

## CASE REPORT

# Oral Allergy Syndrome: Two Case Reports in Dental Practices

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## ABSTRACT

**Background:** Oral Allergy Syndrome (OAS) is a food allergic reaction towards fruit, vegetable and nut causing clinical symptoms in the form of itching, pain, vascular edema, and a narrow throat. In this case report, we reported management two cases of oral allergy syndrome due to banana and longan. **Cases:** The first case reported a 20-year-old man complaining of both upper and lower swollen lips after eating longan fruit. The second case was a 54-year-old woman complaining of pain and discomfort in the upper lip, mouth corners, left and right inner cheeks, palate and especially on the tongue. She had had an Ambon Banana the day before. **Case Management:** Both patients were given antihistamine treatment and informed to avoid the suspected fruits which caused the allergic reaction. The diagnosis is established using the oral food challenge method. **Conclusion:** The principle of management of OAS cases is to identify and avoid allergens. Antihistamines are the drug of choice for this case.

**Keywords:** Oral allergy syndrome, oral food challenge, food allergy, oral lesions

## INTRODUCTION

Oral allergy syndrome (OAS) is allergic reactions that occur in the oral cavity due to allergens in the form of pollen, fruits, vegetables, herbs, and nuts.<sup>1-3</sup> OAS was also known as pollen-food allergy syndrome (PFS) and birch pollen-food syndrome.<sup>2-6</sup> OAS is not a rare disease that can be found in dental practice.<sup>7</sup> The general complaints experienced by the patients were itching, stinging, and vascular edema. Those reactions may affect tongue, lips, palate and pharynx, usually accompanied by itching in the ears and throat feels narrowed.<sup>2-6</sup> OAS can cause severe symptoms, including anaphylaxis, which can occur at any age. The more allergens consumed is associated with the severity of clinical symptoms. These condition have the potentials to cause dangerous situation for the patient.<sup>8,9</sup>

The author will report two OAS cases and its management in outpatients of the Sultan Agung Islamic Teaching Dental Hospital in Semarang.

## CASE REPORT

### Case 1

A 20-year-old male complained of swollen upper and lower lips, itching and pain extent to his throat. He experienced the complaint after eating longan fruit the day before. Extraoral examination of both lips revealed oedema, redness and softness on palpation. The patient was prescribed a tablet of Cetirizine per day for a week and scheduled for a week follow up. The working diagnosis of this case was OAS.



Figure 1. Upper and lower lips clinical conditions before treatment (Case 1)

On the following visit, the patient felt better, and the complaints disappeared after he took the medications regularly as directed. Oral food challenges (OFC) were carried out to establish the diagnosis.<sup>10</sup> Patient was asked to consume suspected allergen food, in this case was longan. During the OFC procedure, the patient was closely supervised, observed and asked if there was any reaction or changes after intake (Table 2). After the OFC procedure, the patient showed positive results of allergies to longan. The patient was then informed to avoid longan since the suspected fruit had been confirmed as the allergen.



Figure 1. Upper and lower lips clinical conditions before treatment (Case 1)

Table 1. Food challenge procedure case 1

Time	Treatment
Start	Patient started to eat longan
1 minute after eating a longan	Patient felt soreness like being pierced by a needle on the entire dorsal area of the tongue
6 minutes after eating a longan	The stinging was increasing up to the palate Patient was given antihistamine (Cetirizine tablets)
5 minutes after antihistamine medication	Symptoms began to subside
15 minutes after antihistamine medication	Patients had no complaints

## Case 2

A 54-year-old female patient complained of soreness and discomfort in the upper lip, corners of the mouth, left and right inner cheeks, palate and especially on the tongue. The complaints were experienced after she ate banana on the previous day. Patient informed that these complaints occurred frequently after she had bananas. Extraoral examination showed no abnormalities. Intraoral examination on the right lateral tongue showed pinpoint multiple red-black macules. On the center of the palate, a clear delineation elongated dark brown macule measuring  $\pm 5\text{mm} \times 20\text{mm}$  was noted (Figure 1). The patient was given Cetirizine a tablet daily for a week and scheduled for follow up a week later. The diagnosis of this case was OAS and fixed food eruption (FFE).

On the follow up visit, the patient felt better and reported no complaints regarding the oral lesions. The symptoms disappeared after taking medications regularly as directed. Intraoral examination on the right lateral tongue revealed multiple pinpoint macules with reduced dimension and color from initial visit (Figure 2). OFC were carried out to establish the food allergy diagnosis by asking the patient to eat banana as the suspected allergen food such in this case. During OFC procedure, the patient was supervised and observed by oral medicine specialist (1<sup>st</sup> author) whether she had any reaction. Any complaints that she experienced were recorded in Table 1. OFC procedure showed positive results for

allergy reactions due to banana. Patient was informed to avoid banana since the fruit had been confirmed as the allergen.

