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Quick Pulse

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PEANUT ALLERGY UPDATE

More than 1.5 million Americans are allergic to peanuts, and peanut allergy accounts for 50% of food allergy deaths, according to the American Academy of Allergy, Asthma and Immunology. Life-threatening allergic reactions can be triggered by as little as two or three peanuts, and even trace amounts can kill. Peanuts are often a "hidden" ingredient in products. For instance:

- Peanuts can get in food products by indirect contamination during the manufacturing process.
- Food labels may use terms not easily recognized as peanuts, such as "hydrolyzed vegetable protein."
- Food sold in bakeries and ice cream stores can be "contaminated" by contact with peanuts.
- Some brands of sunflower seeds are produced on equipment shared with peanuts.
- Artificial nuts can be peanuts that have been de-flavored and then a different nut flavor added.

The July 2003 issue of the ***Journal of Allergy and Clinical Immunology*** (JACI) has seven articles on peanut allergy this month, and there were some interesting research findings. "These studies provide hope that one day scientists will find a cure for peanut allergy, said Anne Munoz-Furlong, Founder/CEO of The Food Allergy & Anaphylaxis Network. However, she warned, "Still, the best practices are avoidance (of peanuts) and immediate availability of epinephrine and education on the dangers of food allergy reactions." Dr. Donald Leung of the National Jewish Medical and Research Center in Denver and Editor of the Journal of Allergy and Clinical Immunology said, "I think the long-term peanut vaccine study is the most exciting article in the journal, but of practical use, the activated charcoal study is extremely interesting."

Asked about the role of Genentech/Novartis's Xolair (omalizumab) for peanut allergy, Dr. Hugh Sampson of Mt. Sinai School of Medicine said, "We hope not initially…I worked on Tanox's TNX-901, and Xolair is not exactly the same. The Xolair dosing regimen for asthma is not the same as for peanut allergy. Dr. Leung and I and others met with Genentech and Novartis and they are interested and probably will carry out a study to find if Xolair has a comparable response in peanut allergy to TNX-901 and at what dose. We would be concerned that using the Xolair asthma dose might make people think they are protected, and we don't know yet if that dose is effective."

ARTICLE #1: Peanut allergy can be a marker or contributor to serious asthma attacks.

This study looked at children with asthma who were hospitalized and compared them to a control of 34 children with asthma who were not hospitalized, looking for risk factors. The authors found that 52.6% of the hospitalized asthmatics were food allergic, compared to 10.5% of controls. Of those with known food allergies, the majority were allergic to nuts, especially peanuts. Dr. Sampson said, "This suggests that some of the life-threatening asthma we are seeing may be food allergies and may be mis-diagnosed as asthma. This paper stimulates the importance of food allergy as a contributor or marker of life-threatening asthma."

ARTICLE #2: Some patients can outgrow a peanut allergy, but in a few cases the allergy recurs.

Doctors used to assume that no one outgrew a peanut allergy, but a series of studies have shown that about 20% of individuals appear to outgrow their peanut allergy. The problem has been figuring out which children outgrow it. Previous studies have shown that when peanut-specific IgE is >15 kiliunits, the allergy is reactivated. This 80-patient study found that ~50% of children with peanut-specific IgE <15 kiliunits outgrew their allergy, and 73% of children with undetectable peanut-specific IgE had no reaction when they ingested peanuts.

The authors followed the patients who outgrew their allergy to see if they would started eating peanuts – and what reaction they would have if they did. About 30% ate peanuts several times a week, and a third ate them occasionally (once or twice a month), but 34% almost never ingested peanuts, indicating a fair number are still worried about peanuts. There was a small group of patients – 4%-10% of those who appear to outgrow their peanut allergy – who seem to re-develop sensitivity to peanuts. There was no correlation between the initial severity of the reaction and other food allergies.

ARTICLE #3: Measurement of peptide specific IgE helps determine who has outgrown a peanut allergy.

This study looked at whether more diagnostic tests can be developed to determine if someone will outgrow a peanut allergy and can be less dependent on food challenges. The peanut proteins that cause the allergic reaction are known, they are fully sequenced, and researchers know where IgE binds to these proteins. In this study, the authors studied eight major epitopes (binding sites) in 31 symptomatic patients and 16 asymptomatic patients (including 10 children who had outgrown their peanut allergy). The study found that, using peptides, they could identify 90% of individuals with low levels of peanut-specific antibody who would still be reactive to peanut following a challenge. Dr. Sampson said, "This suggests that even though ~50% (of people with a peanut allergy) have IgE levels below the diagnostic level of who will react, we now have a test that would pick up 90% of them, reducing the number we have to challenge to about 10%."

