

Drug Allergy or Drug Side Effect?

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What is an allergy?

Allergic reactions are abnormal responses the body has to a substance which the patient has been exposed. The response can be mild to life threatening. Frequently, the allergic reaction is mild, but it can be quite annoying to the patient in terms of itching, a runny nose, eye irritation, etc. Below is a list of allergy symptoms according to organ systems that may be affected.

SKIN – itching, redness, hives or urticaria, swelling

RESPIRATORY -cough, airway swelling, wheezing, shortness of breath, excessive mucus

EYES -itching, redness, swollen lids, excessive tearing

GASTROINTESTINAL - abdominal cramps, diarrhea

How does an allergic reaction occur?

The allergen (or offending item) is recognized by the immune system as foreign, just like antigens (proteins) on bacteria and viruses. The allergen/antigen binds to an antibody called IgE. This IgE antibody was formed after a previous exposure to the offending substance. The antibody is a naturally occurring protein produced by the body to protect you from dangerous foreign substances like germs, viruses or toxins. The combined IgE-allergen structure then binds to cells in the immune system called mast cells and basophils. These immune cells have a receptor (an insert site on the cell) that is specific for another antibody called IgG. This allows the immune cells to attach to the foreign compound. Unfortunately the binding of IgE to its receptor results in the cells releasing histamine and other inflammatory substances which produce the above symptoms. Histamine is the primary cause of allergic reactions. Hence allergic reactions are often treated with medications that battle against histamine (antihistamines like benedryl, or zyrtec). Histamines produce smooth muscle spasm in the large airways or bronchi of the lungs, spasms of the gastrointestinal smooth muscle, and dilation (or swelling and leaking) of the smaller blood vessels. Hence the patient swells up, becomes red (hives and urticaria), has trouble breathing and develops stomach and abdominal cramping.

What is Anaphylaxis?

Anaphylaxis was initially described in 1902 by Portier and Richot who were experimenting with sea anemone toxin as a vaccine in dogs. When the dog was given the second dose or booster, it resulted in the dog's death. The term anaphylaxis was coined to denote a reaction that was without protection and contrary to prophylaxis. Classic symptoms of anaphylaxis include...

Hives- These are red, raised areas of the skin which may have central whitening or blanching. Hives can cover the entire body surface (become confluent) and gives the patient a swollen, red appearance. They are often very pruritic (itchy).

Bronchospasm or airway spasm and respiratory distress- Falling blood pressure caused by widening of the blood vessels and leakage of fluid into the surrounding tissue. Dysfunction of the heart muscle also occurs.

What is an Anaphylactoid reaction?

This type of reaction mimics an allergic reaction in terms of signs and symptoms such as swelling (especially lips, tongue, and possibly the airway), hives, and itching. The symptoms are also due to histamine release; however, release of histamine is not mediated through the IgE antibody.

Angioedema describes the anaphylactoid reaction that results in the symptoms lip, tongue, and airway swelling.

What are the treatments?

Mild reactions can be treated with anti-histamines alone. Anaphylactic reactions require emergency attention in order to protect the airway and prevent shock. Therapy for anaphylaxis includes epinephrine, which dilates the airways, steroids are used to suppress the immune response, and intravenous fluids may be necessary to maintain blood pressure. In addition antihistamines such as Benedryl (diphenhydramine) and Zyrtec are mainstays of treatment.

When is a symptom of allergy not due to an allergic reaction?

Some drugs like morphine produce itching when administered. This itching is not from an allergy unless additional symptoms also occur. Rather the itching in isolation is from the medicine causing histamine release. Morphine and other opiate-related pain relievers frequently cause nausea and/or vomiting. These symptoms are common side effects from the drugs. It is important to distinguish true allergies from adverse effects you may have experienced by describing the symptoms that occurred with your physician.

Drugs which commonly cause allergic reactions:

Aspirin
Non-steroid anti-inflammatories (e.g. ibuprofen, naproxen)
IV contrast dye used for CT radiologic studies
Penicillins and cephalosporins antibiotics
Sulfa antibiotics

Drugs commonly associated with angioedema:

- Blood pressure medicines called ACE inhibitors (e.g. lisinopril, enalapril, ramipril)
- Aspirin and non-steroidal anti-inflammatories
- Antibiotics like penicillins and sulfa
- Dilantin
- Streptokinase

Common food allergies:

- Shellfish
 - Nuts, especially peanuts
- Legumes
Fish
Dairy products such as milk and eggs

Other agents causing anaphylaxis:

Bee stings
Hornet stings
Other environmental toxins.

References:

- <http://www.harrisonsonline.com/>
- www.emedicine.com
- <http://www.nlm.nih.gov/medlineplus/ency/article/000819.htm>
- www.aaaai.org
- <http://www.healthsquare.com/mc/fgmc2322.htm>