

STINGING INSECTS

There are five flying insects, Hymenoptera, that are known to cause allergic reactions. They can be divided into vespids (wasp, white and yellow hornet, and yellow jacket), and aphids (honeybee and bumble bee – a rare offender). Fire ants and harvester ants (non-winged Hymenoptera) also can cause systemic allergic reactions and death, and are well known in the Gulf Coast and southwestern United States, respectively. The hybrid African-Brazilian “killer bees” have migrated to Texas. Their northward migration is likely to be limited by colder temperatures. In contrast to the usual honeybee’s sting, swarms of killer bees may sting the subject (or animal) causing severe or fatal toxic reactions.

More than 500,000 people enter hospital emergency rooms every year suffering from insect stings. A severe allergic reaction known as anaphylaxis occurs in 0.5% to 5% of the U.S. population as a result of insect stings. Fifty to 100 deaths per year result from insect sting anaphylaxis. The majority of insect stings in the U.S. come from wasps, yellow jackets, hornets and bees. The red or black imported fire ant now infests more than 260 million acres in the southern U.S., where it has become a significant health hazard and may be the number one agent of insect stings in those areas.

What is a normal reaction to an insect sting and how is it treated?

The severity of an insect sting reaction varies from person to person. A normal reaction will result in pain, swelling and redness confined to the sting site. Simply disinfecting the area (washing with soap and water will do) and applying ice to reduce swelling.

Large Local reactions will result in swelling that is contiguous with the site. For example, a sting on the forearm could result in the entire arm swelling nearly twice its normal size. Although alarming in appearance, this condition is often treated the same as a normal reaction, with ice, Benadryl and NSAIDS.

Systemic, anaphylactic reactions which rapidly develop away from the site of the sting, are manifested by itch, rash, hives, or swelling of hands, extremities, face, tongue, or throat. Patients might also experience cough, wheezing, shortness of breath, low blood pressure or dizziness. Patients with a true venom allergy can undergo stinging insect allergy shots which return the repeat reaction rate nearly to that of the general population.

Avoidance is a major therapeutic maneuver in preventing deaths from these insects. Avoidance measures include perfume and hairspray avoidance, foot and ankle protection (shoes, long pants, long sleeves, etc.), avoidance of picnic areas, caution and hand protection when gardening, and no camping or trips to remote areas until maintenance immunotherapy has been established. The house should be assessed for nests and hives and they should be removed by others.

Acute medical therapy for systemic reactions includes preparations for anaphylaxis such as epinephrine, antihistamines, corticosteroids and supportive therapy for shock. Patients with large local reactions and positive skin tests are believed to have only a slightly higher than normal (10%-15%) risk of anaphylaxis with subsequent stings. They should expect at least recurrent large local reactions if re-stung. Adults with a systemic reaction of any type and positive skin tests (demonstrating venom-specific IgE antibody) have a 60-70% chance of subsequent systemic reactions and thus are candidates for allergy shots to stinging insects, which provides protection for about 95% of re-stings. Patients are instructed to self-administer epinephrine and go to the emergency room immediately if systemic reactions occur after a sting. Children with skin-only systemic reactions with subsequent positive skin tests only have a 5-10% chance of subsequent systemic reactions.

How are allergic reactions to insect stings treated?

Insect sting allergy is treated in a two-step approach. The first step is the emergency treatment of the symptoms of a serious reaction. The second step is preventive treatment of the underlying allergy with venom immunotherapy.

Life-threatening allergic reactions can progress very rapidly and require immediate medical attention. Emergency treatment usually includes administration of certain drugs such as epinephrine, antihistamines and in some cases corticosteroids, intravenous fluids, oxygen and other treatments.

Injectable epinephrine for self-administration is prescribed as emergency rescue medication for treating an allergic reaction. People who have had previous allergic reactions and rely on epinephrine must remember to carry it with them at all times. Also, because one dose may not be enough to reverse the reaction, immediate medical attention following an insect sting is recommended.

What is venom immunotherapy?

The long-term treatment of insect sting allergy is called venom immunotherapy, a highly effective vaccination program administered by an allergist-immunologist which can prevent future allergic reactions to insect stings.

Venom immunotherapy involves administering gradually increasing doses of venom which stimulate the patient's own immune system to reduce the risk of a future allergic reaction to the same as the general population. In a matter of weeks to months, people who previously lived under the constant threat of severe reactions to insect stings can return to leading normal lives.

The duration of venom immunotherapy required to provide lifelong protection has not been established. It is known that with immunotherapy, venom-specific IgE levels may fall and 20% of patients may lose their cutaneous reactivity to skin testing. In addition, high levels of IgG "blocking" antibody can be found. Some allergists require cessation of positive skin tests to consider stopping venom immunotherapy.

There are believed to be 50-100 or more deaths per year due to anaphylaxis from stinging insects in the United States. The majority of these deaths (60-80%) occur in patients without known histories of prior reactions or stings. Most deaths occur in adults, although the majority of insect stings and reactions occur in young adults and children. The reason for this discrepancy is not understood. The relationship between risk of anaphylactic reactions and presence, absence, or level of venom-specific IgE antibody or level of IgG "blocking" antibody after immunotherapy is not fully understood. The duration of immunotherapy required to prevent recurrent systemic reactions has not been established, but consists of at least 4-5 years.

Allergists/immunologists recommend the following additional precautions to avoid insect stings:

- Avoid wearing sandals or walking barefoot in the grass. Honeybees and bumblebees forage on white clover, a weed that grows in lawns throughout the country.
- Never swat at a flying insect. If need be, gently brush it aside or patiently wait for it to leave.
- Do not drink from open beverage cans. Stinging insects, attracted by the sweetness, will crawl inside.
- When eating outdoors, try to keep food covered at all times.
- Garbage cans stored outside should be covered with tight-fitting lids.
- Avoid sweet-smelling perfumes, hair sprays, cologne and deodorants.
- Avoid wearing bright-colored clothing.
- Yard work and gardening should be done with caution.
- Keep window and door screens in good repair. Drive with car windows closed.
- Keep prescribed medications handy at all times and follow the attached instructions if you are stung. These medications are for immediate emergency use while en route to a hospital emergency room for observation and further treatment.
- If you have had an allergic reaction to an insect sting, it's important that you see an allergist-immunologist, to identify the risk of subsequent reactions and have a plan in the event they occur.