THE "INFO"-HALER

TAKE IN THE INFORMA nON
An easy to understand, informative newsletter for our patients of all ages from the *Allergy & Asthma Associates of Michigan, P.* C.

HOW ALLERGY INJECTIONS WORK

Allergic individuals have confused immune systems which perceive harmless substances such as grass, trees, weeds, pets, mold, dust mites, etc. (allergens) as being harmful. Allergic individuals try to protect themselves from these substances by producing IgE antibodies against these substances. Ordinarily developing antibodies is a very positive thing, as antibodies fight off infections in the body. In allergic individuals, however, IgE antibodies cause trouble.

All people have mast cells located throughout their bodies including the nasal passages, the airways, the skin, and the gastrointestinal tract. The mast cells are capable of releasing chemical mediators such as histamine and leukotrienes. In allergic individuals, the IgE antibodies produced happen to be of an exact shape and configuration to complement the mast cells, and hence they attach themselves to the mast cells. When an allergic individual inhales or touches a bothersome allergen, the body produces IgE antibodies against that allergen which lock on to the mast cells, irritating the mast cells, and causing them to release their chemical mediators like histamine and leukotrienes. These chemical mediators cause the allergic symptoms people experience.

IgE antibodies develop over time and repeated exposure to allergens (the substances people are allergic to). There are specific IgE antibodies for each specific allergen. For example, if a patient is allergic to ragweed and trees, then there are specific IgE antibodies for ragweed and trees attachedto each mast cell within the body. In highly allergic individuals there may be as many as several hundred thousand IgE antibodies for specific allergens attached to each mast cell.

When the mast cells are irritated and histamine and leukotrienes are released, the allergic individual can experience runny, stuffy nose, itchy, watery eyes, and various asthma and skin symptoms. Antihistamine drugs and leukotriene modifiers are readily absorbed and able to control some of the symptoms, but they are not able to prevent the release of the chemical mediators that caused the symptoms to occur in the first place.

Allergy injections (also called immunotherapy, hyposensitization therapy, or desensitization therapy) consist of injecting patients with a very dilute dose of the specific allergen to which they are allergic. There is no medication in an allergy injection; simply diluted protein extracts of the items people are allergic to (eg. ragweed, grasses, trees, cat, dog, molds, etc.). Over time, the quantity and concentration of the dose injected is increased based on the patient's tolerance. The goal of the injections is to reduce the patient's sensitivity to allergens.

The injections directly stimulate other areas of the body's immune system (spleen and lymph nodes) to produce another antibody of a different shape than IgE. This is called IgG. The IgG antibody cannot attach to the mast cells like IgE because it is not the correct size and shape. Instead IgG surrounds the mast cells and works to block the IgE antibodies from getting to the mast cells (similar to the defensive line in the game of football). If the IgE antibodies cannot irritate the mast cells, then no chemical mediators are released and the patient becomes less sensitive. Over time, and with repeated injections, IgG antibodies increase and IgE antibodies decrease.

As a patient progresses through the injection sequence, he will begin to experience fewer symptoms and require less medication to control hay fever and asthma symptoms. Injections are generally given weekly during the build-up stage until a maintenance dose is reached. It generally takes 1-2 years for the full effects of injection therapy to be reached, but each patient responds differently depending on their own unique situation. If injections are continued for 5-6 years, results of a more permanent nature are realized.

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