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## The efficiency of immunotherapy to the subjects with allergy to bee venom and its influence in pollen allergy

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**Introduction:** Hymenoptera venom allergy is an immunoglobulin E (IgE)- mediated hypersensitivity to the venom of insects in the insect order Hymenoptera. This allergic reaction may be caused by stings from a number of species in this insect order, occurring only in persons who have previously been sensitized to Hymenoptera venom. Insect sting allergy can develop at any age and usually manifests after several uneventful stings. The incidence of systemic reactions to Hymenoptera venom is approximately 3% in adults. Although children are stung more often than adults, Systemic reactions occur in only about 1% of children younger than 17 years, and many of these reactions are relatively mild. Large local reactions to Hymenoptera stings are more common in children, with an estimated incidence of 20% and 10%, respectively, for children and adults. The prevalence of insect sting allergy is twice as high in male as in female patients and may be a result of increased exposure rather than inherent susceptibility. Normally there is no clear association with other allergies, and only 30% of patients with venom allergy are atopic. In addition, insect sting allergy is statistically not more likely to occur in persons with a family history of sting reactions.

**History:** The first reports of stinging insect allergy came from the Middle East thousands of years ago. Even at that time, people understood that a small insect, such as a bee or a wasp, had the potential to cause serious illness or even death. Hymenoptera Stinging insects: All the stinging insects belong to the insect order Hymenoptera, of which there are 16,000 species in North America. Less than 1% are responsible for human stings. All the species that are medically important belong to three families: Apidae, Vespidae, and Formicidae. Only the females of each species have stingers, which are ovipositors that have lost their egg-laying function and have been modified for stinging and envenomization. Most species sting in defense of themselves and their nests, although some species also sting as a means of capturing their prey.

**Signs and Symptoms:** Most Hymenoptera stings cause small local reactions of no significant medical consequence. These normal sting reactions are characterized by pain, itching, redness, and swelling at the sting site that resolve within several hours and are caused by the pharmacologic properties of the venom. Some large local reactions are caused by a late-phase IgE-dependent reaction that is mild initially but progresses after 12 to 24 hours to a diameter of more than 5 cm; these usually peak in intensity at 48 to 72 hours. These reactions are contiguous with the sting site and occasionally involve an entire extremity. In rare cases, massive swelling causes local anatomic compression. Large local sting reactions typically resolve gradually over 5 to 10 days. Virtually all patients with large local reactions continue to have similar reactions with not subsequent stings. This tendency is not modified with venom immunotherapy; therefore, patients with large local reactions are candidates for further diagnostic evaluation. Systemic reactions cause signs and symptoms in one or more organ systems and are almost always IgE-mediated. Systemic reactions cause a spectrum of manifestations, ranging from cutaneous signs (pruritus, flushing, urticaria, angioedema) to respiratory involvement (cough, throat and/or chest tightness, dyspnea, wheezing) and cardiovascular compromise (dizziness, hypotension, unconsciousness), depending on the severity of the reaction. Gastrointestinal manifestations (nausea, vomiting, diarrhea) and uterine cramping also occur occasionally. Cardiac anaphylaxis with manifestations of coronary vasospasm, arrhythmias, or bradycardia can also occur following stings, even in persons with no underlying cardiac disease. Systemic reactions usually cause signs and symptoms starting within minutes following a sting. In general, the sooner the symptoms occur, the more severe the reaction. Pathophysiology: Both systemic and large local reactions to stinging insects are usually caused by IgE-mediated reactions to Hymenoptera venom. At least one prior sting is required to sensitize a person to venom, and sensitization is more likely to occur following multiple simultaneous stings or subsequent stings occurring over a relatively short period of time. Once sensitization has occurred, a sting can cause mast cell and basophil degranulation, resulting in release of the histamine and other inflammatory mediators responsible for the signs and symptoms of anaphylactic and some large local reactions.

**Family:** Apidae; Scientific name: *Apis mellifera*; Common name: Bee; *Apis mellifera*, commonly known as the bee, is a very common insect. Believed to have originated in Africa, most likely this primitive species spread from France throughout