

# Allergy and Immunology

## Insect Sting Allergy

### What is insect sting allergy?

In Australia the most common insect sting allergy in children is to bee stings. Reactions can also occur to wasps and jack jumper ants. Insect allergy can cause a mild or severe allergic reaction. The allergic reaction is due to IgE allergy antibodies.

### What sorts of allergic reactions are there?

Most children when stung by an insect develop a small area of redness and pain at the insect sting site. This is a normal reaction and does not mean your child is allergic.

#### More marked reactions are of two types;

- 1 Generalised reactions
- 2 Large local reactions

#### 1 Generalised reactions

Children have a different pattern of insect sting allergy than adults. Bee sting allergy is more common in children. However, severe reactions are less common than in adults. Bee sting reactions which are mild, generalised reactions affecting only the skin occur in about 60% of bee sting allergic children. Children with mild generalised reactions rarely get worse and do not need a course of injections with the aim of reducing the reactions (bee venom immunotherapy). Generalised reactions can become progressively more severe with each sting but this is the exception rather than the rule and occurs in less than 1% of patients.

Children with more severe generalized reactions which affect the skin and other systems (for example the breathing passages or less commonly the blood pressure) have a 50- 70% chance of a similar reaction if stung again even many years later. For this reason these children are often treated with a series of injections of bee venom (bee venom immunotherapy). These injections substantially reduce the risk of getting another severe reaction if the child is stung again. The injections are usually continued for a period of 5 years.

#### 2 Large local reactions

Some children when stung by an insect develop more marked redness and swelling around the sting which can last up to 5-7 days.

This type of reaction is not life threatening and does not usually progress to a generalized reaction in subsequent stings.

### **What is insect venom anaphylaxis?**

Anaphylaxis is a severe generalized allergic reaction. The reaction is characterised by one or more of the following symptoms:

- Severe itching, often all over the body
- An itchy rash which may be red or blotchy similar to widespread “hives”
- Low blood pressure leading to faintness or loss of consciousness
- Asthma
- Swelling in the tongue or throat, which may interfere with breathing.

### **What is venom immunotherapy?**

The long term treatment for patients who have had anaphylaxis is immunotherapy or “desensitisation” injections. This involves giving a series of injections of a purified venom starting with a minute amount and gradually increasing the dose under supervision of your allergy specialist. Once your child has reached the top dose (usually 100 µg) the interval between injections is gradually increased so that injections are given at monthly intervals. This is called maintenance therapy and can usually be continued by your local doctor.

### **Who should have venom immunotherapy?**

The indications for venom immunotherapy are a history of previous anaphylaxis to a sting and a positive allergy skin (venom-specific IgE). Children with a recent history of anaphylaxis and a positive skin test have a 30% to 70% chance of a generalized reaction to a subsequent sting.

Children with a history of large local reactions, and those with generalised reactions limited to cutaneous signs and symptoms (with no respiratory or circulatory manifestations) are at low risk of developing a more severe allergic reactions (<10%). Venom immunotherapy is not required in these low-risk cases

### **How effective is immunotherapy?**

Immunotherapy is very effective at preventing further severe allergic reactions. Once the maintenance dose has been reached the chances of having a severe allergic reaction to an insect sting decreases to less than 10% for bee venom allergy and to less than 5% for wasp venom allergy. The maintenance dose should be continued for 3-5 years.

### **What are the side effects of immunotherapy?**

Because the immunotherapy injections contain an amount of bee venom equivalent to 2 bee stings the injections may cause local or generalized allergic reactions.

About 25% of subjects receiving immunotherapy for insect stings experience some local pain and tenderness at the site of injection which may last for a few days. This is called a local reaction. If this reaction is large and painful medication can be given to relieve the discomfort and in some instances the dosage schedule will need to be altered.

Approximately 20% of people undergoing immunotherapy for insect venom sensitivity have a generalised allergic reaction at some stage during the course of the injections. These types of reactions occur in the first hour after an injection and can be treated very effectively.

There is still a small risk of an allergic reaction after the maintenance dose is reached. Therefore your child will need to be observed for one hour after each injection.

### **How long should my child continue immunotherapy?**

Studies have shown that if you receive injections for 5 years the chances of developing a severe reaction on repeat sting is small, (less than 10%). After 2 years your child is likely to be initially protected, but if stung a year after ceasing injections you have a 50% chance of having a further severe allergic reaction. Consequently we usually recommend immunotherapy be continued for 3-5 years.

### **Should my child have an adrenaline autoinjector?**

If your child has had anaphylaxis to an insect sting an adrenaline autoinjector is usually recommended.

Many experts suggest that an injector is not necessary for children when the chance of a generalised reaction is only 5–10% such as in large local reactors, children with mild systemic reactions, and patients on venom immunotherapy. On the other hand, some feel that even a 2% chance of anaphylaxis warrants carrying epinephrine, even if it doesn't warrant venom immunotherapy. Discuss this with your doctor.