



Diagnostic Approach and Management of Food Allergy-Associated Transient Lingual Papillitis: A Case Report

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ABSTRACT

Introduction: Transient lingual papillitis (TLP) is a benign, self-limiting inflammation of the tongue's fungiform papillae causing localized swelling, erythema, and discomfort. Although its etiology remains unclear, evidence links TLP to IgE-mediated food allergies. Further clinical documentation is needed to confirm this allergic association and improve diagnostic accuracy.

Objective: This case report describes the diagnosis and management of food allergy-associated TLP, highlighting the role of IgE assessment. It also emphasizes comprehensive dietary history to identify triggers and differentiate TLP from oral allergy syndrome, aiming to improve diagnostic accuracy and preventive strategies.

Case: A 23-year-old male patient presented with complaints of itching and a burning sensation affecting his tongue and lips. The symptoms developed approximately two hours after consuming shrimp. The patient denied any history of alcohol consumption or smoking. He also reported no known drug allergies or systemic diseases. However, his mother had a history of crab allergy.

Outcome: Intraoral examination revealed irregular, well-demarcated erythematous nodules on the upper lip and dorsal tongue. Immunologic evaluation demonstrated elevated total serum IgE levels (355.7 IU/mL), supporting an allergic predisposition. Management included allergen avoidance and a topical anti-inflammatory gel, resulting in clinical improvement within eight days.

Conclusion: This case highlights the potential role of food allergy as a contributing factor in TLP and emphasizes the importance of thorough dietary history and immunologic assessment. Recognition of allergic triggers enables targeted preventive strategies and may reduce recurrence. Further studies are required to clarify the immunopathogenesis and to establish standardized diagnostic and management protocols.

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INTRODUCTION

Transient lingual papillitis (TLP) is a common yet often underrecognized condition characterized by inflammation of the fungiform papillae on the tongue. Fungiform papillae are small, rounded structures distributed across the dorsal surface of the tongue and contain taste buds. Clinically, TLP presents as one or several small, red or white papules on the tongue, frequently accompanied by discomfort, pain, or a burning sensation. The condition is transient in nature, typically resolving spontaneously within a few hours to several days, although it may recur periodically. Although TLP is generally benign, its symptoms can be distressing to patients and may negatively affect their quality of life^{1,2}.

The exact etiology of TLP remains unclear; however, several factors have been implicated, including local trauma, stress, infection, and dietary habits. Among these, food allergy has gained attention as a potential contributor to the pathogenesis of TLP. Food allergy involves an exaggerated immune response to specific dietary proteins, leading to systemic or localized reactions, including oral manifestations. TLP associated with food allergy is thought to arise from a hypersensitivity reaction, in which the immune system mistakenly targets lingual tissues following exposure to an allergen. This possible association underscores the importance of identifying dietary triggers in the management of recurrent TLP^{3,4}.

Food allergens such as nuts, shellfish, dairy products, and certain fruits have been reported to trigger episodes of TLP in susceptible individuals. When these allergens come into contact with the tongue, they may activate mast cells within the fungiform papillae, leading to the release of inflammatory mediators such as histamine. This localized inflammatory response results in swelling, erythema, and the characteristic discomfort associated with TLP. An understanding of this mechanism highlights the importance of obtaining a thorough dietary history when evaluating patients with recurrent episodes of TLP⁵.

The diagnosis of TLP associated with food allergy involves a combination of clinical evaluation, detailed patient history, and, when indicated, allergy testing. Diagnostic methods such as skin prick testing or measurement of serum-specific IgE levels may assist in identifying the allergen responsible for triggering TLP episodes. In addition, an elimination diet followed by the gradual reintroduction of suspected foods can help confirm the association. Once identified, management consists of allergen avoidance and symptomatic relief, including the use of topical anesthetics or anti-inflammatory agents^{1,5}. Increasing awareness of the association between food allergy and TLP is essential for both dental and medical practitioners. Early recognition and appropriate intervention can help prevent misdiagnosis and ensure effective symptom management. As research on TLP continues to evolve, a better

understanding of its relationship with food allergy may lead to more targeted therapeutic approaches and improved patient outcomes.^{5,6,7}

This case report aims to describe the diagnostic approach and clinical management of food allergy-associated TLP, highlighting the role of immunologic evaluation and particularly IgE assessment, in supporting diagnosis. Furthermore, this report seeks to emphasize the importance of comprehensive dietary history taking in identifying allergic triggers and differentiating TLP from oral allergy syndrome, thereby contributing to improved diagnostic accuracy and preventive management strategies in recurrent or acute presentations.

