



# Anaphylaxis

## *The GP perspective*

**BACKGROUND** Anaphylaxis is not uncommon in Australia, representing the most severe form of allergy. It is most likely to be triggered by food with the most common allergen being peanuts. It constitutes a medical emergency that requires a rapid medical response.

**OBJECTIVE** This article aims to provide an overview of anaphylaxis - its prevalence, causes, diagnosis and treatment both acutely and in relation to long term management. It also aims to highlight the importance of having a protocol established for the management of this condition in the emergency situation.

**DISCUSSION** With the increased prevalence of allergy in the community, it is likely that at some stage most general practitioners will have to treat a case of acute anaphylaxis. It is imperative that GPs are prepared for such an event as failure to recognise the condition or to follow a validated protocol can have fatal consequences.

Anaphylaxis is a well recognised emergency in general practice. In a recent South Australian study one in 170 school aged children were reported to have suffered an episode of anaphylaxis.<sup>1</sup> While traditionally most precautions have been taken with injected vaccines and medications, it is now more likely that an episode of anaphylaxis is the result of an allergic reaction to a food or medication that has been ingested.<sup>2</sup>

In the US, where anaphylaxis occurs at an annual rate of 30 per 100 000,<sup>3</sup> food allergy has been found to be the most common cause, with peanuts being the most common allergen.<sup>4</sup>

Each year in the USA, peanut allergy results in 30 000 documented episodes of anaphylaxis and is responsible for approximately 200 deaths.<sup>3</sup> In Australia peanut allergy is also common.<sup>5</sup> There is also evidence to suggest the incidence of peanut allergy is increasing. A UK population based study of three year olds found the prevalence of peanut sensitisation had increased from 1.3% in 1989 to 3.2% in 1995.<sup>6</sup>

Along with peanuts, other common allergens for anaphylaxis include:

- penicillin
- cephalosporin
- sulfurs especially trimethoprim
- intravenous contrast
- aspirin and NSAIDs

- tree nuts, eg. walnuts, cashews and pistachios
- insect stings.<sup>3</sup>

Anaphylaxis can occur at any time, even if there is a long history of previous safe usage. History of previous allergy is not very predictive of anaphylaxis. A recent Australian study showed only one-third of patients presenting to an emergency department with anaphylaxis to a drug, had a previous history of allergy to that drug.<sup>7</sup>

### **Diagnosis of anaphylaxis**

Sometimes the most difficult aspect of treating anaphylaxis is making the diagnosis, and, as such, patients are at greatest risk from their first attack of anaphylaxis.

Anaphylaxis is primarily a clinical diagnosis and can mimic severe asthma or a cardiovascular event. Diagnosis may be helped by rapid serial observation over a matter of minutes, as anaphylaxis is a condition that gets progressively worse.

### **Symptoms of anaphylaxis include:**

- sudden onset of severe bronchospasm often without any other asthma symptoms
- oral and pharyngeal pruritis
- cutaneous flushing, urticaria and angioedema
- sensation of tightening of the airways
- colicky abdominal pain
- nausea and vomiting

**Chris Hogan**



*Chris Hogan, MBBS, DRACOG, FRACGP, is a general practitioner, Sunbury, and Director, Research Unit, RACGP, Victoria.*

**Table 1. Protocol for the treatment of acute anaphylaxis**

**ASSESSMENT**

**Life threatening features**

- stridor due to laryngeal and pharyngeal oedema (tongue, lips and uvula)
- cough and wheeze due to bronchospasm
- hypotension due to systemic vasodilation and hypovolaemia (capillary leak)

**Associated features**

- urticaria and pruritus
- nausea, vomiting, abdominal cramps and diarrhoea

**Management**

- dial 000
- adrenaline is the mainstay of treatment

**Adrenaline**

- 0.01 mL/kg of 1/1000 or 0.1 mL/kg of 1/10 000 subcutaneous or intramuscular for children
- 0.3 mL of 1/1000 subcutaneous or intramuscular

Improvement should be seen within two minutes - repeat if effect incomplete

**Airway/breathing**

- oxygen by mask at 6 L/minute
- intubate if obstruction is severe

**Circulation**

- intravenous access with large bore cannula
- treat hypotension with normal saline 20 mL/kg
- if hypotension continues give further colloid boluses of 10 mL/kg and repeat adrenaline dose

**Supplemental treatment**

- admit all patients with anaphylaxis as deterioration may occur 12 hours postinitial episode
- steroids: methylprednisolone 1 mg/kg intravenous
- antihistamine: promethazine 1.0 mg/kg/dose (maximum 25 mg) orally for symptomatic relief of urticaria
- all patients with anaphylaxis need follow up in general medical outpatients

- progressive respiratory distress, hypotension and dysrhythmias.

