EUROPEAN ACADEMY OF DERMATOLOGY & VENEREOLOGY

Information Leaflet for Patients

What should I know about bites of insects and arachnids?

The aim of this leaflet

This leaflet is designed to help you understand more about bites and stings from insects and arachnids (spiders, ticks, mites, and scorpions). It will tell you about these kinds of animals, what is dangerous about the venom, what can be done for the main complications, and how to avoid the bites in the first place. For further information, you will also find in a second leaflet a selection of the most important venomous species and in what cases you need to seek emergency help.

WW.EADV.ORG
INFORMATION LEAFLET FOR PATIENTS 2019
2019 © EADV
2019 © THE EADV TROPICAL DERMATOLOGY TASK FORCE

What should I know about bites of insects and arachnids?

How are insects distinguished from arachnids?

While they are both invertebrate animals, the zoological characteristics are different between insects and arachnids. Insects have 3 pairs of legs and are possibly armed with stingers, venomous glands, and/or fangs (examples: mosquitos, flies, bees, wasps, ants, beetles, fleas, ticks, and caterpillars). Arachnids have 4 pairs of legs, and their venomous glands in the mouth region carry the fangs for eating or defence (examples: spiders, mites, ticks, and scorpions). Some spiders do not bite; they spray the venom towards the prey or aggressor.

How are bites and stings different between insects and arachnids?

- **Insect bites and stings: Clinical characteristics**

Most insect stings involve a single puncture wound with a *papule* (bump) formation, a localised *urticaria* (known as hives, with swelling and redness) and itch. These symptoms usually subside within a few hours or days. Bites from insects are done mainly to stabilise the insect's body before stinging. So, insect bites cause fewer symptoms than insect stings, and subside much more quickly. Venom-spraying insects, like some ant species (e.g. "fire ants"), leave a localised redness or eczema and sometimes blistering. Extremely rarely, insect bites cause wound healing disorders.

- **Spider bites: Clinical characteristics**

The typical feature of spider bites is the twin-puncture wound of the spider's fangs. Most spider bites are associated with fewer symptoms than an ordinary mosquito bite, and even the small puncture wounds of both fangs are sometimes hardly visible. Some spitting spiders (even those who bite like the "brown recluse spider") may leave a severe *necrotic* wound (dead tissue) or an ulcer with a black crusty *eschar* or scab. "Black widows" and some "bird spiders" may additionally cause severe neurological symptoms, such as extremely painful muscle cramps, anxiety, headache, increased salivation, increased sweating, numbness, restlessness, seizures, and more.

What is dangerous about bites and stings from insects and arachnids?

- **Insect bites and stings: Risks and consequences**

Insect bites and stings in human beings worldwide are very common and sometimes nearly unavoidable. They often need medical treatment, either due to bacterial infection of inflamed bite reactions, a toxic reaction, or allergies against components of the insect's venom. Allergies can be life-threatening. Several insect species that are dangerous for people are listed below.

- **Spider bites: Risks and consequences**

Spider bites in human beings are extremely rare and mostly avoidable. Spiders only bite people in self-defence, usually as a result of unexpected human behaviour. Also, the fangs of most spiders worldwide are much too small to penetrate human skin and do harm, and the spider's venom is usually too mild to cause serious problems. A limited number of spiders, mostly residents of tropical or subtropical regions, pose a problem to human beings. The reaction is always toxic/venomous. There are no allergies known to exist against spiders. A selection of a few, rather toxic/venomous species are listed below. Only bites of these spider species require medical treatment.

What are the clinical signs of bites and stings from insects and arachnids?

• Local reaction

Reactions to bites and stings from insects or arachnids are usually caused by toxic components of the venom. The most common reaction is **mild** local inflammation, showing little well-defined swelling, redness, heat, moderate itch, or pain around the affected area, which subsides after a short while. As long as the inflammation stays local, this is, per definition, **never** an allergy. Local reactions need to be monitored, but usually respond to local treatment.

Sometimes, a sting or bite is complicated by pulsating local pain and swollen regional lymph nodes. These may be signs of a **secondary bacterial infection** and include: *pustules* and secretion of pus, *lymphangitis* (infection of lymph vessels), or fever. In this case, contact your dermatologist; this often needs antibiotic treatment.

• Regional reaction

A local reaction that grows and affects a whole **region** (e.g. arm or leg) means a regional reaction. As long as the area around the sting is involved and no other part of the body, the reaction per definition is exaggerated but **not** systemic or allergic. You need to see your dermatologist for regional reactions.

• Systemic reaction

If you get stung or bitten somewhere (e.g. in the right foot), and you develop reactions at distant body parts (e.g. the hands, parts of the face, or elsewhere) or if you have a generalised *urticarial* rash affecting the whole body, this suggests a severe systemic allergic reaction, called **anaphylaxis**.

