Alteplase-induced Facial Orolingual Angioedema

Clinical Image

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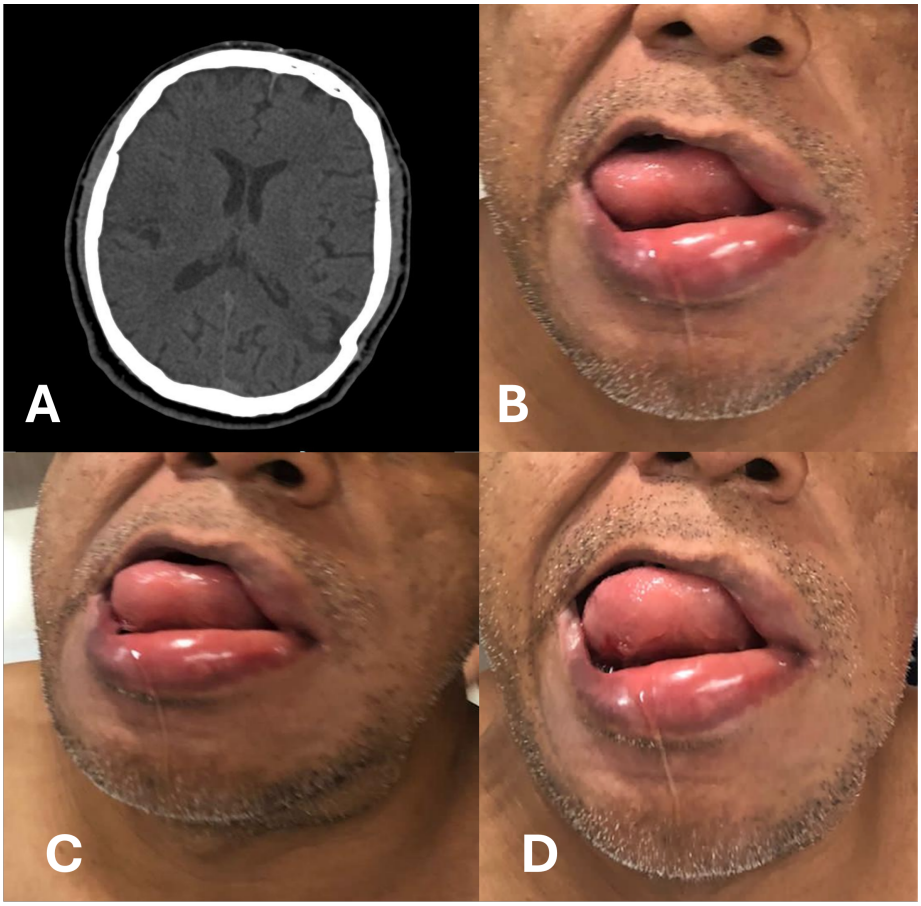

Figure 1: **(A)** Head computerized tomography (CT) revealed a right cortical hypodensity, loss of grey-white matter differentiation, with associated parenchymal swelling, and gyral effacement. **(B-D)** Progressive lingual, oropharyngeal and neck angioedema.

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A 51-year-old man presented to the emergency department with acute hemiparesis that developed 90 minutes earlier. He had a history of hypertension treated with an angiotensin-converting–enzyme (ACE) inhibitor. Head computerized tomography (CT) revealed a right cortical hypodensity, loss of grey-white matter differentiation, with associated parenchymal swelling, gyral effacement, and an insular ribbon sign consistent with early acute ischemic stroke (7 points in the ASPECTS score) (Figure 1-A). We calculated an NIHSS score of 7 and initiated IV alteplase (tissue plasminogen activator, tPA, 5 mg bolus followed by 45 mg in continuous infusion in the remaining hour). Thirty minutes after the infusion ended (90 min from the start), the patient developed acute progressive swelling of the tongue and neck (Figure 1-B,C,D). He also developed shortness of breath, requiring mechanical ventilation. We treated him with IV hydrocortisone and diphenhydramine with complete resolution of the angioedema and successful extubation within 24 hours.

Physiologically plasminogen is hydrolyzed by tPA to plasmin, cleaving high molecular weight kininogen and releasing bradykinin. Patients who take ACE inhibitors and receive Alteplase have an increased risk of angioedema due to bradykinin's increased half-life.[1] The management of orolingual angioedema associated with IV Alteplase administration for AIS includes medication discontinuation, airway protection, IV steroids, and antihistamines. Refractory angioedema includes bradykinin B2 receptor antagonists (e.g., Icatibant).[2] The incidence of this complication ranges from 1.3-8%-[3,4] The prognosis is usually good; most patients with acute angioedema have symptom resolution within 72 hours.[5]

Our case illustrates a common clinical presentation of r-TPA-induced angioedema with atypical neck extension. We performed a review of the literature that revealed how signs and symptoms of angioedema differ in presentation and severity. Symptoms typically begin within 150 minutes after initial infusion (mean 70 minutes) with unilateral angioedema, contralaterally to the side of the stroke. (4) Approximately 30-45% of the patients required mechanical ventilation most of them were on treatment with ACE inhibitors.[1] Physicians treat patients with a combination of steroids, antihistamines, adrenalin, or Icatibant, with complete recovery within 24 to 48 hours.

Patients treated with Icatibant (a bradykinin B2 receptor antagonist) improved within minutes and achieved full remission in the first three hours. Patients who received Icatibant had a quicker improvement, but unfortunately, this drug is unavailable in many centers such as ours. We believe it may become the standard of care in patients presenting with this uncommon but potentially life-threatening complication.

Statements and Declarations

This paper illustrates a case of alteplase-induced angioedema. All authors have contributed to the conception and design of the work and the analysis of the data in a manner substantial enough to take public responsibility for it; each believes the manuscript represents valid work; and each has reviewed the final version of the manuscript and approves it for publication.

All authors have full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. All authors have read and approved the submitted manuscript, the manuscript has not been submitted elsewhere nor published elsewhere in whole or in part.

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Conflict of interest

There is no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript that may affect the reporting of the work submitted.

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