



Tick Allergy

Frequently Asked Questions

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Q 1: What are ticks?

Ticks are arachnids (related to spiders) and have eight legs. Tick larvae are very small, around 1mm in size and can be hard to see. Nymphs are slightly larger at around 2mm diameter and adult ticks before a blood feed are around 4mm in size.

Adult ticks attach to the tips of grass blades and vegetation and transfer themselves to a host, which is usually a passing animal or human. Ticks generally lodge in the skin of the head, scalp or neck of their host. The most common reaction is local irritation, itching and swelling at the site of a tick bite, which is usually not due to allergy.

There are populations of ticks in several non-coastal areas, but they used to live mainly on the east coast of Australia. The risk of exposure to ticks exists throughout the year.

Q 2: What health problems are related to ticks?

Health problems linked with tick bites include:

- Allergic reactions.
- Allergic reactions to red meat and gelatin (mammalian meat allergy).
- Transmission of infections (these are less common than allergic reactions).
- Tick paralysis (this is rare in humans as a tick must be attached for several days to inject enough toxin).

Allergic reactions to ticks range from mild, with swelling and inflammation (at the site of a tick bite), to severe (anaphylaxis).

Anaphylaxis should always be treated as a medical emergency and requires immediate treatment with adrenaline (epinephrine) which is injected into the outer mid-thigh muscle. Delayed treatment can result in fatal anaphylaxis. To prevent allergic reactions to ticks, it is important that ticks are not forcibly removed or touched. Disturbing a tick may cause it to inject more allergen-containing saliva.

Q 3: How can ticks be safely removed?

Published studies show that the safest way to remove a tick is to:

- Freeze the tick, using a product that rapidly freezes and kills the tick, and allow it to drop off, or
- Leave the tick in place and seek medical assistance to remove the tick.

The safe and fast removal of a tick may reduce the possibility of becoming allergic to them. It may also reduce the risk of getting a tick-borne infectious disease or developing tick paralysis.

If you are in a tick-endemic area, it is important not to scratch anything that you cannot see.

Q 4: What is first aid treatment for tick bites?

- Do not forcibly remove the tick and avoid disturbing the tick by scratching or applying chemicals such as methylated spirits or kerosene to the tick.
- Freeze the tick, using a product that rapidly freezes and kills the tick. Allow it to drop off. In most cases ether-containing sprays will kill the tick within five minutes.
- If the tick does not drop off, or cannot be frozen, leave it in place and seek urgent medical help.
- It is unsafe to insert fine tweezers between the skin and the tick to try to remove it.

If a person is allergic to ticks:

- They should carry an adrenaline injector such as EpiPen or Anapen, and a mobile phone.
- If they have symptoms of anaphylaxis use an adrenaline injector and follow the ASCIA Action Plan.
- The tick should be killed and removed in a hospital emergency department. After consultation with a medical specialist, a person with tick allergy may be able to kill and remove the tick safely without going to hospital. Some people with tick allergy are so highly allergic that medical support should always be sought. A medical specialist will advise as to which approach will be safest.
- If available, liquid nitrogen applied by a doctor is effective in killing a tick.

It is important to note that:

- This advice is based on the clinical experience and published studies of medical specialists who treat patients with tick allergy.
- Tick allergy should be confirmed by a clinical immunology/allergy specialist.
- There is a link between tick allergy and the development of allergic reactions to mammalian meats and/or mammalian meat-derived gelatin.

Q 5: What are the symptoms of allergic reactions to ticks?

Mild allergic reactions to ticks appear as large local swelling and inflammation at the site of a tick bite, that can last for several days.

Anaphylaxis to the Australian paralysis tick, *Ixodes holocyclus*, occurs when the tick is disturbed, as this may cause the tick to inject more allergen-containing saliva.

Signs of anaphylaxis include any one of the following:

- Difficulty or noisy breathing
- Swelling of tongue
- Swelling or tightness in throat
- Wheeze or persistent cough
- Difficulty talking or hoarse voice
- Persistent dizziness or collapse
- Pale and floppy (young children)

Mild or moderate allergic reactions may not always occur before anaphylaxis.

Q 6: How is tick allergy diagnosed?

There is no reliable skin test or blood test for allergen specific Immunoglobulin E (IgE) antibodies to confirm a diagnosis of tick allergy. Australian researchers have identified that the allergens that cause problems are proteins in tick saliva. Diagnosis is currently based on the patient's clinical history of the reaction.

The following blood tests for allergen specific IgE may assist in confirming a diagnosis:

- Mammalian meats Immunocap.

- Alpha-galactose Immunocap. Alpha-galactose is a sugar molecule present in meat from mammals other than humans, great apes and Old World monkeys. It is also found in the gut of ticks.
- Blood tests for mast cell Tryptase may also be useful. Tryptase is an enzyme that is increased in people with a condition called mastocytosis. It is associated with a higher risk of allergic reactions to many allergic triggers including insect stings and tick bites. People with higher tryptase levels may have more severe anaphylactic reactions to insect stings and bites.

Q 7: Can mammalian meat allergy be caused by tick bites?

Clinical immunology/allergy specialists in Australia were the first to describe a link between tick bites and the development of mammalian meat allergy. These findings have since been confirmed by researchers in the USA and in Europe.

Some people are also allergic to mammalian milks and animal-derived gelatin which is in many food products as a binding agent, in some medications, and in intravenous blood substitutes known as gelatin colloid (such as Haemaccel and Gelofusine). The allergen (alpha-gal) is in the gut of ticks and all mammalian meats such as beef, pork, lamb, kangaroo, and venison.

People with allergic reactions to mammalian meats are advised to avoid all mammalian meats such as beef, lamb/mutton, pork, goat, horse, kangaroo, venison and other exotic mammals. Artificial blood (made from beef), and all forms of gelatin should also be avoided.

Medical identification warning of allergy to intravenous gelatin colloid should be carried by people with mammalian meat allergy. This is used as a blood substitute in emergency situations.

Q 8: How do you reduce the risk of tick bites?

Tick bites are best avoided by covering up as much as possible:

- Wear a long-sleeved shirt and long trousers.
- Tuck shirt into trousers and trousers into long socks.
- Wear a wide-brimmed hat.
- Wear light-coloured clothes, which makes it easier to see ticks.
- Consider using permethrin-treated clothing when exposed to tick habitat or gardening in tick endemic areas.

Other measures:

- Brush clothing before coming inside to remove ticks.
- Check for ticks on the body, especially in the neck and scalp.
- Use insect repellent that contains DEET.

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