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Predicting the Development of Food Allergies with Skin Biomarkers

Dr. Takemoto:

Thirty-three million Americans have food allergies, accounting for an astounding 377 percent increase between 2007 and 2016. That's one in 10 adults and one in 13 children. And since the prevalence of food allergies is only expected to continue increasing, is there a way that we can predict their onset?

Welcome to *On the Frontlines of Food Allergies* on ReachMD. I'm Dr. Jody Takemoto. And here with me today to discuss his research on how skin biomarkers can predict the development of food allergies is Dr. Donald Leung, who's a Distinguished Professor and the Head of Division of Pediatric Allergy and Immunology at National Jewish Health in Denver, Colorado.

Dr. Leung, thanks for being here today.

Dr. Leung:

My pleasure.

Dr. Takemoto:

To start us off, Dr. Leung, can you provide a brief overview of this study, including its objective and study design?

Dr. Leung:

Yes. In this study, we wanted to determine whether there were changes in the skin which might predict which babies would develop future food allergy or atopic dermatitis, also called eczema, which is a major risk factor for food allergy. The study design we used was to obtain a skin sample by touching the baby's skin with an adhesive tape that has the sensation of a Johnson & Johnson baby bandage and, therefore, is not painful. These samples were obtained at two months of age before they developed any clinical food allergy or eczema. And then we followed them for up to two years to see who developed the food allergy and who didn't develop a food allergy.

Dr. Takemoto:

And what were the findings from this study?

Dr. Leung:

We found that before they got the food allergy, they developed abnormalities in the lipids or fat in their skin, and certain cytokines, which are proteins that control inflammation in the body, appeared in the skin. Therefore, we were very excited because we knew then that we might be able to predict who was going to get a food allergy and then focus our attention on early treatment of those people.

Dr. Takemoto:

Now why are these findings significant? And how do they differ from current practices?

Dr. Leung:

Well currently, we have no idea who's going to get a food allergy and who isn't; therefore, we can't start early treatment or even prevention. Now with the skin predictive test, we can find those 8 percent of people who develop food allergy and tell their caregivers as well as their parents that they have to be vigilant about the early signs of food allergy or eczema. Some studies have shown that

reducing eczema may be beneficial in reducing food allergy. Furthermore, if you introduce foods early, particularly in the diverse diet, and eat them regularly, there is less chance of developing food allergy. Importantly, identifying children at risk of future development of food allergy with high probability will allow the implementation of targeted preventive strategies to reduce sensitization and increase immune tolerance to foods.

Dr. Takemoto:

For those just tuning in, you're listening to *On the Frontlines of Food Allergies* on ReachMD. I'm Dr. Jody Takemoto, and I'm speaking with Dr. Donald Leung about skin biomarkers predicting the development of food allergies.

So with these findings from your study in mind, Dr. Leung, where do we go from here? Is this approach ready to be incorporated into clinical practice, or is additional research needed?

Dr. Leung:

I think additional research is going to be needed because the study we did was only on a small population of individuals in Korea where 100 percent of the participants were Asian. We want to know whether our findings can be extended to Caucasians and African Americans throughout the world. Importantly, a larger number of individuals need to be tested to be sure our findings can be generalized to people of all races and gender.

Dr. Takemoto:

And what kind of impact might this approach have on patient lives and outcomes?

Dr. Leung:

Well, I think we will be able to, in the future, prevent food allergy and, therefore, prevent deaths from food allergy as well as improve their quality of life. In patients with a family history of allergies, early features of eczema, such as dry skin, could be treated. When overt eczema, particularly severe eczema, occurs, such families should see their allergist or dermatologist to optimize skin care and introduce a diverse diet of foods between four to six months of age because that will give them the best chance of preventing food allergies and controlling eczema.

Dr. Takemoto:

Now as we come to the end of our discussion today, would you like to leave our audience with any final thoughts or takeaways?

Dr. Leung:

Mainly that I'm really optimistic about the future and that we really, truly believe that we will be successful in preventing food allergies and eczema in the future.

Dr. Takemoto:

This has been a great discussion about a noninvasive skin test to predict the risk of future food allergies, and I want to thank my guest, Dr. Donald Leung, for sharing his insights from his research. Dr. Leung, it was wonderful speaking with you today.

Dr. Leung:

Thank you.

Dr. Takemoto:

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