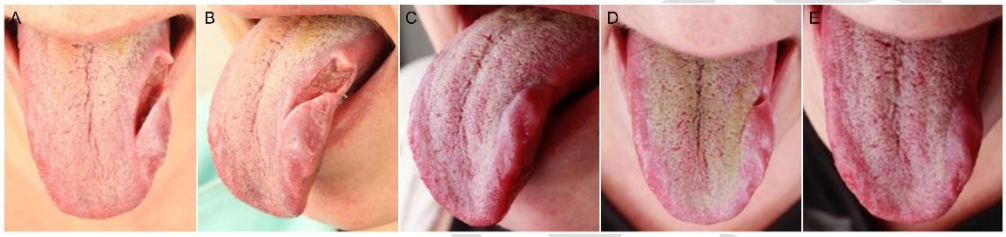


Figure 2. Clinical evolution and healing of lingual necrosis following corticosteroid therapy. (A, B) At 72 hours, marked clinical improvement is observed, with reduction of inflammation, decreased edema, and early re-epithelialization of the lesion. **(C, D)** At 10 days, progressive healing is evident, characterized by contraction of the lesion margins and resolution of peripheral erythema. **(E)** At 4 months, complete healing is observed, with restoration of normal mucosal architecture and a normochromic surface.

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Discussion

A recent case-based review identified 55 well-documented cases of lingual necrosis associated with GCA [4]. The mean age of affected individuals was 77.8 years, with a marked female predominance (female-to-male ratio, 46:9), consistent with the established epidemiological profile of the disease [4]. Importantly, approximately 32.7% of patients presented with lingual necrosis as the initial manifestation, indicating that this presentation,

although uncommon, has already been recognized as a sentinel ischemic event rather than exclusively as a late-stage complication [4]. Therefore, the relevance of the present report does not lie in claiming lingual necrosis as an unprecedented initial manifestation, but rather in documenting an atypical and diagnostically challenging presentation and geographic underrepresentation.

Published data document cases with extensive tissue necrosis, tongue substance loss, self-amputation, visual ischemic events, surgical debridement, and the need for additional immunosuppressive therapy [4]. The Brazilian case reported by Dos Reis et al. [8] is particularly relevant from an oral medicine perspective. Their patient was a 91-year-old woman with extensive tongue necrosis, elevated ESR and CRP levels, anemia, mild headache, jaw numbness, visual impairment, dysphagia, and hearing loss, requiring surgical debridement combined with corticosteroid therapy, followed by complete epithelialization. By contrast, our patient was 52 years old, close to the lower age threshold for GCA classification, and presented with a rapidly progressive lateral tongue ulcer of only 72 hours' duration. ESR and CRP levels were normal, no ocular ischemic involvement was identified, and complete healing was achieved with systemic corticosteroid therapy and conservative local care. This contrast suggests that GCA-associated lingual ischemia may occur along a clinical continuum, ranging from early ulcerative-ischemic lesions to extensive necrosis with tissue loss.

Histopathologically, GCA is characterized by granulomatous inflammation of the arterial wall, fragmentation of the internal elastic lamina, and infiltration by mononuclear cells and multinucleated giant cells, leading to progressive luminal narrowing and ischemia [9]. Pathophysiologically, the rarity of lingual necrosis has been attributed to the tongue's extensive collateral circulation, mainly supplied by branches of the external carotid artery

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[5]. When lingual necrosis occurs, it likely reflects critical vascular compromise rather than an isolated mucosal process. In this context, necrosis involving the scalp, tongue, or lip has been associated with higher mortality in GCA, suggesting that mucocutaneous necrosis may represent a marker of a more severe ischemic phenotype [10]. The present case reinforces this concept while also showing that clinically meaningful tongue ischemia may be detected before extensive tissue loss, provided that oral ischemic signs are recognized early.

Our case also highlights the limitations of relying exclusively on classical clinical features or laboratory abnormalities. The 2022 ACR/EULAR classification criteria integrate clinical, laboratory, imaging, and histopathological variables and require a minimum score of six points for GCA classification [2]. Our patient, however, achieved a score of eight points based on four documented clinical manifestations. Importantly, these criteria are intended for research classification rather than clinical diagnosis and should be applied only after a clinical diagnosis of vasculitis has been established and relevant mimics have been excluded [2]. Of clinical relevance, 12 features of GCA have been proposed elsewhere, including headache, temporal artery abnormalities, scalp tenderness, scalp necrosis, jaw claudication, tongue claudication, tongue necrosis, amaurosis fugax, permanent vision loss, fever, limb claudication, and blood pressure inequality [11].

In the present case, histopathological confirmation and vascular imaging were unavailable, and inflammatory markers were within normal limits. Nevertheless, the patient's age, temporal tenderness, rapidly progressive ischemic-appearing lingual ulcer, exclusion of common infectious and hematologic mimics, absence of an alternative local cause, and rapid response to corticosteroid therapy collectively supported the clinical suspicion of GCA. This scenario illustrates the diagnostic challenge posed by rare ischemic oral presentations, i.e., awaiting definitive confirmation may delay treatment, whereas early intervention may

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prevent irreversible complications. In agreement with Breuer et al. [12], a rapid response to corticosteroid therapy may provide additional supportive evidence when GCA is clinically suspected but histopathological confirmation is unavailable.

The absence of elevated inflammatory markers deserves particular attention. In the review by Cabaleiro-Raña et al. [4], ESR was elevated in 97.9% of cases with available data, and CRP was elevated in all cases in which it was assessed. Thus, our patient differs from most reported cases by presenting a laboratory-silent ischemic phenotype. Although elevated ESR and CRP are common in GCA, their sensitivity is imperfect. Kermani et al. [13] reported sensitivities of 86.9% for CRP and 84.1% for ESR in patients undergoing temporal artery biopsy, and a small subset of biopsy-positive patients may have normal ESR and CRP at diagnosis. Accordingly, normal inflammatory markers should reduce but not eliminate clinical suspicion when the phenotype suggests cranial ischemia. In oral medicine practice, this point is especially important because a painful necrotic tongue ulcer with violaceous or ischemic borders may initially be interpreted as traumatic, infectious, drug-related, hematologic, or neoplastic [4,8].

Early recognition and prompt initiation of corticosteroid therapy remain critical to prevent irreversible ischemic complications, including vision loss [14-17]. Current guidelines recommend initial prednisone-equivalent doses of 40–60 mg/day, followed by gradual tapering [18]. Although glucocorticoids remain the cornerstone of treatment, targeted therapies (e.g., tocilizumab) may be considered in selected cases [4,19], with infection among the most frequently reported adverse events [20]. Previously reported cases of lingual necrosis have sometimes required surgical debridement, high-dose corticosteroids, or additional immunosuppressive therapy [4,8]. In contrast, our patient showed rapid clinical improvement following a 12-day prednisone regimen initiated at 20 mg/day, combined with

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conservative local measures. Despite the lower initial dose and shorter treatment duration compared with guideline recommendations, complete healing was achieved within two months, with no recurrent symptoms at four months. This favorable clinical course underscores the importance of individualized clinical assessment and monitoring, although the observed response alone does not establish the efficacy of this regimen for systemic GCA.

Conclusion

In summary, lingual necrosis, although rare, should be recognized as a clinically meaningful and potentially early manifestation of GCA. Its presence requires a high index of suspicion, particularly in patients over 50 years of age. The present case expands the clinical spectrum of reported cases by showing that significant oral ischemia may occur despite normal ESR and CRP values and in the absence of ocular involvement. Early diagnosis and prompt treatment are essential to prevent irreversible complications.

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