

Anaphylactic Reactions in Travellers

I Mackay

World travellers are exposed to health risks which may not be met at home and anaphylactic reactions are more likely in a foreign environment. Eating unusual foods and dining in strange restaurants and locations can put the unwary traveller at higher health risk. Emergency response to this eventuality may not be as immediate as anticipated in Europe. Health professionals and first aid may be far distant, when adverse anaphylactic reaction requires immediate intervention to prevent fatal outcome. Travellers with hypersensitivities and those who have survived severe generalised, or systemic, anaphylactic reaction should be advised of risk, precautions and emergency treatment in pre travel consultation.

Case History

A thirty year old male passenger travelling by air to Singapore enjoyed the in-flight meal of fish and lobster. He suddenly became breathless, had severe abdominal pain, was extremely nauseated, sweaty, had a racing pulse and felt he was going to die. He vomited profusely, collapsed and recovered consciousness after 15 minutes. Considering the symptoms were due to food poisoning, he did not identify the possible trigger for his distress and failed to appreciate the seriousness of the event. In Indonesia a week later, he consumed lobster bisque. Within 15 minutes he became very ill with respiratory and cardiac symptoms and unconsciousness occurred. Fortunately, he was treated almost immediately in a hospital nearby.

Anaphylactic reaction to lobster was diagnosed and he was given an adrenaline injection. Advised to avoid shellfish he inadvertently consumed a small amount of crab-enhanced gravy in a restaurant while travelling in the USA and immediately suffered cardiac and respiratory arrest and coma. A potentially fatal event, his life was saved by prompt CPR and adrenaline administration from a neighbouring diner, a doctor. On this occasion the patient had been unaware of the dietary food risk to which he had been exposed.

World travel brings exposure to exotic meals containing fish, shellfish and nuts often previously unfamiliar to tourists and their consumption can bring dangerous consequences. Holiday locations favour sea coasts and sea food restaurants tempt the vacationer. Luxury shellfish are affordable and many gorge on them which may result in food poisoning and serious anaphylactic reaction. Small amounts of potentially dangerous allergens are added to conventional food dishes abroad creating a hidden trap for the diner and a life threatening hazard to the hypersensitive, even when they scrutinise menus. Travellers should be aware of these health hazards. The hypersensitive should be identified at pre travel consultation and instructed on appropriate travel precautions and immediate treatment.

Anaphylaxis is an extreme and severe generalised, or systemic, hypersensitivity reaction affecting the whole body, often occurring within minutes of exposure to the allergen, although it may occur hours later. Common causes include foods such as peanuts, nuts from trees (e.g. almonds, walnuts, cashews, Brazils), sesame, fish, shellfish, dairy products and eggs. Nonfood causes include wasp, or bee stings, natural latex (rubber), antibiotics, and medications. Extreme exercise can trigger a severe reaction in some people, either on its own, or in combination with other factors such as food or drugs (e.g. aspirin). When no cause

can be found for anaphylaxis, it is termed idiopathic with perhaps 25% of all episodes are so classified. Many of those affected have underlying allergy or asthma conditions.¹

Allergic reactions, including the extreme form anaphylactic shock, occur because the immune system reacts inappropriately in response to the presence of a substance wrongly sensed as a threat. Anaphylactic reaction results from the sudden release of chemical substances, including histamine, from cells in blood and tissues. Release is triggered by reaction between the allergic antibody and the allergen, causing the anaphylactic reaction. This mechanism is so sensitive that minute quantities of allergen can cause a reaction. The released chemicals act on blood vessels to cause swelling in mouth and skin. There is a fall in blood pressure. In asthmatic people, the effect is mainly on the lungs. Route of trigger entry can affect timing of response. Fatal food reactions can cause respiratory arrest in half hour, whereas deaths from intravenous medication can occur within five minutes.² Anaphylaxis often produces signs and symptoms within seconds to minutes of exposure to an allergen. Some reactions may develop later (>30 minutes after exposure). Symptoms can progress rapidly unless promptly treated. A second reaction may occur in 1 to 72 hours (usually within 8 hours) after initial recovery despite no further exposure to the trigger. This is known as a biphasic reaction and it can occur in up to 20% of all anaphylactic reactions

