Pilot study successful in taming allergic reactions to food

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Children who were allergic to eggs were able to essentially overcome their allergy by gradually consuming increased quantities of eggs over time, researchers at Duke University Medical Center and the University of Arkansas for Medical Sciences have found in a small pilot study.

“Participants who took a daily dose of egg product over the two-year study period were able to build up their bodies’ resistance to the point where most of them could eat two scrambled eggs without a reaction,” said A. Wesley Burks, M.D., chief of Duke’s Division of Allergy and Immunology and a senior member of the research team. “Egg allergies cause a significant decrease in quality of life for many people, so this study is exciting in that it brings us a step closer to being able to offer a meaningful therapy for these people.”

Egg allergy is one of the most common food allergies among children in the United States, Burks said. Just how many children are allergic to eggs is unclear, but the National Institute of Allergy and Infectious Diseases estimates that 6 percent to 8 percent of children have some type of food allergy. Most children outgrow egg allergy by age 5, but some people remain allergic for a lifetime.

The findings are reported in an advance online edition of the Journal of Allergy and Clinical Immunology and will appear in the journal’s January 2007 print edition.

The study was funded by the National Institutes of Health and the two

universities.

The study is the first in a series of studies on food allergy "desensitization" that are under way at Duke and the University of Arkansas. The goal, Burks said, is to offer food allergy sufferers protection from accidental ingestion of items that provoke reactions and, eventually, to induce complete or near-complete tolerance to those items.

Burks and his colleagues modeled the study on a commonly used method for treating seasonal allergy sufferers to alleviate symptoms. In this approach, called immunotherapy, physicians give patients shots containing small amounts of the troublesome allergen in an effort to build their tolerance to it. The therapy works on a cellular level to alter specific immune system cells, called lymphocytes, that play a part in orchestrating allergic reactions and to increase the immune system's production of antibodies that attack and neutralize allergens, Burks said.

The seven subjects in the study, who ranged from 1 to 7 years of age, had a history of allergic reactions, including hives, wheezing and vomiting, when they consumed eggs or egg products. For safety's sake, none of the children enrolled had previously experienced a life-threatening allergic reaction, Burks said. As an extra precaution, the subjects received a supply of epinephrine, which is commonly used to treat breathing problems that can occur with food allergy.

Instead of receiving shots, as seasonal allergy sufferers do, the subjects were given small doses of powdered egg orally, mixed in food. "We started the subjects with a very small concentration of egg product -- the equivalent of less than one-thousandth of an egg -- and then we increased the dose every 30 minutes for eight hours in order to determine the highest dose that each subject could tolerate," Burks said.

The subjects consumed the first doses in the study clinic. The

researchers then gave the children's parents or caregivers a supply of egg product, allocated into the tolerated doses, which the subjects consumed daily at home, mixed with other foods.

The children returned to the clinic every two weeks. At each visit, the researchers increased the subjects' dosages until they reached the equivalent of one-tenth of an egg, Burks said. The children then continued to take this "maintenance dose" daily for the duration of the study.

Over time, the children showed both an increase in tolerance to eggs and a decrease in the severity of their allergic reactions, Burks said. At the end of the study period, most of the children could tolerate two scrambled eggs with no adverse reactions.

The researchers now are conducting two follow-up food allergy desensitization studies, Burks said. In one study, subjects receive higher doses of egg to see if this will further reduce their sensitivity or even neutralize the allergy altogether.

The second study focuses on children who are allergic to peanuts, to see if the desensitization approach can build their tolerance and decrease the severity of their reactions. Peanut allergy, which can be life-threatening, affects approximately 1 percent of children under age 5, and its incidence has been on the rise over the past 15 years, according to Burks. Studies have shown that about 20 percent of children with egg or milk allergy will go on to develop a peanut allergy.

Source: Duke University Medical Center