CASE REPORT

A 23-year-old male patient presented with complaints of itching and a burning sensation affecting his tongue and lips. The symptoms developed approximately two hours after consuming shrimp. The patient denied any history of alcohol consumption or smoking. He also reported no known drug allergies or systemic diseases; however, his mother had a history of crab allergy. Intraoral clinical examination revealed multiple nodular lesions located on the upper lip and the dorsal surface of the tongue. The nodules appeared erythematous, irregular in shape, and well-demarcated, with prominent surrounding redness. Based on the patient's history and clinical findings, the working diagnosis was transient lingual papillitis, with oral allergy syndrome considered as a differential diagnosis.



Figure 1. Clinical presentation of the patient's tongue (A) and lips (B).

Intraoral clinical examination revealed swelling and erythematous changes involving the upper lip, with multiple small nodular or papular elevations distributed across the vermilion

surface. The upper lip appeared diffusely enlarged, with a relatively smooth and slightly glossy surface and multiple focal reddish elevations, giving the lip a mildly irregular and bumpy appearance. The lesions were predominantly erythematous and appeared closely distributed within the swollen area, without evident ulceration, crusting, or vesicular changes. The surrounding lip tissue also showed mild diffuse erythema. These clinical findings are shown in Figure 1A.

Examination of the dorsal surface of the tongue revealed numerous small erythematous papules distributed across the dorsal tongue, particularly over the anterior portion. The papules appeared as discrete reddish elevations corresponding to the lingual papillae, producing a diffuse granular and erythematous appearance of the tongue surface. The papules were more prominent toward the anterior dorsum, while the intervening mucosa remained relatively homogeneous in appearance. No apparent ulceration, white plaque, or coating was observed on the dorsal tongue. The clinical appearance of these erythematous papules is presented in Figure 1B.

In this case report, the management approach included patient education and counseling, pharmacologic therapy, and follow-up evaluation. At the initial visit, the patient was informed that the condition, identified as oral urticaria likely triggered by a shrimp allergy, could be managed with topical medication to reduce inflammation and relieve discomfort. The patient was advised to avoid shrimp to prevent recurrence and was provided with instructions on maintaining oral health, including brushing twice daily, adhering to a balanced diet, using dental floss and mouthwash, and attending routine dental check-ups every six months. The prescribed medication included stabilized chlorine dioxide spray (Oxyfresh dental spray), to be applied to the tongue three times daily. The patient was also referred for further investigation, specifically serum IgE testing. Additionally, follow-up visits were scheduled to monitor lesion progression and evaluate treatment outcomes.

At the second visit, an evaluation of the lesions was performed following the provision of patient education and pharmacologic therapy. Clinical examination demonstrated a reduction in the lesions on the dorsal surface of the tongue and the patient's lips in Figure 2A and 2B. The results of the adjunctive investigation, specifically serum IgE testing, revealed a level of 355.7 IU/mL.



Figure 2. Clinical presentation at 8-day follow up of the patient's tongue (A) and lips (B).

