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Allergy Newsletter I

What is an Allergic Reaction?

Lauren, an 18-year-old college student, used to have a mildly runny and stuffy nose, mostly in the fall. On spring break weekend, she spent several hours at an outdoor barbecue and developed episodes of sneezing, a runny nose and itchy and watery eyes. She wondered "Am I allergic to something in the air? Why not Erica?"

What is an allergy? An allergy is defined as an "abnormal sensitivity to a substance normally tolerated and generally considered harmless substances such as pollen, food, drugs or even insect sting. This means that while some substances are as a rule well tolerated by most people, they can induce an adverse reaction (allergic reaction) in others, mainly due to the presence of the IgE antibody.

What is an IgE antibody? The first we need understand is our immune system. B lymphocytes, with the help of T lymphocytes and macrophages, can produce five separate and distinct classes of immunoglobulin (antibodies), IgA, IgG, IgM, IgD and IgE. IgA, IgG and IgM, the immunoglobulins that protect our bodies against foreign organisms, are produced by almost everyone except for some people with congenital or acquired immunodeficiency.

Despite its presence in our body in only minute quantity, IgE is a key player in allergic reactions. The reason why some substances (allergens) have the ability to induce IgE production, and others substances (non-allergens) do not, or why only some individuals develop an allergic reaction after exposure to some particular allergens is still not fully understood. However, we do know that genetic predisposition plays a significant role in developing allergic conditions. For example, children whose parents have allergic rhinitis, asthma or eczema have a significantly increased likelihood of developing allergic rhinitis, asthma or eczema.

Take Lauren's case. Her mother has a history of eczema and allergic asthma. Lauren's inherited the ability to produce IgE to tree pollen. After exposure for a period of time, she produced specific IgE to tree pollen that bound themselves to the surface mast and basophil cells in the lining of her nose and conjunctiva. The mast and basophil cells immediately released a variety of potent chemical mediators (histamine, leukotriene and prostaglandins) after tree pollen attaching to specific IgE. It made her sneeze, nose stuffy and runny and eyes watery and itchy. Unlike Lauren, Erica did not produce IgE to tree pollen. For her, tree pollen was not an allergen and would not cause her symptoms, so outdoor activity during spring season could be a walk in the park.

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Delayed Reaction and Priming

As we already learned, allergic reactions are linked to allergen-IgE- mast cells/basophils and chemical mediators that induce almost immediate allergic symptoms (early or immediate phase reaction). Typically, sneezing, a runny nose, nasal congestion, and itching of the nose, throat or wheezing peaks rapidly, but subsides within a few hours. However, as we've come to learn, some patients can also experience a so called "late or delayed reaction." after immediate allergic reaction.

The delayed reaction usually appears about four to six hours after allergen exposure, and up to eight hours in some cases. A delayed phase reaction is an inflammatory reaction, caused by chemical mediators, which are released and produced after initial immediate phase reaction.

In some cases, this delayed reaction can actually be more severe than an immediate reaction. While antihistamines and quick-relief bronchodilators can only effectively control immediate reactions, corticosteroids can control delayed reactions, as do allergy shots (immunotherapy). This is why nasal steroid and inhaled corticosteroids play a significant role in decreasing inflammation in allergic rhinitis and asthma.

Both patients and physicians have noted a phenomenon, termed "priming." Priming is due to after prolonged exposure to allergens, the cells and tissue become hypersensitive. Therefore, it takes less pollen in the air to initiate an allergic reaction late in the pollen season than it did at the beginning of the season. Symptoms can also be triggered by other allergens which is not normal trigger symptoms or even by irritants such as pollutants, smoke, powders, cosmetics, and newsprint's.

Pollination and Hay Fever

Pollen, tiny particles that travel in the air or carried by insects, is male cells of flowering plants and essential to plant fertilization. However, if it's windy while pollination is in progress, there exists a higher tendency of wind-borne-pollen induced allergic conjunctivitis, rhinitis and asthma.