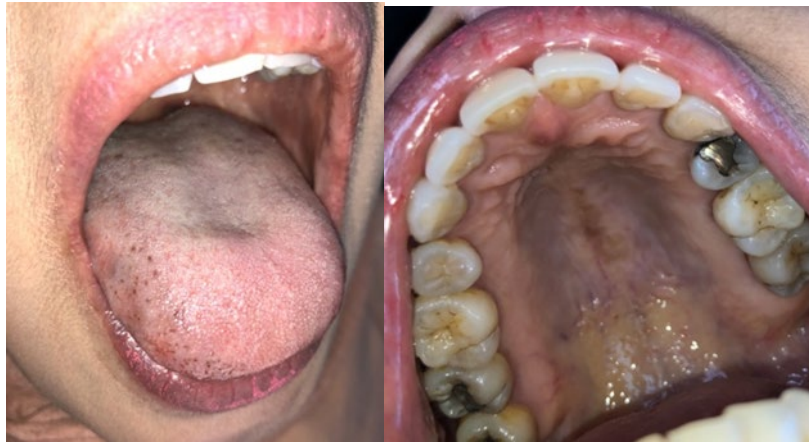


Figure 3. Oral mucosa conditions a day after exposure to food allergen.



Figure 4. Oral mucosa conditions after medication and avoiding banana

Table 2. Oral Food Challenge Procedure in Case 2

Time	Treatment
Start	Patient started eating banana
1 minute after eating a banana	Patient experienced soreness like being pierced by a needle on the entire dorsal area of the tongue
6 minutes after eating a banana	The stinging sensation was increasingly felt up to the palate Patient was given antihistamine (Cetirizine tablets)
5 minutes after antihistamine medication	Symptoms began to subside
15 minutes after antihistamine medication	Patient had no complaints

## DISCUSSION

OAS was triggered by food allergens in the form of fresh fruit or vegetable pollen.<sup>1,8,11</sup> Allergens trigger the formation of specific IgE derived from plasma cells, which subsequently binds to the mast cell wall. The next mechanism is the incoming allergen directly binds to a specific IgE that has already been attached to the mast cell wall. The bond activates mast cells and results in degranulation of mast cells that secrete inflammatory mediators, one of which was histamine. The release of histamine will cause an increase in vascular permeability and cause swelling of soft tissues (angioedema),

itchiness (urticaria) and even anaphylactic shock. Symptoms last rapidly within a few seconds to minutes.<sup>8,11</sup>

Urticaria (itchiness) and angioedema were among the signs and symptoms of OAS which caused by histamine secreted by mast cells.<sup>11</sup> Angioedema is an acute edema of the mucosa or skin characterized by rapid swelling. The patients felt that their mucosa or skin were getting thicker. Angioedema could occur in the oropharynx which may lead to difficulty of swallowing and breathing.<sup>9</sup> This condition specifically occurred in the first patient, while the second patient experienced OAS and FFE.

The immunopathogenesis of FFE can be explained as a food allergic reaction caused by non-IgE, which clinically shows the presence of a blackish-brown macular that settles in the oral mucosa and skin. The macula will look darker when food becomes an allergen and will fade after the patient takes antihistamine medication and avoids allergens. This condition occurs when food allergens induce interferon (IFN) gamma that produces CD8 T-cells in the mucosa or skin, leading to apoptosis of keratinocytes (local inflammation) and removal of melanophages hyperpigmentation.<sup>12,13</sup>

Anamnesis was an important key in identifying OAS and FFE. Patients often do not suspect that the fruit acts as the trigger of allergic reaction. The key information during anamnesis was patient eating history which immediately led to complaints, the duration of time after eating to complaints, and the type of complaints. Patient's complaints from itchiness or sharp pain such as being pierced by a needle after eating a fruit or vegetable, was an indication of the clinical diagnosis of OAS. Oral antihistamines (in this case cetirizine 10 mg) or intra-muscular injection of epinephrine dissolved with aqueous 1:1000 at a dose of 0.01mL/kg body weight, are the main choices in cases of OAS.<sup>8,10,14,15</sup> Cetirizine is a fast-acting and highly selective peripheral histamine H1 receptor antagonist. Cetirizine does not cross the blood-brain barrier, which produces minimal sedation compared to many first-generation antihistamines. Cetirizine decreases vascular permeability, reducing fluid escaping into tissues from capillaries, and also an inhibitor of histamine-induced bronchospasm.<sup>16-18</sup>

OFC procedure is a gold standard for establishing a diagnosis of food allergies. OFC was conducted in hospitals for safety considerations in anticipation of anaphylactic shock. Patients should not consume allergens that will be tested four hours prior to OFC. This procedure is carried out to identify any food allergen so that the patient will be able to avoid it. This will prevent fatality of anaphylactic shock in the future. Positive result is stated if allergy symptoms appear during the OFC procedure, but otherwise is considered as negative.<sup>10,19,20</sup> Medical suggestion given to the patients were to avoid fruits that had been confirmed as the allergens and the main purpose therapy was to avoid recurrence of allergic reactions.<sup>5,6,8</sup>

## CONCLUSION

The main principle of OAS management was to identify the cause through anamnesis, recognize the clinical symptoms, avoid allergens, and consider antihistamines as medical options.