More severe or even life-threatening symptoms may occur, such as breathing problems, *tachycardia* (palpitations), abdominal pain, increased bowel movements with faecal urgency or incontinence, nausea, vomiting, diarrhoea, cardiovascular collapse or "shock," unconsciousness, cardiac arrest, and death.

A systemic reaction is always a case of **severe emergency**. Immediate help of an emergency physician and intensive care in a hospital is necessary.

What about people with an impaired immune system?

People with very dry and tender skin or genetic skin disorders (e.g. ichthyosis vulgaris), skin immune deficiency (e.g. *atopic dermatitis*), autoimmune diseases leading to reduced skin defence mechanisms, immune suppressive medical treatment, infectious diseases impairing the immune system, or any form of malignant diseases may react more severely to any insect stings or arachnid bites.

People with a predisposition to having allergies may develop an allergy against stinging insects (like wasps or bees). Stings may then cause a life-threatening situation. In these cases, emergency treatment is required. The dermatologist/allergologist can provide medical help, and assistance with the diagnosis of specific allergies and preventive measures.

How are bites and stings from insects and arachnids treated?

What you can do:

• Cooling devices

Local reactions mainly just need cooling with cold water, ice packs, or gels.

• Over-the-counter medicine

In other cases, topical steroid creams are often helpful (available over-the counter in some countries). Also, antihistamine tablets or drops (obtainable without prescription) may help to decrease the itch and swelling.

• Electrical devices for local thermotherapy (heat therapy)

So-called mosquito bite relievers work on the principle that most insect venom is *thermolabile* (sensitive to heat). These reusable pocket-sized devices work with electrical heat and claim to deliver heat at the right temperature in order to deactivate venom from thousands of different species of insects and sea creatures in about 30 seconds.

When should I see a clinician?

• Growing inflammation

If the inflammation grows and initial signs of allergic reaction or bacterial infection occur, the help of your dermatologist is needed. Your dermatologist will decide whether to prescribe stronger topical treatment or systemic prescriptions.

In all cases of stronger reactions, even out-of-office hours of your local dermatologist, do not hesitate to contact the emergency department of your local hospital or call an ambulance.

• Bacterial infections

Bacterial infections may need antibiotic prescriptions. In advanced stages, you may need to have antibiotic intravenous (i.v.) infusions as an in-patient at a hospital.

• Allergies

Severe forms of allergies will be treated by your dermatologist with cortisone and antihistamines (as tablets, injections, or infusions). After every allergy caused by venomous insect bites, contact your dermatologist to discuss the possibilities of a *hyposensitization therapy*. This is the only way to treat the cause of an allergy.

Your dermatologist will also prescribe you an **Allergy Emergency Kit** (antihistamine drops, liquid cortisone, and an epinephrine syringe). This is obligatory and must be carried with you all the time. It is important to pay

What should I know about bites of insects and arachnids?

attention to the expiration dates of the medications (please note that the prescribed medications presented here may vary from country to country).

How can I avoid bites and stings from insects and arachnoids?

• Clothing

Insects are often attracted by dark-coloured clothing. The *Tsetse* fly, an insect that transmits sleeping sickness in Sub-Saharan Africa, is especially attracted by blue colours. So, in these areas wear light colours, which can even keep you cooler in the sunny heat. Be sure that you cover as much of your skin as possible and wear clothes made of tightly-woven fabric so that mosquitoes cannot penetrate. Wear loose-fitting clothing, because if the material is not close to your skin, insects cannot bite through to you. Make sure that the cuffs and collar are tight enough to prevent insects from getting through.

• Fragrance

Avoid fragrance of all kinds, as it may attract insects.

• Repellents

Regarding the use of repellents to deter insects, there are many different products on the market, some effective and some useless. **Pyrethroids** are synthetic organic compounds similar to the natural pyrethrins from chrysanthemums. Pyrethroids now constitute the majority of commercial household insecticides. In general, they are harmless to human beings in lower doses. **DEET** is effective for ticks and insect bites. It is most helpful against malaria-carrying mosquitoes and horseflies, and reasonably effective against large horseflies, gnats, and midges. For further information and recommendations, ask your local dermatologist.

• Fly screens and bed nets

For indoor protection, use enclosed fly screens at windows and doors as well as mosquito nets (especially, to protect the sleeping area). Some venomous insects are very small, therefore an adequately small mesh size is important.

• General precautions

In general, the best thing to do is to avoid places which are preferred by swarms of venomous stinging insects, especially at times when they are known to be most active. Additionally, never try to catch, hold, or squeeze insects and arachnids.

While every effort has been made to ensure that the information given in this leaflet is accurate, not every treatment will be suitable or effective for every person. Your own clinician will be able to advise in greater detail.

EUROPEAN ACADEMY OF DERMATOLOGY & VENEREOLOGY

WW.EADV.ORG
INFORMATION LEAFLET FOR PATIENTS 2019
2019 © EADV
2019 © THE EADV TROPICAL DERMATOLOGY TASK FORCE