

# Phenytoin induced life threatening macroglossia in a child

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### ABSTRACT

Isolated acquired macroglossia of tongue rarely reported. It occurs due to causes like hereditary angioedema, localized angioedema, etc., Here we describe an 8-year-old boy developing life threatening localized angioedema of tongue due to phenytoin without any association with drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome or pseudolymphoma encountered in rural medical college. Anticonvulsants, that is, phenytoin induced this isolated peculiar complication, which was not described before.

**Key words:** Angioedema, macroglossia, phenytoin

## Introduction

The etiologies of acquired macroglossia are many.<sup>[1,2]</sup> Localized angioedema due to various drugs are known.<sup>[3,4]</sup> Occasionally the acquired macroglossia causes life-threatening upper airway obstruction. Prompt recognition and appropriate management of this complication are required to save the life. Patients should be attended immediately if they experience swelling of the face, neck, or tongue, along with trouble breathing, speaking, or swallowing. Acquired macroglossia due to localized angioedema following phenytoin therapy is not known.

## Case Report

An 8-year-old boy, previously diagnosed as cerebral palsy with developmental delay, microcephaly and mental retardation, presented with sudden onset of huge swelling of the tongue for last 24 hours. Two weeks back, he developed generalized tonic clonic convulsion with

status epilepticus for the first time. He was then admitted to a nursing home and managed with intravenous diazepam followed by loading dose of phenytoin as per standard protocol. He was discharged with instruction to get intravenous phenytoin (300 mg/day) once daily at home for the next 15 days. There was no history of headache or vomiting. There was no history of respiratory distress, swelling of face, itching, and loose stool. No history of atopy or similar type of episodes seen in other family members.

On examination, the child was conscious but irritable. There was swelling of whole dorsum of tongue, which was protruding outside the mouth with oozing of blood over both the edges of tongue following superadded infection [Figure 1]. The oral cavity was so blocked by edematous tongue that the child could not speak or swallow anything. Face, lips, and gums were normal. His body weight was 24.5 kg, height was 123 cm and head circumference was 45.5 cm. His pulse rate was 144/min, regular, normal volume, respiratory rate 32/min, blood pressure 120/70 mm of Hg, temperature 99.8°F. The child had mild pallor without any pedal edema or cyanosis. Abdomen was soft without any visceromegaly. There was mild respiratory distress due to oro-pharyngeal obstruction. Auscultation of his chest including cardiovascular system was otherwise normal. There was no ataxia, nystagmus, or altered sensorium. However, he had neurologic manifestation of spastic diplegic cerebral palsy with associated complication.

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**Figure 1:** The clinical picture showing engorged swollen tongue

Investigation revealed hemoglobin of 12.8 g/dL. Total leukocyte count of 16900/cmm, polymorphs 86%, lymphocytes 12%, platelet counts 2.2 lakhs/cmm, ESR 22/1<sup>st</sup> hour. Biochemistry showed serum sodium 138 meq/L, potassium 5.2 meq/L, calcium 8.6 mg/dL. Renal function and liver function tests were normal. Chest X-ray and sonography of abdomen did not reveal any abnormality.

Serum C1 esterase inhibitor was 0.62 mg/L (normal: 0.21-0.39 mg/L), which excludes hereditary angioedema. Serum phenytoin level (37.20 µg/ml, toxic range >20 µg/ml) was elevated.

The child responded to supportive management along with parenteral empirical antibiotics and with intravenous steroids (hydrocortisone), antihistamines, and epinephrine within 2 days. Macroglossia due to edema was reduced and the tongue could be repositioned within the oral cavity [Figure 2]. He was discharged with valproate sodium and other advice like psychiatric management, etc.

## Discussion

Macroglossia may occur due to localized edema, hereditary,<sup>[1]</sup> and acquired<sup>[2-4]</sup> or any structural hyperplasia like vascular malformations. The identified etiologies of localized acquired tongue edema are due to various drugs like barbiturate vehicle,<sup>[2]</sup> synthetic saliva,<sup>[3]</sup> angiotensin-converting enzyme (ACE) inhibitors,<sup>[4]</sup> oxcarbazepine,<sup>[5]</sup> etc., as described in the literature. Rarely, it can mimic one of the presentations of Melkersson-Rosenthal syndrome (MRS). MRS includes the triad of recurrent oro-facial edema, facial nerve palsy, and furrowed tongue.<sup>[6]</sup>



**Figure 2:** The clinical photograph after the tongue swelling reduced

Antiepileptics especially phenytoin are known to cause tongue swelling in several conditions like drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome and pseudolymphoma as reported in the literature.<sup>[7,8]</sup> DRESS syndrome, uncommon hypersensitivity drug reaction following phenytoin, constitutes fever, drug rash, eosinophilia, systemic involvement like hepatitis and rarely tongue swelling. Angioedema in association with lymphoproliferative disorders was also reported previously with association with acquired C1 esterase inhibitor deficiency in literature.<sup>[9]</sup>

As serum C1 esterase inhibitor was not suggestive, it precludes the association with hereditary angioedema in the index case. Phenytoin was given in a very high dose as suggested by the measured drug level. However, he had no clinical features of phenytoin toxicity like acute nystagmus, ataxia, hypotension, arrhythmia, altered sensorium, etc., As this child responded only with supportive management and hydrocortisone dramatically within a short period, we inferred that it was a localized angioedema caused by the drug triggered by an initial tongue bite rather than its toxicity.

But, our child had isolated angioedema of tongue in absence of any lymph node involvement or C1 esterase inhibitor deficiency to be unique from the previously reported cases. The child had acute massive tongue swelling without any rash, eosinophilia, or hepatic involvement, which excludes the possibility of DRESS syndrome in our case.

Our child has developed a peculiar complication due to a drug, which is frequently used to manage childhood seizures. To the best of our knowledge such isolated acquired life threatening macroglossia due to localized angioedema following phenytoin is hitherto unreported.

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