A Review of the Effectiveness of Allergy Immunotherapy

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ABSTRACT

Food allergies are a serious public health problem that affects about 32 million people in just the United States and an estimated 220 million people globally. Allergic reactions occur when the immune system reacts to an allergen by triggering the production of antibodies called immunoglobulin E (IgE). IgE antibodies travel throughout the body and release chemicals that cause allergy symptoms. Currently there is no cure for a food allergy, those who are born with an allergen health problem must carry it with them for the rest of their lives. The standard care approach for treating food allergies of allergen avoidance and pharmacotherapy are becoming impractical and unaffordable. However, many advances have been made towards finding a cure for food allergies in the form of allergy immunotherapy. Allergy immunotherapy is a treatment that aims to build immune tolerance to allergens in an effort to "cure" a patient's food allergies. In this paper I review the literature on allergy immunotherapy and argue that there is potential for allergy immunotherapy to become the new standard for allergy treatment. Research has demonstrated that immune tolerance can be achieved by exposing a patient to incremental doses of an allergen until their immune system is eventually desensitized to the allergen. The amount of allergen present in the body needed to activate the production of IgE is effectively lowered with this technique. A patient who undergoes allergy immunotherapy can eventually consume food they are allergic to without the symptoms of an allergic reaction. In conclusion, the further development of allergy immunotherapy treatments and a shift towards becoming the standard form of allergy treatment is underway and showing promise.

SCIT

Subcutaneous Immunotherapy

This form of allergy immunotherapy involves direct injections of allergen extracts into the skin. SCIT treatments begin with a build-up phase where a patient is administered injections with increasing amounts of allergens about one to two times per week for 3-6 months. The build-up phase is followed by a long monthly maintenance phase of injections for a period of 3-5 years.

Three years of SCIT: before (left) and after (right). SCIT has been able to produce the desired results of allergen tolerance, although it is a process that takes a long time to produce results.

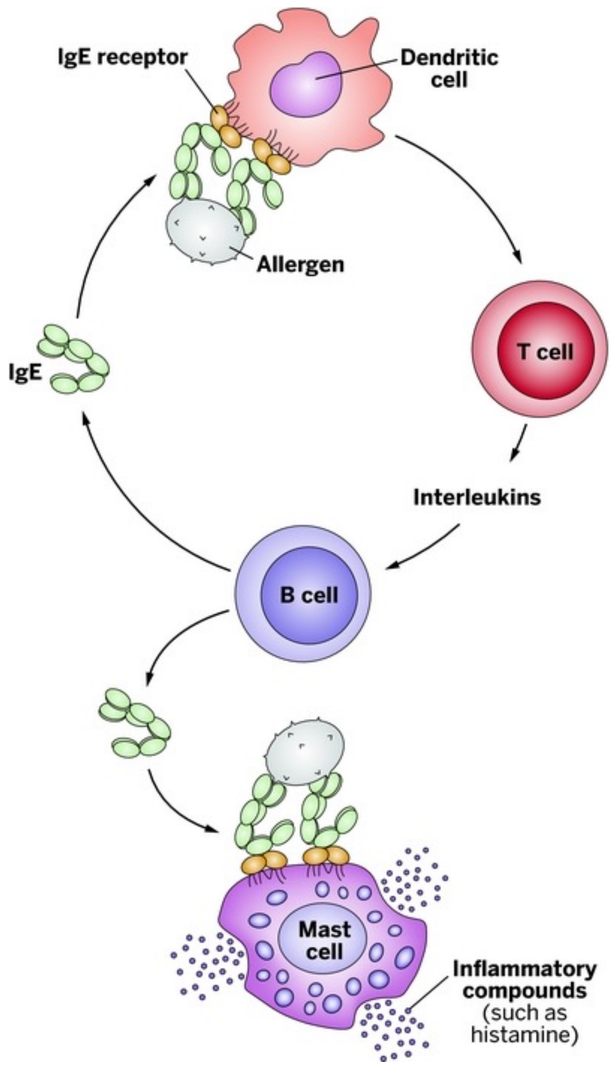
SLIT

Sublingual Immunotherapy

Sublingual immunotherapy is a form of allergy immunotherapy that involves putting drops/tablets of allergens extracts under the tongue, to be absorbed through the lining of the mouth. The unique aspect of sublingual immunotherapy is that it is specifically used to treat allergic rhinitis. Allergic rhinitis is the inflammation of the nose when the immune system reacts to allergens in the air. This usually affects most individuals in the springtime, where seasonal allergies thrive due to the start of the pollen season. Individuals experience symptoms such as stuffy noses, sneezing, red, itchy, and watery eyes, and swelling around the eyes. Treatment under sublingual immunotherapy is much less time demanding than SCIT.

Allergy serum vials and dropper bottles used in SLIT treatments. No injections!

IMMUNOGLOBULIN E MECHANISM



OIT

Oral Immunotherapy

The main immunotherapy that deals with food allergies. It involves directly feeding an allergic individual increasing amounts of their food allergen in order to raise their tolerance in the amount of allergenic protein required to trigger IgE production, which is the antibody responsible for starting an allergic reaction. Oral immunotherapy can change the way that individuals with food allergies interact with their diet for the rest of their life. Recipes that contain milk, egg, peanut, tree nuts, shellfish, soy or wheat can be consumed with the help of oral immunotherapy.

TDIT

Transdermal Immunotherapy

The latest approach in managing allergy symptoms that targets the allergies that injections and oral drops cannot treat. The introduction of transdermal immunotherapy in the form of topical application has provided allergy sufferers with an effortless way to stay on top of their immunotherapy treatment.

Topical creams are easier for both adults and children to apply at home.

Conclusion

If we want a change in the way that allergies are handled in healthcare, it is essential that allergy immunotherapy becomes the standardized approach to treating patients diagnosed with an allergic disease. Oral immunotherapy has the potential to gain the attention of the masses as food allergies are becoming more prevalent and long lasting. The potential to alter the natural course of an allergic disease by effectively making an individual unreactive to the allergen can change the way that people with allergies live. The time, effort, and money spent on immunotherapy will produce the results of sustained immunological tolerance and the relief of not needing to worry about a severe allergic reaction.