Presenting symptoms

- generalised flushing of the skin
- raised rash anywhere on the body
- a sense of impending doom
- swelling of the throat and mouth
- difficulty in swallowing or speaking
- heart rate alteration
- severe asthma
- abdominal pain, nausea and vomiting
- a sudden feeling of weakness due to hypotension
- collapse or unconsciousness

All these symptoms may not be experienced, but a history of exposure to a known allergen makes anaphylaxis likely, when three criteria are present:

1. The sudden onset and progression of symptoms.
2. Life threatening airway, breathing or circulation problems.
3. Skin and/or mucosal changes.

Assessment

The Resuscitation Council³ recommends an ABCD approach to assessment with consideration of:

- A. Airways
- B. Breathing problems -breathlessness and wheeze
- C. Circulation problems -signs of shock and hypotension, confusion, loss of consciousness.
- D. Disability due to hypoxia and decreased brain perfusion with change in consciousness.
- E. Erythema with diffuse or patchy red skin rash and urticaria

Anaphylaxis is highly likely when any one of the following 3 criteria is fulfilled:

Criterion 1. Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (eg, generalized hives, pruritus or flushing, swollen lips-tongue-uvula). Because the majority of anaphylactic reactions (>80%) include skin symptoms, it was judged that at least 80% of anaphylactic reactions should be identified by criterion 1 – even when the allergic status of the patient and potential cause of the reaction is unknown. However, cutaneous symptoms might be absent in up to 20% of anaphylactic reactions in children with food or insect sting allergy.

Criterion 2 and 3:

AT LEAST TWO OF THE FOLLOWING events that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours). In patients with a known allergic history and possible exposure, criterion 2 should provide ample evidence that an anaphylactic reaction is occurring.

Respiratory compromise (eg, dyspnoea, wheezebronchospasm, stridor, reduced peak expiratory function, hypoxemia).

Reduced blood pressure or associated symptoms of end-organ dysfunction (eg, hypotonia [collapse], syncope, incontinence). persistent gastro-intestinal symptoms eg, cramping abdominal pain, vomiting).

People at high risk

Those who have suffered a bad allergic previous reaction should anticipate a future reaction is likely to be severe. Asthma and allergies are often associated. When foods such as nuts, seeds, shellfish and fish are concerned, even mild symptoms should not be ignored by asthmatics, because future reactions may be more severe.

Allergic triggers

Stinging insects eg, honeybees, fire ants, yellow jackets, yellow hornets, and paper wasps.

Less commonly, biting insects eg, mosquitoes, ticks, and flies.

Medications and Foods.

Cross-Reactivity

Cross-reactivity is a phenomenon that occurs when a food that does not itself contain any allergens is tainted with an allergen during processing or cooking. There is highly allergic cross-reactivity among different types of fish, meaning that people with allergies to one type of fish are likely to have, or to develop, allergies to others. This is because of a protein (parvalbumin) that is present in many fish. For this reason, most people with an allergy to one fish are advised to avoid all fish (including eel and shark). Grills are a notorious source of cross-contamination because food is generally placed directly onto grill grates and moved with one spatula or set of tongs.

Nut Allergens

Allergic reaction to nuts can progress rapidly to anaphylaxis. Peanut allergy is responsible for more fatalities than any other type of allergy. Strictly avoiding nuts, including peanuts and tree nuts such as cashews and walnuts, and food containing nuts is the only way to prevent a reaction. Many products unsuspectedly contain nuts including: Peanuts and Tree nuts. Examples are:

Cold-pressed or processed groundnut (peanut) oil.

Peanut butter and flour.

