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Children at Duke fight food allergies

Controlled exposure might make peanuts, milk and eggs less dangerous

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In severely allergic children, a trace of peanut or smidgen of egg can trigger a deadly reaction. But new research by Duke physicians suggests a way out: feeding children gradually increasing amounts of the foods that sicken them.

When 6-year-old Caroline Vande Berg of Cary started in a Duke peanut allergy study last spring, she was so sensitive she couldn't enter the same room as an open jar of peanut butter without coughing and breaking out in a rash. Today, after receiving daily doses of peanut flour through the Duke study, Caroline can safely inhale or touch peanuts and she can even eat the equivalent of about one peanut a day with no reaction.

The experimental therapy, while still in its early stages, represents a potentially major advance in the treatment of food allergies, which annually send about 30,000 Americans to the emergency room. About 200 people die from allergic reactions to food.

The treatment would be the first to prevent or reduce food allergies, with the power to cut threats from accidental exposures or even cure allergies



Caroline Vande Berg, 6, takes a dose of peanut protein mixed with applesauce from pediatric nurse Pamela Steele at the Duke Clinical Research Unit, where researchers are trying to desensitize children to foods that trigger their allergies.

Staff Photo by Ted Richardson

FOOD ALLERGIES

Who has food allergies?: Up to 8 percent of children and about 2 percent of adults suffer from food allergies.

What are food allergies? People with such allergies have super-sensitive immune systems that react to certain substances in food and drink. The immune system mobilizes to fight the substance, or allergen. This internal battle produces symptoms such as swelling of the lips and throat, skin rashes and hives, vomiting and other digestive problems, and difficulty breathing.

Are food allergies permanent? Many children seem to outgrow food allergies, especially allergies to milk, soy and eggs, while nut allergies often persist into adulthood. Other allergies, such as sensitivity to shellfish, can strike in adulthood.

altogether. Between 6 percent and 8 percent of children are thought to suffer from food allergies, according to the National Institute of Allergy and Infectious Disease.

In many schools today, parents must agree not to send peanut butter sandwiches or any other peanut products to school. And parents of an allergic child must worry that if their child accidentally encounters the wrong thing, someone will treat him before he quits breathing.

Caroline's mother, Janet Vande Berg, used to worry daily that an accidental nibble might cause her child to have a severe allergic reaction called anaphylactic shock. It causes breathing problems, a sudden drop in blood pressure, loss of consciousness and shock -- all of which can kill. Teachers and caregivers all have to be trained to use an Epi-Pen, a ready-to-use dose of epinephrine that quickly reverses a violent allergic reaction.

"Now, she can be a normal kid," said Vande Berg.

The peanut study is one of a series of tests on food allergy desensitization that physicians at Duke and at the University of Arkansas are conducting.

Researchers are also working with children as young as 1 who are allergic to milk and eggs, which, along with peanuts, are among the most common allergies.

A small initial study of children with egg

What are the most common food allergies? Nine out of 10 allergic reactions to food are caused by eight foods: milk, soy, eggs, wheat, peanuts, fish, shellfish and tree nuts (walnuts, almonds and pecans).

How serious are food allergies? Reactions range from mild to severe. Severely allergic people can experience anaphylaxis, marked by breathing difficulties, drop in blood pressure, loss of consciousness and shock -- all of which can be fatal.

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HOW TO LEARN MORE

Asthma and Allergy Foundation of America, www.aafa.org

The Food Allergy and Anaphylaxis Network, www.foodallergy.org

Kids with Food Allergies, www.kidswithfoodallergies.org

Call Duke about having your child take part in a food allergy study at (919) 668-1333.

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- [Food Allergy: An Overview \(1 MB, PDF\)](#)

allergies found that feeding kids increasing amounts of powdered egg over two years effectively neutralized allergies, said Dr. A. Wesley Burks, chief of Duke's Division of Allergy and Immunology and a senior member of the research team.

Parents brought their children to Duke every two weeks to receive increasing doses of powdered egg mixed in applesauce or yogurt. Children started out eating the equivalent of about 1/1000th of an egg and, over time, worked up to about one-sixth of an egg a day. Between visits to Duke, parents mixed egg into the child's food at home.

At the end of the study, which was funded by the universities and the National Institutes of Health, all seven participants were able to eat two scrambled eggs without reaction. Study results will be published in the January edition of the Journal of Allergy and Clinical Immunology.

"If they can tolerate two scrambled eggs, they're basically not allergic anymore," Burks said.

Burks cautioned that parents should not attempt to desensitize allergic children on their own. Some children experienced mild to moderate allergic reactions, such as rashes or digestive problems, during the study. At Duke, children visit the hospital each time they receive an increased dose of an allergen and are closely monitored. To be extra safe, initial studies excluded the most seriously allergic children.

Researchers are now doing a larger follow-up study of children with egg allergies to test desensitization therapy in kids with allergies of all levels of severity, and to determine whether children must continue daily doses to receive lasting benefit. Duke is enrolling children in peanut and milk allergy studies, as well.

The therapy is based on the same basic concept behind treatments for patients allergic to grass, pollen or bee stings.

Seasonal allergy sufferers are given shots containing small amounts of allergens. Similarly, people who are very allergic to bee stings can be desensitized if they receive shots containing bee venom. Over time, the body's immune system gets accustomed to the allergens and is less inclined to react violently when the patient is exposed.

Burks said more research is needed to support the use of oral desensitization therapy. But he said that if the therapy works for egg, milk and peanut allergies it should be effective for any food.

That's great news for parents like Andria Youngberg, whose son Tyler, 7, is seriously allergic to peanuts, milk and eggs.

The family doesn't frequent restaurants because it's too hard to avoid Tyler's trigger foods. Every event has to be carefully orchestrated, Youngberg said.

This weekend, for example, Tyler will attend a birthday party. While the other children munch on pizza and birthday cake, Tyler will eat homemade vegan pizza and a peanut, egg and milk-free cupcake sent from home.

Tyler, who is participating in the follow-up egg study at Duke, has all but lost his sensitivity to eggs since starting therapy 11 months ago.

"To know that maybe in his lifetime that he can be desensitized or even cured is a huge relief," she said. "I'm thrilled he's going to have a chance at a totally normal life."

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