ARTICLE #4: Dry roasting increases the allergenicity of peanuts.

In China where peanuts are boiled or fried, there is no peanut allergy, though people eat an equivalent amount of peanuts. This study showed that dry roasting peanuts increases the amount of IgE binding, suggesting the processing may make peanuts more allergenic. They also found that dry roasting peanuts increases trypsin inhibitor activity by 3.5-fold, providing evidence that dry roasting, the typical U.S. processing method, may play a role in increasing the allergenicity of peanuts.

ARTICLE #5: Casual contact with peanuts does not cause systemic reactions.

To determine whether casual contact with peanut butter – like being in a room with someone eating peanut butter, or being touched or kissed by someone who recently ingested peanut butter – cause a reaction, the researchers studied 30 children (13 with contact reactions, 11 with reactions on casual exposure by inhalation). The children were subjected to double blind, placebo-controlled inhalation and contact challenges. For inhalation, researchers took 3 ounces of peanut butter, blinded the smell and held it in front of the patient's face for 10 minutes. For contact, researchers used a small amount of peanut butter rubbed on the skin. The placebo was soy butter made to smell and feel the same as peanut butter.

In this study, none of the patients experienced any inhalation reaction, showing that smell of peanuts did cause a reaction. On contact, there were some small, local reactions but no systemic reactions. The authors noted that these findings do not apply to nuts served on airplanes, where peanut dust could be a factor, and kids could put their fingers with peanut butter on them in their eyes or mouth causing a systemic reaction.

ARTICLE #6: Activated charcoal is effective therapy for peanut reaction.

Currently, peanut allergy people get Epi-pens and antihistamines. This study looked at whether ingesting activated charcoal would help as well. Patients were given mixed activated charcoal with peanuts, and researchers found that activated charcoal was very effective in binding up residual peanut protein. It takes about 1 mL of activated

charcoal to bind 1 mg of peanut protein. Dr. Sampson said, "Accidental exposure is two or three peanuts, so you have to drink about 4 ounces of activated charcoal to bind the of residual protein from that type of ingestion. What the peanuts were in, did not affect the activated charcoal ability to bind." However, he cautioned that, while activated charcoal may be useful additional therapy, it is not a replacement for epinephrine or antihistamines.

Dr. Leung explained, "Charcoal binds the peanut so it can no longer bind with the IgE. There may be mast cells in the GI tract that could set off vomiting or a local reactions, but a more severe reaction could occur if peanut is absorbed into the bloodstream, and the idea is that the whole process of peanut absorption takes time and by drinking charcoal soon after you have symptoms – and you will have symptoms before you know you accidentally ate peanuts -- then you are preventing a more serious reaction…We find chilling the charcoal or drinking it through a straw helps." Dr. Sampson said, "A person thinks he has ingested any allergic food, not just peanuts, then drink it. There should be no significant adverse effect from drinking it except that it doesn't taste very good. If you are having symptoms, then the first course of action would be medications (epinephrine or antihistamines). Once activated charcoal is used, the oral antihistamine would probably be less effective."

Anne Munoz-Furlong added a word of caution about use of activated charcoal, "Parents might think they should lead with activated charcoal but that is quite a bit of fluid to get into someone in distress. It should be in the (treatment) plan, but not in place of epinephrine and not in place of getting the person to a hospital."

ARTICLE #7: New vaccine to treat peanut allergy is early but looks promising.

Modified recombinant proteins have been developed that are not bound by peanut-allergic patients. These recombinant proteins are produced by E. coli bacteria, then purified and can be used as a medication. Researchers at Mt. Sinai Hospital in New York had the idea was that since E. coli are necessary to make the protein, perhaps taking advantage of the E. coli itself might lead to a way to turn off the allergic reaction to peanuts. This animal study looked at the long-term protective effect of this vaccine, administered by suppository in three doses. The study found that administration of heat-killed E. coli at the highest dose gave markedly extended protection. At three months, the mice still had full protection and no evidence of anaphylactic symptoms, compared to mice getting sham treatment or lesser doses of vaccine. A researcher said, "We think the vaccine activates the regulatory component, which then brings down the Th2 or allergic component of the response, and maybe affects the Th1 slightly, thereby eliminating the allergic response that was there."

Human trials of the vaccine are expected to start within the next year. They expect patients to need about three administrations, and then perhaps yearly boosters. ♦