In the United States, most wind-pollinating plants, those not attractive to insects, release pollen during one of the five pollen seasons: early spring (February-March), late spring (March-June), early summer (July-August), late summer to autumn (August-October) and winter (November-January).

Here in Florida, if your symptoms worsen during early spring, the probable cause is tree pollen, while in the late spring and early summer, tree and grass pollen would be likely culprits. From late summer to autumn, weed pollen, especially ragweed is high and during the summer and fall, but also year-round, mold spores are quite active. During the winter, most areas of the country are typically pollen free, with the exception of Florida, South Central Texas, and South California, which have some pollen activity including a few trees, weeds and mold.

While, warm air encourages pollination, cool temperature reduces pollen production and rain washes it away. And because humidity affects the pollination process, a combination of low humidity and a wind increase the amount of pollen in the air, which can increase the misery of allergy sufferers.

Tree, grass, and weed pollen account for almost of all pollen-induced allergies, grass allergy being the most common in the world. Levels of pollen can be calculated, with the use of a special device, by counting the average number of pollen grains in a cubic yard of air during a period of 24 hours.

What we are experiencing now is high tree pollen, which we can expect to be active until April or May. Even though it may be critical for very sensitive people to avoid large doses of allergenic plants, many times it is almost impossible because pollen can travel many miles on a breeze and can also be present at home, often blow indoors (typically through open windows and doors)

Therefore, avoiding intense outdoor activity, during the early morning and late afternoon hours when pollen counts are high, and by wearing a dust mask can help. Other prevention methods are to close windows and run a HEPA (High Efficiency Particulate Arrester) or ULPA (Ultra Low Penetration Air) air purifier, to clean and replace air-conditioner filters regularly, and to monitor your community pollen count report to know what to expect and how to prepare for it.

We spend about one third of our lives in our bedroom. And because most of this time is spent in bed, the bedroom is the most important room to be rid of dust mites, pet dander, and molds.

One of the most common indoor asthma and allergy triggers are dust mites. Even though you

Allergen Avoidance Begins at Home

cannot see them with the naked eye, dust mites are a fact of life and can be found almost anywhere; in our mattress, pillows, box spring, blankets, carpet, towels, upholstered furniture, drapes, and our children's cuddly stuffed animals. In fact, the typical mattress contains two million dust mites. Imagine how many we breathe in every night.

Another major indoor trigger is animal dander (skin flakes). All warm-blooded household pets, even my white Bichon Dolly, regardless of hair length, produce proteins in their dander and saliva that can trigger allergies, which by the way, dust mites love to eat. And cat dander residue can linger in carpets for up to 20 weeks and in mattresses for years.

Unlike the Northern United States and Canada, where molds diminish after the first snow, molds in Florida do not have a limited season. Airborne mold spores can blow through an open window, door or vent and grow year-round particularly in dark, humid areas, such as basements, bathrooms, carpets, mattresses, refrigerators, and older homes.

We must protect our beds. Cover pillows, mattresses and box springs with special allergen resistant covers. Wash linens weekly in at least 130 degrees water. And avoid down-filled (feather) comforters and pillows. Keep in mind that a warm humid area is not a good place for a bedroom and that a mattress should be on a frame, not the floor. But, air conditioners and dehumidifiers can help keep humidity under 50%.

Carpet and thick rugs are also an allergy no-no as they tend to trap dirt, dander, mold, and dust mites. But if carpets are a must, vacuum weekly with a HEPA or ULPA vacuum cleaner, and try to wear a dust mask when you clean.

When you decide to decorate, consider washable curtains or window shades rather than heavy drapes or blinds as well as wood, leather, or vinyl furniture versus upholstered to keep the mites at bay. Keep rooms uncluttered. And to top it off, buy one of those stylish looking HEPA air cleaners available now that can keep indoor air as pure as possible.

Finally, because getting rid of the family pet may be too emotional, try to bath them weekly, keep them outdoors as much as possible, and definitely out of the bed and even bedroom.

