



Allergies: When the Immune System Backfires

Video Transcript

Medication in an emergency

[Andreas J. Bircher]: Patients who have suffered from a severe anaphylactic reaction to an insect sting or to food should be equipped with emergency medications. Here, we briefly recapitulate the important steps. If first symptoms of anaphylaxis, such as sudden pruritus and flush, throat swelling, cough, wheezing, or dizziness occur, help should be called. If possible, the allergen source, for example, a stinger, should be removed carefully or any further consumption of a suspicious food should be stopped immediately. A comfortable position should be chosen. In case of cardiovascular symptoms, reclined or flat on the floor with elevated legs. In case of asthmatic symptoms, sitting on a chair. Then, the medications should be prepared and administered. These medications include the adrenaline autoinjector, antihistamine tablets, corticosteroids tablets, and if prescribed, the betamimetics inhaler.

Adrenaline is the first drug to administer. It reverses the effects of inflammatory mediators on circulation and lung. It increases heart rate and blood pressure, dilates the bronchi, constricts blood vessels, and reduces the leaking of serum into the extravascular space. Adrenaline is injected intramuscularly into the upper thigh. It starts to act within minutes. Its effects last approximately 20 minutes. Then, a second dose can be injected if severe symptoms are persisting. Unfortunately, several devices with different manipulation steps and colour codes are on the market. Patients should be familiar with their device and its handling. You'll find a link to a short film explaining the handling in the text below.

In general, there are two doses available, the junior device with 150 micrograms adrenaline dose, and the adult device with a 300 micrograms dose. Recently, a 500 micrograms device has been marketed for heavier persons. The dose is adjusted to the weight of the patient, roughly 10 micrograms per kilogramme of body weight are recommended. Patients between 7.5 to 25 kilogrammes will thus use the junior device, and patients being heavier than 25 kilogrammes will need the adult device. Adrenaline will lead to a fast heartbeat, sweating, tremor, paleness, and nervous feelings. Patients should still remain in a horizontal recline position until professional help arrives. Sudden standing up could result in a fatal drop of blood pressure. Antihistamine tablets or drops should be taken as soon as possible. Their onset of action is between 30 to 60 minutes.

Antihistamines can reverse pruritus, urticaria, and gastrointestinal symptoms, and prevent later symptoms. Yet, they are not effective alone to treat severe anaphylaxis. If mild symptoms persist they should be taken for several days. One to two tablets can be taken by an adult. Antihistamines can also be injected intravenously by emergency staff. Anaphylaxis may recur after some hours, rarely up to 24 hours. The intake of corticosteroids blocks newly generated inflammatory mediators. Corticosteroids should be given early, since its onset of action is several hours and lasts up to a day. A typical dose is 1 to 2 milligrammes per kilogramme of body weight. Corticosteroids can be taken orally or given intravenously by emergency staff.

Patients with concurrent asthma or severe bronchospasm during an anaphylactic episode should have a betamimetics inhalation device. It only acts on the lungs but may be additionally helpful to treat bronchial symptoms. Inhalation in the acute phase may be difficult and the spacer may be helpful. Regular training of the correct inhalation technique is mandatory. The timely injection of adrenaline can save the life of a



University
of Basel

patient suffering from anaphylaxis. Antihistamines and corticosteroids can reverse symptoms and prevent relapses. And finally, bronchial symptoms can be treated with inhalation of betamimetics. Patients who had severe anaphylaxis in the past should be equipped with such emergency medications. The course of action in an emergency and the handling of the devices should be discussed and practised in regular intervals. Expiry dates should be checked and a new medication prescribed if necessary.