

Researchers Identify Skin Abnormalities in Eczema Patients Who Develop Food Allergies

Findings Suggest Personalized Treatments to Prevent Food Allergy

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DENVER — Researchers at National Jewish Health and their colleagues have identified structural and molecular markers in the skin of atopic dermatitis patients that distinguish those who have food allergies from those who do not. The findings, published in the February 20, 2019, issue of *Science Translational Medicine*, strengthen emerging science indicating that the skin plays a major role in food allergies, and suggest that personalized treatments for a subset of atopic dermatitis patients might help prevent food allergies.



“The skin of atopic dermatitis patients with food allergies show clear markers of a predisposition to allergic diseases and a faulty skin barrier,” said lead author Donald Leung, MD, PhD, head of Pediatric Allergy/Immunology at National Jewish Health. “They suggest that personalized treatment of these children may reduce the risk of developing both atopic dermatitis and food allergies.”

Atopic dermatitis, or eczema, is the most common inflammatory skin disease in childhood, affecting nearly 20 percent of children. It is characterized by dry, itchy and cracked skin. About 30 percent of children with atopic dermatitis go on to develop food allergies. In recent years, evidence has accumulated that eating potentially allergenic foods, such as peanuts, in early life can actually decrease the chances of developing allergies, while food and other allergens that enter the body through cracks in the skin can raise the risk of developing allergies.

“The skin of atopic dermatitis patients loses water and dries out,” said Dr. Leung. “It can crack like potato chips. Increasing evidence indicates that when food particles enter those cracks, they can promote the development of food allergies.”

Dr. Leung and his colleagues comprehensively evaluated clear, unaffected skin of 62 children with atopic dermatitis and food allergies, atopic dermatitis without food allergies and no atopic dermatitis. They found that the skin of atopic dermatitis/food allergy patients had significant abnormalities, including the lack of structural proteins needed to retain moisture and produce an effective skin barrier, increases in specific keratin proteins indicative of an immature skin barrier, and increased activation of type 2 immune genes, which are associated with allergic diseases.

“These findings indicate that atopic dermatitis patients who go on to develop food allergies are a distinct subset of patients,” said Dr. Leung. “The first weeks after birth, when an infant goes from the watery environment of the womb to the dry air of the outside world, is particularly traumatic for an infant’s skin. We believe early treatment to maintain moist skin and a healthy skin barrier is especially important for these patients.” The skin sampling technique introduced in this study may provide an instrument to identify this group of infants “at risk for food allergies” and lead to early intervention and/or prevention of food allergy.

Dr. Leung is currently conducting several studies on eczema, food allergies and the atopic march. Anyone interested

in participating in these studies can call the National Jewish Health Clinical Research Unit at 303.398.1717.

National Jewish Health is the leading respiratory hospital in the nation. Founded 121 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the media resources page.

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