DISCUSSION

Transient lingual papillitis (TLP) is a benign, self-limiting condition affecting the fungiform papillae of the tongue, commonly characterized by discomfort, swelling, and erythema. Although its exact etiology remains unclear, emerging evidence suggests a possible association between TLP and food allergy, adding a new dimension to the understanding of this condition. This potential relationship underscores the need to further explore immune-mediated mechanisms in its pathogenesis, particularly in cases where TLP is recurrent and temporally associated with food exposure.^{1,3,5}

Serum total IgE testing revealed a level of 355.7 IU/mL, which was elevated above the laboratory reference range for adults (≤ 214 IU/mL). An increased total IgE level may indicate an enhanced atopic or hypersensitivity response and, in the context of the present case, may support the clinical suspicion of an allergic process. However, elevated total IgE is not specific for food allergy and should be interpreted in conjunction with the patient's clinical history and, when indicated, allergen-specific IgE testing to identify the relevant dietary allergen.¹³ Even allergen-specific IgE indicates sensitization rather than confirmed clinical allergy, and in shrimp allergy neither history nor specific IgE alone can establish reactivity; the double-blind placebo-controlled food challenge remains the reference standard.^{14,15} Positive results may also arise from tropomyosin cross-reactivity with house dust mite and cockroach.^{14,15} The elevated total IgE in this patient therefore supports an atopic tendency only, and shrimp remains a presumptive trigger.

Food allergy involves a hypersensitivity reaction triggered by specific allergens, resulting in localized or systemic immune responses. In the context of TLP, the condition is likely to

arise from local mast cell activation within the fungiform papillae. Following exposure to allergens such as shellfish, nuts, or certain fruits, mast cells release histamine and other inflammatory mediators, leading to the characteristic swelling and erythema observed in TLP. This mechanism is consistent with the localized nature of the condition, distinguishing it from more systemic manifestations of oral allergic reactions.^{5,10}

The clinical presentation of TLP associated with food allergy may vary, but it commonly includes multiple small, red or white papules on the tongue, accompanied by pain or a burning sensation. The onset is typically acute and may correlate with recent consumption of allergenic foods. Recognizing this pattern is essential for clinicians, as it provides a basis for identifying potential dietary triggers through a detailed patient history. Failure to address the underlying food allergy may result in recurrent episodes and a subsequent decline in the patient's quality of life. The diagnostic approach to food allergy-related TLP includes a comprehensive dietary history and allergy testing, such as skin prick tests or measurement of serum-specific IgE levels. An elimination diet followed by controlled reintroduction of suspected allergens can further confirm the association. This diagnostic process helps identify the triggering factor, enabling targeted management strategies that address not only symptom relief but also the underlying cause of the condition. In the present case, adjunctive immunological testing revealed elevated IgE levels, indicating sensitization of the immune system to a specific allergen and supporting the presence of an allergic reaction, including food allergy. In food allergy, IgE antibodies are produced when the immune system mistakenly identifies food proteins as harmful. These antibodies bind to mast cells and basophils, and upon re-exposure to the allergen, trigger the release of chemical mediators such as histamine, resulting in allergic symptoms including pruritus, swelling, and gastrointestinal disturbances. In severe cases, this reaction may progress to anaphylaxis. Elevated IgE levels therefore serve as an important parameter in supporting the diagnosis of food allergy⁹. Current guidelines place an allergy-focused clinical history first, followed by tests of IgE sensitization, namely specific IgE, skin prick testing, and, where available, the basophil activation test, with the oral food challenge as the reference standard.¹⁶

In this case report, oral allergy syndrome (OAS) was considered as a differential diagnosis. TLP is characterized by localized inflammation of the fungiform papillae on the tongue, commonly triggered by factors such as local trauma, stress, infection, or food irritants. Clinically, it presents as small, painful papules that typically resolve within a few days. In contrast, OAS is an IgE-mediated hypersensitivity reaction associated with cross-reactivity between pollen allergens and proteins found in raw fruits, vegetables, or nuts. It usually manifests as itching, tingling, or swelling of the mouth and throat immediately after ingestion

of the triggering food. Unlike TLP, the symptoms of OAS generally subside within one hour and are rarely severe, and cooked forms of the offending foods often do not elicit a reaction^{1,10}.

