



australasian society of clinical immunology and allergy inc.

Anaphylaxis

ASCIA Education Resources
Information for health professionals

Anaphylaxis is a rapidly evolving, generalised multi-system allergic reaction characterized by one or more symptoms or signs of respiratory and/or cardiovascular involvement and involvement of other systems such as the skin and/or the gastrointestinal tract. It is the end result of major mast cell degranulation, triggered by IgE-dependent or independent mechanisms. Common triggers include food, stinging insects and medication. Exercise and alcohol are important co-factors in some patients.

Anaphylaxis is life-threatening and all patients with suspected anaphylaxis should be referred to an Allergy Specialist for investigation and provision of a comprehensive Anaphylaxis Management Plan including an Emergency Action Plan.

PATIENT EVALUATION

It is useful to undertake a structured interview to first determine whether anaphylaxis occurred before examining the surrounding circumstances to define a cause.

- Disorders mimicking anaphylaxis should be considered in the differential diagnosis.
- Exposure to stinging insects, food, beverage and medication in the previous 12 hours should be recorded. This is because anaphylaxis generally occurs within minutes of a sting, and within hours of a food or drug allergen.
- The presence of known food allergy should be recorded and the possibility of accidental exposure considered. A commonly missed form of food allergy is known as Oral Allergy Syndrome in which an itchy mouth or angioedema develops soon after eating fresh fruit or semi-cooked vegetables. This mainly affects hay fever patients with pollen allergy, some of whom may develop food induced anaphylaxis, particularly if combined with exercise.
- Co-factors that enhance the likelihood or severity of an allergic reaction (such as exercise, alcohol, spicy food, beta blockers, NSAIDs or a high ambient temperature on the day of reaction) should also be identified.
- Occasional patients suffer from idiopathic anaphylaxis, where extensive evaluation fails to identify an underlying cause.

Evaluation by an allergy specialist is recommended after a diagnosis of possible anaphylaxis.

EXERCISE AND ANAPHYLAXIS

Exercise-induced anaphylaxis typically affects young adults. Manifestations include itch, urticaria /angioedema, bronchospasm, sweating, syncope, gastrointestinal symptoms and nasal congestion. Some people experience symptoms with exercise alone, whilst others will only do so if allergenic foods are ingested around the same time.

The syndrome of food and exercise-induced anaphylaxis usually occurs during exercise. Less commonly, symptoms are triggered when the allergenic food is ingested following exercise.

- Foods implicated in this syndrome include wheat and other cereals, celery, seafood, nuts, fruit and some vegetables. Mast cell degranulation appears to be triggered by cross-linking of allergen-specific IgE combined with neuropeptide release by adjacent nerve endings.

- The severity of symptoms is generally influenced by the amount of food ingested, the vigor of exercise and the time between the two. Thus severe symptoms are usually due to food eaten only a few hours earlier.

INVESTIGATION

Confirmation of the cause of anaphylaxis is made by a suggestive history supported by the detection of allergen-specific IgE.

- Skin prick testing can be performed to detect allergen-specific IgE to candidate dietary allergens. Since testing carries a very small risk of inducing anaphylaxis, it must be carried out in an environment where anaphylaxis can be treated. Testing is normally performed using commercial food extracts. Occasionally, it is necessary to repeat testing with the actual food prepared as eaten. This is because some protein allergens are denatured by commercial extraction procedures. Skin tests are sometimes negative for 4 to 6 weeks following an episode of anaphylaxis, and selected patients may need to be retested at later intervals.
- The reliability of blood allergen specific IgE (RAST) testing is dependent on the method used to measure allergen-specific IgE and remains unvalidated for all but a small number of foods. Total IgE or RAST testing of food mixes may provide misleading or irrelevant results.
- It is important to note that a positive skin prick test or RAST result indicates sensitization to an allergen, but does not always imply clinical reactivity or help distinguish between the risk of a mild allergic reaction and anaphylaxis.
- There are no reliable blood or skin tests for allergic reactions to anti-inflammatory drugs at this time, and allergy testing for antibiotic allergy is not available for all medications.
- The scientific validity of "alternative tests" such as the cytotoxic food test, the Vega test, bioelectrical testing, hair analysis, pulse test or kinesiology has not been demonstrated (reviewed at "Quackwatch" <http://www.quackwatch.com>)
- To establish a diagnosis where there is doubt as to the causative agent, challenge testing may sometimes be performed under the supervision of a specialist in allergy and clinical immunology with foods, medication or exercise (under strictly supervised conditions). Negative challenge testing with food followed by supervised exercise does not always exclude the diagnosis of exercise-induced anaphylaxis.

