Anaphylaxis

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Anaphylaxis is an acute, generalized potentially fatal allergic reaction. It is a Type 1 hypersensitivity reaction that occurs in a person who has been previously sensitized by exposure to an allergen. The allergic reaction occurs on repeated exposure to the same allergen.

An allergen is a non-parasitic substance capable of stimulating an allergic reaction in individuals. Common allergens include insect bites or stings, medication, latex rubber and foods such as peanuts, shellfish, milk and egg.

An anaphylactic reaction begins when the allergen enters the bloodstream and reacts with an IgE antibody. This reaction causes a generalised inflammatory response stimulated by the release of histamine from cells in the body. There is an immediate multisystemic response to these cellular events involving mainly the respiratory and cardiovascular system. The airways constrict causing wheezing, blood vessels throughout the body dilate with a resultant drop in blood pressure, the walls of blood vessels loose integrity and leak fluid causing swelling and hives. Finally, cardiac conduction may be impaired resulting in an erratic and inadequately functioning heart.

The person may initially complain of dizziness, flushing, angioedema, urticaria, nasal congestion, and sneezing. Severe symptoms include upper respiratory tract obstruction, hypotension, vascular collapse associated with angioedema and urticaria, gastrointestinal distress, cardiovascular arrhythmias, and/or arrest.

In a 5 year prospective study conducted in the United Kingdom, the incidence of anaphylaxis was determined to be 8.4 per 100 000 persons per year with the most common allergens being insect stings and oral medication. Approximately 10% of cases had hypotension and shock that required urgent treatment. A separate study in the United States by Neugut et al showed that anaphylaxis affected 1.21% to 15.04% of the US population. The most common causes where found to be medicines, insect stings, radiologic contrast medium and food.

Anaphylaxis results in approximately 1,500 deaths per year in the U.S. In England, research shows mortality rates of 0.05 per 100 000 population, or around 10-20 a year. Anaphylactic reactions requiring urgent hospital treatment seem to be increasing, with authorities in England reporting a threefold increase between 1994 and 2004.
In less severe allergic reactions, the patient may be treated with oral antihistamines. When severe symptoms develop, however, emergency resuscitation must be initiated with attention to airway management, supplemental oxygen and intravenous fluids. Administration of epinephrine is the treatment of choice with antihistamines and steroids often used as adjuncts. Often patients are observed in hospital for 6 - 24 hours due to concerns of biphasic anaphylaxis.

In some instances it may be possible to prevent anaphylaxis.

The greatest success with prevention has been the use of allergy injections to prevent recurrence of sting allergy. The risk to an individual from a particular species of insect depends on complex interactions between likelihood of human contact, insect aggression, efficiency of the venom delivery apparatus, and venom allergenicity. Venom immunotherapy has been demonstrated to reduce the risk of systemic reactions to below 3%.

Desensitization techniques are also being investigated for peanut allergies. In the meantime, a potential vaccine has been developed to prevent anaphylaxis due to peanut and tree nut allergies. Although the vaccine has not yet been approved for marketing and distribution, it shows some promise to reduce the likelihood of anaphylaxis in affected individuals

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