

Insect Sting Allergy

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One sunny fall afternoon about thirty years ago I was walking through some woods near my neighborhood looking for things to shoot with my new slingshot. It was a nice one with a metal frame and a brace that fit over the forearm. It shot steel balls a little smaller than a marble. These balls were expensive, so I was shooting at things like cans and bottles on the ground, hoping to recover my ammunition for later use. I remember targeting a bright red Coke can and hearing the satisfying “clunk!” as the metal balls passed through the can into the ground. After a few solid hits, I set about trying to dig up my ammunition. That’s when I felt a sharp pain on the back of my neck, soon followed by another on my arm, then my back. I looked over my shoulder to see several yellow jackets swarming around me. I quickly dropped everything and made a bee-line for my house. I must have run fifty yards or more before the stinging stopped. I still wonder once in a while about that slingshot. I suppose it’s still out there rusting in the woods.

I received fifteen stings that day producing lots of pain, yelling and localized swelling, but nothing more serious. However, for some people with insect venom allergy, even a single sting can rapidly develop into a life threatening situation. Insect venom allergy, like all other allergies, involves an inappropriate and exaggerated immune-system response to a specific substance (in this case, insect venom proteins). When an allergic state is present, components of the immune system are in place to trigger an allergic reaction when a specific substance is encountered. The most serious of these reactions can adversely affect the cardiovascular and respiratory systems and cause death. An estimated two million insect-allergic people live in the United States, and stings result in approximately fifty fatalities each year in this country. Allergists can help manage insect venom allergy by estimating the risk of having severe reactions to subsequent stings in individuals who have had abnormal sting reactions in the past, and determining the best course of treatment based on that risk.

A detailed history of a sting reaction is key in estimating the chance of receiving a subsequent sting and reacting severely to such a sting. Individuals who spend large amounts of time outdoors are at greater risk for incurring stings, especially if their frequent pastimes include things like landscaping / gardening (insects are attracted to plant nectar and fruits, and can become aggressive if disturbed by lawn mowers, weed eaters, etc.); or camping / picnicking (insects are drawn to foods enjoyed by us during these activities). Children are at increased risk for stings because their bodies often contact the ground, bushes, and other vegetation frequented by stinging insects. Being a father of three, I’ve witnessed children engaging in behavior that greatly increases their risk of stings such as going barefoot, or even willfully antagonizing stinging insects. The most reliable predictor of having a severe reaction to an insect sting is a previous history of such a reaction. To quantify the risk associated with subsequent stings, allergists classify sting reactions as local or systemic. Local reactions involve symptoms like rash / redness, swelling, and pain that remain contiguous with the sting site, even if the affected area is large (like an entire extremity). Systemic reactions involve systems or body areas away from the sting site. Examples of systemic reactions include developing tongue and throat swelling after receiving a sting to the foot, or having a drop in blood pressure causing dizziness following a sting. Around ten percent of people who are prone to large local reactions will end up having a more serious, systemic reaction to future stings, whereas about half of those who have had systemic reactions in the past will have a recurrence upon repeat sting. This percentage is a little higher if the previous reaction was severe. Determining a person’s immunologic



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Apis



Dolichovespula



Solenopsis stratoides



Polistes

stance towards insect venoms by skin testing or blood testing can help guide management decisions, and is necessary if venom immunotherapy (discussed below) is being considered. Combined information about sting risk, reaction risk, immunologic status and overall health should be weighed in developing a plan of care for people with insect venom allergy.

People who are at increased risk for systemic reactions to subsequent stings should carry an epinephrine self-injector (i.e. EpiPen or Twinject). This medication can be lifesaving in the event of a severe systemic reaction. The prescribing physician and patient should thoroughly discuss the use of injectable epinephrine so there are few doubts about its method of use, the circumstances requiring its use, and the importance of using this treatment when indicated. Those with systemic sting-reaction histories and immunologic evidence of insect venom allergy should consider venom immunotherapy (VIT), especially if they have a significant chance of receiving another sting. VIT involves scheduled injections of insect venom extracts which, when done correctly, is safe and around 97 percent effective in preventing future systemic sting reactions.

Taking measures to avoid stings is an important part of managing insect sting allergy. Some general precautions for sting allergic people include wearing closed shoes outdoors as opposed to sandals, and use clear straws while drinking from closed drink containers (insects are drawn to sweet liquids and can enter the mouth or throat with a sip from a drink). The medically important stinging insects in our region include fire ants, yellow jackets, hornets, paper wasps, and bees. Fire ants sting more people than the others, with about half of the population in our area receiving at least one fire ant sting during the course of a year. Most who live in the southeast are familiar with the dirt-mound nests of fire ants that seem to crop up everywhere. Those allergic to fire ant sting should use fire ant control measures aimed at reducing the fire ant population around their homes. Yellow jackets are the most aggressive of the flying stinging insect group, and are attracted to places where people con-

gregate because they seek out foods we bring to picnics, outdoor gatherings, and outdoor trash cans. Yellow jackets are more irritable in the fall when they are focused on gathering and protecting resources to sustain their queen through the winter. Paper wasps build nests in rain-sheltered areas like bushes and under roof overhangs. They aren't usually aggressive towards humans unless the nest is approached closely or attacked. Make sure to look for these nests under any outdoor sheltered or horizontal surface like tables, infrequently used chairs, wheel wells and hoods of immobile cars, etc., or landscaping shrubbery before disturbing such areas. The hornets here include the white-faced hornet, yellow hornet, and the introduced European hornet. They build large, rounded nests in trees or other elevated structures. They are usually non-aggressive unless threatened. Honey bees and bumble bees usually ignore humans unless threatened or provoked. Bees have barbed stingers that cause the stinging apparatus to remain lodged in the skin after the bee stings.

In summary, insect venom allergy is a significant health concern in the United States. Management of insect venom allergy should include assessing the risk of future stings, and the likelihood of severe reactions to such stings. Injectable epinephrine should be carried by individuals at increased risk for systemic sting reactions. Venom immunotherapy is very effective and should be considered in appropriate situations. Additional information about insect venom allergy can be found on the web site of the American Academy of Allergy, Asthma and Immunology at this address:

<http://www.aaaai.org/patients/publicedmat/tips/stinginginsect.stm>

For more information on insect venom allergies or other allergy related issues, Dr. Khan may be reached at Southern Allergy and Asthma, P.C. located at 5223 Paulsen Street, Savannah, GA 31405, you may call him at (912) 303-9355 or you may e-mail him at wasilkhan@southernallergy.net.