Hydrolysed plant and vegetable protein.
Almonds. Brazil nuts. Cashews. Chestnuts. Filberts. Hazelnuts. Macadamia nuts.
Pecans. Pine kernels. Pistachios. Walnuts.
Marzipan. Almond paste. Nougat.
Nut butters (such as cashew butter and almond butter) oil, paste (such as almond paste).
Nut extracts (such as almond extract).
Ground nuts.
African, Chinese, Thai and other ethnic dishes.
Biscuits, sweets, pastries, cakes and other baked goods.
Grain breads.
Ice cream.
Frozen desserts.
High-energy bars.
Cereals and granola.
Salad dressing.

Shellfish Allergies

Lobsters, langoustines, crab, squid and mussels are powerful allergens and are often involved in cross reactivity when contact of the shellfish on a preparation slab or near other fish can cause an allergic response.

Fish allergens

Pollock, salmon, cod, tuna, snapper, eel, and tilapia are among the fish that commonly trigger fish allergies. Fish allergies are similar to shellfish allergies in that they are more likely than many food allergies to start during adulthood and less likely than other allergies to be outgrown. Fish allergies are often quite severe. They are linked to an increased risk of severe asthma in adult patients. Fish has been linked with the oral allergy syndrome in which the mouth itches or tingles after eating an allergen and occurs in people with occupational contact with fish.

Parasite Allergens

Anisakis simplex. This fish parasite is considered a major allergen and, like fish allergies, can cause severe allergic reactions including anaphylactic shock. While Anisakis larvae can be killed by freezing or cooking, they can still trigger allergies after being killed.

Foods Commonly Containing Fish

- Caesar salad dressing. Worcestershire sauce.
- Ceviche (fish or shellfish “cooked” in an acidic citrus marinade]. Caviar. Gelatin. Cioppino.
- Nam pla (Thai fish sauce). Bouillabaisse. Fumet (fish stock)

There are recorded instances of inhalation reactions due to aerosolized fish proteins, so people with fish allergies should avoid hibachi-style communal grill restaurants if fish is on the menu. Seafood restaurants and sushi bars are high risks for cross-contamination due to the close proximity of fish and non-fish items. Another source of potential cross-contamination is frying oil. If fish has been fried in oil, people with fish allergies should avoid eating any other food fried in the same oil.

Differential diagnosis

Fainting (vaso-vagal attack) is most likely to be confused with anaphylaxis. Key differences are that in a fainting episode, there is a slow pulse, cool and pale skin, no hives or difficulty breathing. Other conditions, such as heart attacks, blood clots to the lungs, septic shock, and panic attacks may have to be considered.

Treatment

Adrenaline [sometimes named “epinephrine”] is of prime importance and the Resuscitation Council³ advises that it be given to all patients with suspected anaphylactic reaction and life threatening features. Pre-loaded adrenaline injection kits called “Epipen” are available on prescription for those at risk.

Adrenaline acts quickly to constrict blood vessels, relax smooth muscles in lungs, improve breathing, stimulate the heart and stop swelling around the face and lips. The best site for injection is the anterolateral aspect of the middle third of the thigh using a needle long enough to penetrate into the muscle. If there is not a prompt clinical improvement, the dose can be repeated after a five minute interval and prior to hospitalisation. Intramuscular injection of adrenaline can be given through light clothing such as trousers, skirts, or stockings. After 10 to 15 minutes, if symptoms are still significant, another dose of adrenaline can be given. Oxygen therapy if available can be life-saving. Intravenous fluids, steroids and antihistamines may be given but these are often not helpful initially and do not take the place of adrenaline. Because biphasic reactions are unpredictable and may occur at anytime (including while administering immunotherapy; it is important that there be a post therapy observation period.

Prophylaxis

Anti-Allergy injections may be suggested to people with wasp, yellow jacket, hornet, honey bee, or fire ant reactions. This form of treatment gives 98% protection against the first four insect reactions, though somewhat less protection against fire ant reactions. An epipen should be carried by those at high risk and their colleagues and siblings instructed in its use if the person becomes comatose.⁴ Patients at highest risk for anaphylaxis should carry two doses of Epipen.

Skin tests

Skin tests can be performed at least 3 to 4 weeks after an anaphylactic reaction. They may determine the presence of IgE antibodies and identify anaphylactic reactions triggered by food, medications, and stinging insects. In a skin prick/puncture test, a positive result is indicated by a mean wheal diameter of 3 mm or greater. Challenge tests help predict the clinical reactivity to anaphylaxis triggered by food and medication but are time consuming and costly.

