

Stinging Insect Venom Allergy

Peter M. G. Deane, M. D.

Please note: This article is for informational purposes only and cannot substitute for an allergist's opinion in consultation.

Summer is here. The flowers are in bloom, the insects are abuzz, and many of us look forward to spending more time outdoors. However, for some of us the buzz of insects is a reminder of the risk of a systemic allergic reaction when stung, which when it involves breathing or blood pressure is known as anaphylaxis, and can be life-threatening or even fatal. Although the official number of deaths directly attributed to anaphylactic reactions to insect stings is only forty to fifty a year for the entire country, many experts believe that the actual number is actually much higher because it does not include many cases of sudden outdoor death where the sting was not noted.

The insects responsible for causing this type of severe reaction belong to the class Hymenoptera and include the honeybee (*Apis mellifera*) and several wasps: the paper wasp, the yellow jacket, the yellow hornet, the white faced hornet and the imported red fire ant (*Solenopsis invicta*, which is not present in our area because our winters are too cold for it to survive). Of these, by far the most common stinger is the yellow jacket, a very aggressive, ground dwelling scavenger which tends to sting people in their feet and lower legs when accidentally disturbing their nests while mowing the lawn or doing yard work. As they are scavengers, they will fight you for your food. This is why they are pests at picnics: they act like flies with stingers, which is basically what they are. Other wasps hunt insects, so they are interested in you mainly if you bother them, for example, try to destroy their nests. Bees are interested in pollen from flowers, and usually sting only when they cannot get away—if you step on them, for instance. So the most common insect to be stung by is a yellow jacket—the “bees” that hang around your plate of food at a picnic.

When they sting, each of these insects injects a number of proteins in their venom which have been characterized by researchers. For reasons that are not yet understood, certain persons will develop allergic sensitivity to these venoms. In most cases, the first sting by one of these insects will not result in a generalized or systemic reaction, but it sensitizes you by making you produce allergic antibodies to the venom proteins. After a second sting, these antibodies react with the venom and trigger allergy cell activation with release of large amounts of the chemicals which cause the systemic reaction, such as histamine, leukotrienes and many others. These cause symptoms including but not limited to flushing, hives, swelling of various body parts including sometimes the lips and throat, wheezing, shortness of breath, nausea, diarrhea, and dizziness or passing out from low blood pressure.

People who experienced **only** a local reaction (swelling and pain in the immediate area of the sting—the same limb which was stung)—even a large one—do not appear to be at very high risk for a subsequent systemic reaction.

People who have had a systemic reaction—anything not limited to the immediate vicinity to the site of the sting—are considered at a very high risk for a subsequent reaction of equal or even greater severity if restung and should be referred to an allergist for further evaluation and treatment. These patients need to be skin tested with insect venom to confirm their allergic sensitivity and, if positive, have a clear reason to receive allergy shots (often called desensitization or immunotherapy) with insect venom extracts. This treatment is **extremely** protective, reducing the chance of a systemic reaction if stung again from approximately 50% to less than 3%. In many cases it can be discontinued after three to five years of treatment, depending on the severity of the initial reaction, the offending insect(s), your lifestyle and on whether your skin tests become negative after three or more years of immunotherapy. Some experts recommend continuing the injections longer in cases of severe low blood pressure or when the offending insect was a honeybee. In addition, all patients with a history of a systemic reaction to a sting need to carry an auto-injecting epinephrine syringe (EpiPen® or TwinJect®) and should be instructed by their physician on when and how to use it. All of these patients and their close relatives need to have a plan of action to be implemented immediately in case of sting. This usually involves taking a short-acting antihistamine such as 25-50 milligrams of diphenhydramine (Benadryl® and others), seeking immediate help from others for transportation to an emergency medical facility, contacting their allergist, and using their auto-injecting epinephrine in case of respiratory or cardiovascular distress.

Last but not least, certain lifestyle changes to reduce the chance of attracting stinging insects. These include but are not limited to wearing closed shoes and socks while doing yard work, avoiding the brightly colored clothes which attract insects, not wearing strong scents, not using floral or herbal shampoos and not trying to remove beehives or wasp nests. Although these are not a guarantee for not being stung, as the saying goes, “better safe than sorry.”

A good source for further information is the American Academy of Allergy, Asthma and Immunology at <http://www.aaaai.org/patients/gallery/insect.asp>.