## CONFLICT OF INTEREST

The authors declare that there were no conflicts of interest related to this case report.

## REFERENCES

1. American Academy of Allergy Asthma & Immunology. *Oral Allergy Syndrome – Pollens and Cross-Reacting Foods Table.*; 2019.
2. Muluk NB, Cingi C. Oral allergy syndrome. *Am J Rhinol Allergy.* 2018;32(1):27-30. doi:10.2500/ajra.2018.32.4489
3. Zhang Md Y, Marzouk Md H. Otolaryngologists Practice Pattern on Oral Allergy Syndrome. *Allergy Rhinol (Providence).* 2021;12:21526567211021304. doi:10.1177/21526567211021305
4. Högerle C, Nicolo MS, Gellrich D, Eder K, Gröger M. Clinical Relevance of Profilin Sensitization Concerning Oral Allergy Syndrome in Birch Pollen Sensitized Patients. *J Asthma Allergy.* 2022;15(January):249-255. doi:10.2147/JAA.S348650
5. Skypala IJ, Hunter H, Krishna MT, et al. BSACI guideline for the diagnosis and management

- of pollen food syndrome in the UK. *Clin Exp Allergy*. 2022;52(9):1018-1034. doi:<https://doi.org/10.1111/cea.14208>
6. Carlson G, Coop C. Pollen food allergy syndrome (PFAS): A review of current available literature. *Ann allergy, asthma Immunol Off Publ Am Coll Allergy, Asthma, Immunol*. 2019;123(4):359-365. doi:10.1016/j.anai.2019.07.022
  7. Mastroianni C, Cardinale F, Giannetti A, Caffarelli C. Pollen-Food Allergy Syndrome: A not so Rare Disease in Childhood. *Medicina (Kaunas)*. 2019;55(10). doi:10.3390/medicina55100641
  8. Skypala JJ. Can patients with oral allergy syndrome be at risk of anaphylaxis? *Curr Opin Allergy Clin Immunol*. 2020;20(5):459-464. doi:10.1097/ACI.0000000000000679
  9. Pier J, Bingemann TA. Urticaria, Angioedema, and Anaphylaxis. *Pediatr Rev*. 2020;41(6):283-292. doi:10.1542/pir.2019-0056
  10. Calvani M, Bianchi A, Reginelli C, Peresso M, Testa A. Oral Food Challenge. *Medicina (Kaunas)*. 2019;55(10). doi:10.3390/medicina55100651
  11. Alessandri C, Alessandri C, Ferrara R, et al. Molecular approach to a patient's tailored diagnosis of the oral allergy syndrome. *Clin Transl Allergy*. 2020;10(1):1-18. doi:10.1186/s13601-020-00329-8
  12. Sharma L, Agarwal R, Chopra A, Mitra B. A Cross-Sectional Observational Study of Clinical Spectrum and Prevalence of Fixed Food Eruption in a Tertiary Care Hospital. *Indian Dermatol Online J*. 2020;11(3):361-366. doi:10.4103/idoj.IDOJ\_340\_19
  13. Sohn KH, Kim BK, Kim JY, et al. Fixed Food Eruption Caused by *Actinidia arguta* (Hardy Kiwi): A Case Report and Literature Review. *Allergy Asthma Immunol Res*. 2017;9(2):182-184. doi:10.4168/aaair.2017.9.2.182
  14. Shaker MS, Wallace D V, Golden DBK, et al. Anaphylaxis-a 2020 practice parameter update, systematic review, and Grading of Recommendations, Assessment, Development and Evaluation (GRADE) analysis. *J Allergy Clin Immunol*. 2020;145(4):1082-1123. doi:10.1016/j.jaci.2020.01.017
  15. Pflipsen MC, Vega Colon KM. Anaphylaxis: Recognition and Management. *Am Fam Physician*. 2020;102(6):355-362.
  16. Naqvi A, Gerriets V. Cetirizine. In: ; 2022.
  17. Zhou P, Jia Q, Wang Z, Zhao R, Zhou W. Cetirizine for the treatment of allergic diseases in children: A systematic review and meta-analysis. *Front Pediatr*. 2022;10:940213. doi:10.3389/fped.2022.940213
  18. Adusumilli NC, Friedman AJ. An Updated Therapeutic Strategy for Chronic Idiopathic Urticaria. *J Drugs Dermatol*. 2021;20(3):354-355. doi:10.36849/JDD.0421
  19. Bird JA, Leonard S, Groetch M, et al. Conducting an Oral Food Challenge: An Update to the 2009 Adverse Reactions to Foods Committee Work Group Report. *J Allergy Clin Immunol Pract*. 2020;8(1):75-90.e17. doi:10.1016/j.jaip.2019.09.029
  20. Nachshon L, Zipper O, Levy MB, Goldberg MR, Epstein-Rigby N, Elizur A. Subjective oral symptoms are insufficient predictors of a positive oral food challenge. *Pediatr Allergy Immunol Off Publ Eur Soc Pediatr Allergy Immunol*. 2021;32(2):342-348. doi:10.1111/pai.13392