Effects of heavy exercise

Heavy exercise can cause anaphylaxis.⁵ Exercise-induced anaphylaxis (EIA) usually occurs with prolonged, strenuous exercise. Conditioned athletes such as marathon runners are the most likely to be affected. The reaction may occur while exercising shortly after eating a meal, after eating specific foods (for example, lettuce, shellfish, or celery) or after taking aspirin. It appears as though food or aspirin ‘loads the gun and exercise pulls the trigger’. Early symptoms are usually flushing and itching, which may progress to other typical symptoms of anaphylaxis if exercise continues. Pre-medication with antihistamines or other

drugs does not consistently prevent EIA. Exercise avoidance is the most effective treatment. An EpiPen is more useful in preventing a recurrent delayed reaction

Avoidance strategies with Fish and shellfish Allergies:

Some types of restaurants are riskier than others because of cross-contamination issues, or because a high percentage of dishes on the menu may include shellfish. These include seafood restaurants and sushi bars (which may store fish and shellfish in very close proximity, or which may use the same knives on both types of seafood), Cajun restaurants, and Chinese restaurants that specialize in seafood. Be wary, too, of sharing tapas with friends, as many traditional tapas include shellfish and sharing dishes could be a major cross-contamination risk. The safest restaurants are strict kosher restaurants and dedicated vegan or vegetarian restaurants, which forbid shellfish. Diners at risk should advise onsite staff about allergies and about cross-contamination concerns

Shellfish in American Cuisine:

In addition to dishes like fried shrimp, surf'n'turf, or steamed mussels that clearly indicate shellfish, several traditional American dishes are made with shellfish. Cioppino, a soup made from seafood and other shellfish. Cajun specialties like gumbo and jambalaya are usually made from shellfish, and seafood muffuletta sandwiches may be found in coastal areas.

Shellfish in Latin American Cuisine:

Shellfish is not as prevalent in Mexican and Central American restaurants as in some other cuisines, but some restaurants do serve enchiladas or tacos with shrimp fillings, or shrimp versions of traditional Snapper Veracruz. Brazilian and Peruvian cookery features more shellfish, especially ceviche (fish or shellfish “cooked” by marinating it in citrus juice). Be wary of any Latin American dish with “mariscos” in the name, as this is the Spanish word for “seafood.”

Shellfish in French and Western European Cuisine:

Shrimp, prawns, lobster, and other shellfish feature prominently in French food and in the cuisine of the Mediterranean. French dishes served “à l’Americaine” comes with a topping of lobster; likewise, “crevettes,” on a French or Continental menu always indicate shrimp. Italian cuisine may feature mussels or shrimp. Greek cuisine, likewise, features a lot of fish but comparatively little shellfish beyond octopus.

Shellfish in Middle Eastern and Indian Cuisine:

Shellfish is not a prominent part of Middle Eastern cooking. However mussels or other steamed shellfish may be on the menu. Many Indian restaurants are vegetarian and therefore safe. Cuisine from Goa, with its strong Portuguese influence, is more likely than others to contain shellfish.

Shellfish in East Asian Cuisine:

Most popular East Asian cuisines – Vietnamese, Thai, Chinese, Japanese, and Malaysian – include shellfish as a major part of their menus, Hong Kong hot pots frequently include shellfish, though vegetarian and meat-based varieties do exist. In addition to asking about shellfish in the dishes themselves, be aware of the possibility of shellfish in condiments, stocks, and other hidden sources. Chinese dried shrimp, Thai kapi and nam prik, and Vietnamese mam tom are among the condiments and sauces that always include shellfish.

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Resources

<http://www.resus.org.uk/pages/guide.htm> .

[http://foodallergies.about.com/od/glossary/g/](http://foodallergies.about.com/od/glossary/g/xcontamination.htm)

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Ian Mackay is a retired GP. with a special interest in allergies and travel.