MANAGEMENT PRINCIPLES

- Patients at risk of anaphylaxis should wear an identifying MedicAlert (or similar) bracelet, which will increase the likelihood that adrenaline will be administered in an emergency.
- They should avoid medication that may enhance the severity of anaphylaxis or complicate its treatment. Beta blockers (and perhaps ACE inhibitors) fall into the first group as they inhibit counter-regulatory mechanisms that may protect from uncontrolled hypotension.
- Patients in whom episodes are unpredictable, who are allergic to foods that are extremely difficult to avoid or when the cause cannot be identified should carry injectable adrenaline and be trained in its use.
- Patients in whom exercise is a co-factor are best advised to pre-medicate with H1 and H2 antagonists, to carry injectable adrenaline (such as EpiPen®)*, to not exercise alone and to consider carrying a mobile telephone.
- In some circumstances (see below), it may be possible to reduce the severity of allergy by specific immunotherapy.

- After an episode of anaphylaxis, patients should be observed for relapse under medical supervision for a minimum of 4-6 hours once complete clinical resolution is achieved. Many allergy specialists recommend a minimum of 12 hours observation post recovery, based on evidence that severe "rebound" symptoms are observed in up to 20 % of patient with anaphylaxis after apparent early recovery.

IMMUNOTHERAPY

Immunotherapy is effective for the treatment of inhalant allergies and bee or wasp stings. Unfortunately, there is no reagent at this time for down-regulating "jumper ant" or tick reactions. Attempts to modify the severity of food allergy using similar techniques have failed, although research is ongoing.

A COMPREHENSIVE MANAGEMENT PLAN IS ESSENTIAL

- A comprehensive management plan for patients with anaphylaxis should always include:
 - Referral to an allergy specialist
 - Identification of anaphylactic trigger(s)
 - This will include a comprehensive medical history and clinical examination followed by interpretation of allergy test results.
 - Education on avoidance of allergenic triggers
 - This is particularly important with food anaphylaxis and may also involve advice from an experienced allergy dietitian.
 - Regular review by an allergy specialist
 - Provision of an Emergency Action Plan (see below).

EMERGENCY ACTION PLAN

Since episodes of anaphylaxis are unpredictable, a written Anaphylaxis Action Plan should be provided to your patients. Anaphylaxis Action Plans which have been developed by ASCIA are available on the ASCIA website at <http://www.allergy.org.au/anaphylaxis/index.htm>. These Action Plans outline the early warning symptoms of anaphylaxis and instructions for patients and their care-givers.

USING EPIPEN IN ANAPHYLAXIS

- EpiPen is a pre-loaded auto-injecting device containing an exact dose of adrenaline.
- Adrenaline works rapidly to reverse the effects of anaphylaxis and should be considered "First Aid for its treatment.
- An EpiPen should only be prescribed as part of a comprehensive anaphylaxis management plan.
- As of 1 November 2003 EpiPen is now available by Authority prescription on the Pharmaceutical Benefits Scheme in Australia for those considered at high risk of anaphylaxis. Prescriptions need to be issued in consultation with a clinical immunologist, allergy specialist, paediatrician or respiratory specialist.
- EpiPen prescription guidelines are available on the ASCIA website <http://www.allergy.org.au/anaphylaxis/index.htm>
- Instructions on how to use and NOT use EpiPen are on the ASCIA website <http://www.allergy.org.au/aer/infobulletins/adrenaline.htm>

NB: Where 'EpiPen' is stated in this document it refers to EpiPen® or EpiPen Junior® which are distributed in Australia and New Zealand by CSL Pharmaceuticals.

WEB RESOURCES

The Australasian Society of Clinical Immunology and Allergy (ASCIA)

<http://www.allergy.org.au/anaphylaxis/index.htm>

Lieberman PL. Anaphylaxis

<http://www.medscape.com/Medscape/RespiratoryCare/journal/1997/v01.n07/mrc3025.lieberman/mrc3025.lieberman.html>

Joint Committee on Allergy, Asthma & Immunology: Anaphylaxis Practice Parameters

<http://www.jcaai.org>

MedicAlert Bracelets

<http://www.span.com.au/medic>

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DISCLAIMER

The content of this document has been reviewed by ASCIA members, represents the available published literature at the time of review, is not influenced by sponsors and is not intended to replace professional medical advice. Any questions regarding a medical diagnosis or treatment should be directed to a medical practitioner.

For further information on allergy, asthma or immune diseases
visit <http://www.allergy.org.au> - the website of ASCIA
ASCIA is the peak professional body of Clinical Allergists
and Immunologists in Australia and New Zealand.

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