

## **OAS could be a sign of underlying pollen allergy**

*Brenda loves melons and cantaloupes. Until few years ago she could eat them without any problem. Apparently in the last few years she found out that whenever she ate these fruits, she developed intense itching of her throat and ears and sometimes swelling of her lips, tongue and throat. Once she had to go to a hospital emergency room because she felt her throat was closing. She is very much frustrated and needs some help desperately.*

Oral Allergy Syndrome (OAS) is a condition where people who are highly allergic to pollens develop symptoms of itching, swelling and hives involving lips, mouth, tongue and throat when they eat fresh fruits or vegetables. In the majority of such patients, the symptoms are confined to mouth and throat. However in 3% of patients, the symptoms could be more generalized resembling a systemic allergic reaction (anaphylaxis). Therefore some doctors would like to call this condition, Pollen Food Syndrome. This term, according to them better explains the true nature of the problem.

### **What causes OAS?**

The Oral Allergy Syndrome is as a result of cross-reactivity between certain proteins (allergens) in fresh fruits or vegetables and other proteins in pollens from grasses, weeds and trees. It is mediated by IgE-antibodies directed against these cross-reacting proteins. During pollen seasons (spring and fall), patients who have allergic rhinitis, allergy induced asthma and eczema develop IgE-antibodies to pollens. The amount of IgE antibody made increases during pollen seasons and declines during rest of the year. The resulting IgE gets fixed to the surface of mast cells and basophils- the cells that mediate immediate type allergic reactions. These cells primarily reside in the inner linings of eyes, nose, mouth, throat, gut, lungs and skin and around blood vessels.

Each IgE-molecule is directed against a specific allergen. For example, the IgE that is directed against Bermuda grass pollens is different from the IgE against cat dander and therefore will not recognize and react with cat dander. When a specific IgE molecule on the surface of mast cells recognizes and combines with its specific allergen in pollens or foods, it triggers an allergic reaction. The resulting symptoms could be local at the point of contact (eye, mouth, nostrils, skin etc.) or could be generalized (anaphylaxis) depending on the degree of allergy (mild versus severe), amount of exposure (small versus large) and site of exposure.

In Oral Allergy Syndrome, the structural similarity between certain allergens in fresh fruits and vegetables and pollens is so close that the body's immune system gets confused between the two and treats both of them in the same way. For example, when a patient who is highly allergic to birch tree pollens eats fresh apples, he or she may develop itching, swelling and hives involving lips, mouth, tongue or throat. Other foods that may cross-react with birch tree pollens include pears, peaches, apricots, cherries, plums, nectarines, prunes, kiwi, carrots, celery, potatoes, peppers, fennel, parsley, coriander, parsnips, hazelnuts, almonds and walnuts. Similarly patients who are highly allergic to ragweed pollens may develop symptoms of OAS when they eat melons, cantaloupes, honeydews, cucumbers and avocados. Grass allergic patients may react with peaches, celery, melons, tomatoes and oranges. Mugwort pollen allergic patients may react with celery, apple, kiwi, peanut, fennel, carrots, parsley, coriander, sunflower and peppers. Alder tree pollen allergic patients may react with celery, pears, apples, almonds, cherries, hazelnuts, peaches and parsley.

### **How does OAS manifest?**

The symptoms of OAS could be mild or severe depending on how allergic the patient is to particular pollen, the amount of cross-reacting food that is ingested, how ripe or unripe the fruit is and season of the

year. For example, some patients with OAS develop allergic symptoms only when they eat ripe bananas whereas others do so only with unripe or partially ripe bananas. Similarly some patients with OAS can not eat certain fruits and vegetables during spring or fall but can eat the same food rest of the year with much less problem. This wide variation in presentation makes OAS unique and interesting.

### **How is OAS diagnosed?**

OAS is diagnosed by obtaining good history from the patient, by looking for physical findings on examination that are consistent with allergic rhinitis, asthma or eczema and by doing allergy skin or blood tests for pollens and foods. In general, patients with OAS are highly allergic to pollens by allergy skin tests or blood tests. Tests for suspected foods may or may not be positive because of the fragile nature of these food allergens (lack of stability and deterioration in quality with time). To overcome this problem, some allergists do what is known as prick-prick test. In this procedure, suspected fresh fruit or vegetable is pricked with a sterile needle and the same needle is used to prick the skin of the patient. A positive test indicates allergy to the food in question. Even with this procedure results may vary.

### **How is OAS treated?**

Until recently, not much could be done about problems faced by patients with OAS. Avoiding the food(s) in question was the only available treatment option. Some patients have found that cooked vegetables and fruits (bananas for example) are tolerated without much problem. In patients who develop systemic symptoms of anaphylaxis, obviously this option is dangerous and should not be followed. Such patients should strictly avoid the offending foods in question and carry self-injectable epinephrine with them at all times for emergency use. A study that was done in Europe few years ago found that majority of patients who had OAS from eating apples and who had underlying allergy to birch tree pollens could eat apples again after undergoing allergy desensitization injections for birch tree pollens for a year. While this finding may not be applicable to other pollens and fruits/ vegetables, nevertheless this study points out that allergy desensitization injections may play a beneficial role in this condition.

### **Are there other conditions similar to OAS?**

There are other syndromes similar to Oral Allergy Syndrome. For example, patients who are highly allergic to latex may cross-react with certain tropical fruits such as kiwi, bananas, papaya, avocados, chestnut etc.. Similarly patients who are highly allergic to dust mites may react with shrimp, patients who are highly allergic to cats may cross-react with pork and patients who are highly allergic to feathers may cross-react with eggs. As we understand more about molecular structures of different allergens in pollens, fruits and vegetables, we will be in a better position to solve many of the problems faced by OAS patients.

### ***About the author:***

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