The management of TLP associated with food allergy involves both symptomatic relief and preventive measures. Topical therapies, such as anti-inflammatory gels or anesthetic agents, may provide immediate relief from pain and inflammation. However, the cornerstone of management lies in allergen avoidance. Patients should be informed about specific foods to avoid and the potential for cross-reactivity with related allergens. In addition, regular follow-up is essential to monitor symptom resolution and ensure adherence to preventive measures. In the present case, the patient was instructed to avoid shrimp, which was suspected to be the triggering allergen, and was prescribed Oxyfresh gel to alleviate discomfort. Stabilized chlorine dioxide oral spray was selected as an adjunctive treatment because of its antiseptic and antimicrobial properties and its potential to help maintain oral hygiene and a favorable oral environment during the healing process. In cases of transient lingual papillitis, which is generally a self-limiting inflammatory condition, Oxyfresh spray may provide supportive care by helping maintain oral conditions during recovery, particularly in the presence of suspected allergy-associated mucosal inflammation. In this case, Oxyfresh spray was used as supportive therapy rather than as a specific treatment for allergy or transient lingual papillitis.

The recognition of food allergy as a contributing factor to TLP represents a significant advancement in understanding this condition. It highlights the interplay between dietary factors and oral health, emphasizing the need for multidisciplinary collaboration between dental and medical professionals. Further research is required to determine the prevalence of food allergy-associated TLP and to refine diagnostic and management protocols, ultimately improving outcomes for affected individuals.^{5,7}

Systemic and psychological factors can also influence oral mucosal lesions. In an Indonesian community survey, mouth sores were reported by 11% of ethnic Malay respondents and were associated with general health status,¹⁷ and psychological stress has been linked to recurrent aphthous stomatitis.¹² Whether such factors play a role in TLP is unknown. Ridho et al. reported an association between stress-related salivary cortisol levels and recurrent aphthous stomatitis, highlighting the role of immune-inflammatory mechanisms in oral mucosal lesions.¹² Although the pathogenesis of transient lingual papillitis differs from recurrent aphthous stomatitis, this inflammatory response may be relevant in the present case, where transient lingual papillitis occurred in association with suspected food allergy, suggesting that an immune-mediated response to dietary antigens may have contributed to the observed lingual inflammation.

CONCLUSION

Transient lingual papillitis (TLP) is a benign condition affecting the fungiform papillae of the tongue, characterized by swelling, erythema, and discomfort. TLP may be associated with food allergy, which involves mast cell activation and histamine release following exposure to allergens such as shellfish or nuts, resulting in localized symptoms. The diagnosis of allergy-related TLP requires careful dietary history taking, allergy testing, and elimination of suspected allergens. This condition should be distinguished from oral allergy syndrome (OAS), an IgE-mediated hypersensitivity reaction associated with proteins in raw foods that typically produces more immediate and sometimes systemic manifestations. Management of TLP includes topical therapy for symptomatic relief and patient education regarding allergen avoidance, as demonstrated in this case in which the patient was advised to avoid shrimp. Recognizing food allergy as a contributing factor to TLP underscores the importance of multidisciplinary collaboration to enhance understanding and improve patient outcomes.

This case highlights the potential role of food allergy as a contributing factor in TLP and emphasizes the importance of thorough dietary history and immunologic assessment. Recognition of allergic triggers enables targeted preventive strategies and may reduce recurrence. Further studies are required to clarify the immunopathogenesis and to establish standardized diagnostic and management protocols.

DECLARATION

Authors Contributions

[AF]: Conceptualization, Investigation, Data Curation, Writing - Original Draft. [DM]: Validation, Supervision, Writing - Review & Editing. [EN]: Validation, Supervision, Writing - Review & Editing. [MS]: Validation, Supervision, Writing - Review & Editing. All authors have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics Approval and Consent to Participate

Ethical approval was not required for this case report because it describes the diagnosis and clinical management of an individual patient and does not involve experimental intervention or the collection of data for research purposes.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying clinical photographs and imaging.

Data Availability Statement

Data sharing is not applicable to this article as no new datasets were generated.

Declaration of Generative AI In Scientific Writing

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this manuscript.

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