Allergic Reactions to Bites and Stings

Most insect bites and stings result in a localised itch and swelling that settles within a few days. Severe allergic reactions (anaphylaxis) to insects are usually due to bees, wasps or the Australian Jack Jumper Ant. Fortunately, effective treatments are available to treat allergic reactions to bites and stings.

Stinging insects are a common cause of anaphylaxis

Allergies to venoms from stinging insects are one of the most common causes of severe allergic reactions (anaphylaxis) in Australia. Symptoms include an all over rash, swelling of tongue or throat, trouble breathing, abdominal pain, diarrhoea, vomiting or a drop in blood pressure (shock).

Although the insects are all *hymenoptera* (which means membranous winged insects), their venoms are very different. Allergy to one type of stinging insect does not usually increase the risk of reaction to another.

- The Honey Bee is the most common cause of allergic reactions to insects in Australia.
- Paper Wasps and European Wasps can sting multiple times. The European Wasp is becoming an increasing problem in Australia, is particularly aggressive and likes to get inside drink cans at barbeques, although the more familiar Paper Wasp is responsible for the majority of serious stings.
- The Australian Jack Jumper Ant (*Myrmecia pilosula*) is a medium sized black bull ant prevalent down the eastern side of Australia and Tasmania. It can be recognised by its characteristic hopping motion when it walks. It is a very aggressive ant and its sting can cause severe local pain. Severe allergic reactions are much more common than is seen with more common bull ants.
- Native Australian Bees and the Green Ant of Queensland can also cause allergic reactions.

Bites are a less common cause of anaphylaxis than insect stings

- Mosquitoes and March flies can cause itchy bites. However, severe allergic reactions are very rare, even when the swellings are very large and uncomfortable.
- Caterpillars can cause severe irritation from touching their spines, which are attached to venom sacs underneath the skin. In rare cases they can trigger anaphylaxis.
- Ticks (which are arachnids) also bite. Sometimes large local swelling and inflammation can arise at the site of a bite and last several days. Such reactions are usually due to mild allergy to the tick. Severe allergic reactions (anaphylaxis) have also been described to the Australian paralysis tick, *Ixodes holocyclus*. **Severe allergic reactions (anaphylaxis) occur when the tick is disturbed.** Further information on tick allergy is available on the ASCIA website: http://www.allergy.org.au/patients/insect-allergy-bites-and-stings/tick-allergy
- Anaphylaxis following snake bites has also been reported, although these are very rare.
- Common Bull Ants can occasionally cause anaphylaxis.

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Natural history of allergic reactions

**Bites**
Local reactions to biting insects (such as mosquitoes and midges) tend to become less severe with time.

**Stings**
Reactions to stinging insects (particularly when severe) tend to persist, although children are more likely to improve than adults.

**Isolated local reactions**
Individuals who have had a rash or large local swelling alone have a less than 1 in 10 chance of developing serious allergic reactions with further stings. Allergen immunotherapy is not indicated.

**Generalised reactions without life threatening features**
Symptoms of generalised hives (urticaria) without difficulty breathing or a drop in blood pressure are uncomfortable but not dangerous. This type of allergic reactions is more common in children than adults and has less than a 1 in 10 chance of progressing to anaphylaxis. Allergen immunotherapy is not indicated in children who have reactions confined to the skin but is indicated in adults.

**Anaphylaxis**
Individuals who are at greatest risk of further serious reactions are those who have previously had a severe allergic reaction (e.g. difficulty breathing, drop in blood pressure) following a sting. Adults are at greater risk than children. Anyone with a history of a generalised reaction (even without life threatening features) to an insect sting should be referred to a medical specialist (clinical immunology/allergy specialist).

**Prevention is better than cure**
- Bites from midges and mosquitoes are best avoided by covering up as much as possible. Avoid being outdoors in the early morning or at dusk, and use an insect repellent containing DEET.
- After being outdoors, check for ticks if living in an endemic area. Ticks should not be removed from allergic individuals until the individual is in an emergency medical facility. This is because allergic reactions often occur when the tick is removed. Further information on tick allergy is available on the ASCIA website: http://www.allergy.org.au/patients/insect-allergy-bites-and-stings/tick-allergy
- Honey Bees normally only sting in self defence. The best protection is light coloured clothing, covering much of the body (particularly the feet) and avoiding perfumes.
- Wasps tend to nest in logs, walls or underground. They are generally more aggressive than bees and attracted to food and drink, so it is important that you don’t drink blindly from open drink cans when outdoors.
- Avoid wearing perfumes and bright colours, which attract bees. It is preferable to wear dark, white or muted coloured clothing, such as tan or green.
- Stings often occur on bare feet so people with allergies to bites or stings should always wear shoes when outdoors.
- When gardening, wear long sleeves, long pants and gloves. Tuck shirt into pants and pants into socks to prevent tick bites.
- Avoid provoking bees and wasps.
- Where possible, drive with the windows up.
- Have nearby nests (ant, bee, wasp) removed by professionals. This is also relevant to schools and childcare services, particularly if they have children enrolled with stinging insect allergy.

**Diagnosing the cause of your allergy**
Your doctor will normally ask a series of questions that may help to narrow down the list of likely cause of your reaction. This approach will also help to exclude conditions that can sometimes be confused with anaphylaxis. Skin test or blood allergy testing can help confirm or exclude potential triggers.
First Aid is adequate for the treatment of minor reactions
Bees usually leave their barbed sting in the skin and die. Flicking the sting out as soon as possible (preferably within 30 seconds) will reduce the amount of venom injected. Use the edge of your fingernail, a car key or credit card, being careful not to squeeze the venom sac, as this will only increase the amount of venom injected. By contrast, wasps and bull ants rarely leave their sting in the skin. Cold packs and soothing creams often help for minor reactions. Antihistamines usually do not help. Very large and uncomfortable local reactions may sometimes need cortisone tablets to settle the swelling.

Severe allergic reactions can be fatal
Anaphylaxis from stinging insect allergy results in an average of three deaths per year in Australia. Older individuals and those with severe difficulty breathing are at greatest risk and should be seen by a medical specialist (clinical immunology/allergy specialist) to develop a strategy for dealing with subsequent stings.

Effective treatment for severe allergic reactions is available
Patients with at risk of anaphylaxis are usually advised to:
1. Have an ASCIA Action Plan for Anaphylaxis and adrenaline autoinjector (EpiPen or Anapen) readily available to treat anaphylaxis.
2. Wear a medical identification bracelet, which will increase the likelihood that adrenaline will be administered in an emergency.
3. Avoid medication (where possible) that may increase the severity of anaphylaxis or complicate its treatment. Beta blockers (and perhaps ACE inhibitors) fall into this group.
4. Seek urgent medical assistance if stung.

Allergen immunotherapy can reduce the severity of allergy
Allergen immunotherapy (desensitisation) can help to switch off the allergic reaction over time. This is effective for the treatment of bee and wasp stings. Unfortunately, there is currently only limited access to vaccine for treating Jumper Ant Allergy and there is currently no vaccine available for treating tick allergy or reactions triggered by some other species of ants and wasps.

It is important to realise that allergen immunotherapy is not helpful in patients with large local swellings alone and may not be necessary in patients with isolated rashes. For these reasons, patients should be evaluated by a clinical immunology/allergy specialist before initiation of immunotherapy is considered. The duration of treatment is generally for at least 3-5 years.

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