While there are several types of rhinitis, approximately 50 to 70% of Americans suffer from allergy-induced rhinitis. Allergic rhinitis usually affects patients with a genetic predisposition to become sensitized to airborne substances such as ragweed, tree and grass pollens, dust mites, cat or dog dander. Usually, allergic rhinitis emerges at a young age, and in patients with a strong family history of atopy, a term used to describe a group of patients who have a personal or family history of one or more of the following conditions: allergic rhinitis/hay fever, asthma, or eczema.

Inhalant Allergens and Allergic Rhinitis

While allergic rhinitis can be purely seasonal, symptoms can also occur year round, depending on the offending allergens. Patients who are allergic to grasses, trees, and ragweed frequently have seasonal symptoms, however, people who are allergic to dust, mold, or animal dander, commonly experience perennial symptoms.

In order to identify offending allergens, your allergist must first review your history and perform a physical examination. Then, skin testing will be performed, by applying small amounts of allergens on the skin and pricking it. Within fifteen minutes, results from skin testing are apparent and show a reaction by producing a "wheel" or round red raised area at the particular allergen's site.

Patients with allergic rhinitis are initially treated with antihistamines and a nasal corticosteroid spray, instructed in the principles of allergen avoidance, and explained her option of immunotherapy (allergy injections) in the event that the medication did not control her symptoms.

Immunotherapy Treatment in Allergic Disorders

While avoiding offending allergens is always the first step in preventing and treating allergic disorders, this approach is often impractical or even, impossible. For instance, dust mites are extremely difficult to completely eradicate, or a beloved pet just cannot be parted with. While medications can be a very effective way to control allergic disease, many people still suffer allergic symptoms despite their use. In many cases, immunotherapy (also known as allergy injections or desensitization) is the most effective form of treatment for allergic rhinitis, conjunctivitis, and asthma.

Immunotherapy alters and lessens the allergic reaction to triggering allergens by decreasing the production of certain IgE, and by initiating the production of other specific allergen-blocking IgG, which also interferes with the IgE. Immunotherapy also stabilizes mast cells and basophiles, as well as fostering other effects, which decreases the release of chemical mediators.

Prior to starting immunotherapy, an allergist must perform skin testing, in conjunction with compiling a detailed medical history, to identify offending allergens and the patient's corresponding degree of sensitivity.

Typically, an effective immunotherapy program requires weekly injections for at least three to five years. The injections are a specifically formulated and diluted solution comprised of inhalant allergen extracts to which you are allergic, such as tree, grass, weed pollen, mold spore, dust mite, or animal. Your allergist will gradually build up your dose by increasing the amount of allergen concentration weekly until maximum concentration is reached or side effects occur. At this time you start what is known as a dosage maintenance period. During the maintenance period, you will receive a fixed amount of maximum tolerable concentration, with extended intervals between injections, from two weeks to one month apart, depending on your progress.

In many cases, your sensitivity to the allergens decreases and your symptoms improve during the course of immunotherapy. The state of desensitization can be maintained for several years, or in some cases for life, with no need to restart injections. However, in some cases, the reappearance of allergic symptoms may occur. In such instances, your allergist will need to evaluate your symptoms and consider the possibility of restarting immunotherapy or other treatment.

In order for immunotherapy to work, you need to commit to the program and follow the prescribed schedule of treatment, including close monitoring of a possible allergic reaction within the first twenty minutes of injection. You should wait at least twenty minutes in the clinic after your shot, in the event you might experience a rare, but severe reaction. By doing staying on site, your allergist can assess any reaction and provide immediate qualified assistance if necessary, as well as adjust your next dose appropriately.

Next Issue:

- Chronic Sinusitis and Allergic Disorders
- Anti-histamine relieves Symptoms
- Corticosteroid and Anti-histamine Nasal Spray
- Inhaled Bronchodilator and Corticosteroid