**Difficulties in diagnosis**

Anaphylaxis may mimic an asthma attack. However, in anaphylaxis the symptoms progressively worsen, there are systemic effects and there is only partial response to salbutamol.

The early stages of anaphylaxis may be confused with a vasovagal episode or a panic attack with hyperventilation. Vasovagal episodes however, respond promptly to a recumbent pose while the symptoms of anaphylaxis are progressive.

Severe anxiety or a feeling of impending doom are genuine symptoms of anaphylaxis but will not occur in isolation.

Cutaneous symptoms are present in over 90%

of patients with anaphylaxis. However, occasionally the rapid onset of hypotension will mask the appearance of urticaria which may occur only transiently after adrenaline is administered.<sup>7</sup>

It is important to note that if there is any suspicion of anaphylaxis it is worthwhile contacting local services as delays in treatment can be fatal. Also, as adrenaline tends to work quickly - as quickly as Narcan in a narcotic overdose or intravenous dextrose in hypoglycaemia - a therapeutic trial in cases where the diagnosis is in doubt may be appropriate.

**Treatment of acute anaphylaxis**

Anaphylaxis is an emergency that requires a rapid response. All general practices should have a recognised protocol to follow. It is also important that the necessary equipment and medication are readily accessible. Preloaded adrenaline syringes - Minijets and Epipens can be very useful in this situation.

There are many different protocols available for the treatment of acute anaphylaxis and these can vary considerably. However, there is a clear common message - seek help and give adrenaline.

The protocol reproduced in this article (Table 1) was chosen because of its simplicity and proven usefulness.<sup>8</sup>

**The biphasic reaction**

Following apparently successful treatment of an acute episode of anaphylaxis, approximately 20% of people will have a return of severe bronchospasm.<sup>9</sup>

This biphasic reaction is often severe and refractory to treatment, necessitating intubation and ventilation. Secondary pneumothoraces are not unusual from the high ventilation pressures needed.

Due to the risk of this biphasic reaction, all patients who have experienced an episode of acute anaphylaxis should be observed in hospital for at least 12 hours, even if they have made an apparent full recovery.

**Subsequent management**

The mainstays of management following an episode of acute anaphylaxis involve isolating the allergen, subsequent avoidance of that allergen and adrenaline.<sup>4</sup> An allergist's advice is useful as the triggering antigen may not always be obvious.

Education and the development of management strategies for acute episodes are also important.

Patients need to be aware not only of the allergen, but also of cross interactions (particularly in the case of drug allergies) and the possibility of accidental exposure. They need to be able to recognise the symptoms of anaphylaxis early and be able to access treatment immediately. In most cases this means the self administration of adrenaline by means of the prefilled adrenaline syringes.

Patients, and in the case of children, parents and carers should be regularly updated about the use of these devices (see Patient education sheet). The importance of having them close at hand should also be emphasised regularly. Evidence shows that the main factor contributing to a fatal outcome of anaphylaxis is the failure of the patient to carry their emergency kit with adrenaline (eg, EpiPen).<sup>10</sup>

In the case of children, it is important that a written first aid plan is developed and made available to all those involved in the child's care. Such a plan needs to include the child's name and photo, a description of the symptoms of severe allergy, the need for urgent treatment including the calling of an ambulance and the administration of adrenaline (see Patient education sheet).

All patients with a known allergy should be advised to wear a medical warning bracelet such as Medicalert.

## Conclusion

Acute anaphylaxis is not as rare as we would wish and all GPs should be prepared to treat it. The keys to management include recognising the condition and having a protocol to follow.

Along with difficulties in diagnosis, appropriate treatment is sometimes delayed by an apparent reluctance by some physicians to use adrenaline. It is worthwhile noting that intramuscular adrenaline is safer than penicillin. And despite variations among protocols from hospitals and specialist bodies, it is universally accepted that the treatment of anaphylaxis must include the seeking of assistance and the administration of adrenaline as soon as possible.

## SUMMARY OF IMPORTANT POINTS

- Anaphylaxis is a medical emergency that requires a rapid response.
- Food allergy is the commonest cause of anaphylaxis and peanuts are the most common allergen.
- Common symptoms of anaphylaxis are bronchospasm, hypotension and urticaria.
- Anaphylaxis is a rapidly progressive condition which helps distinguish it from other similar conditions.
- All general practices need to have a protocol for treating anaphylaxis.
- Adrenaline is the treatment of choice for anaphylaxis.
- Patients with recurrent anaphylaxis should carry adrenaline for self administration in an emergency.
- All carers of children with recurrent anaphylaxis should be informed of the risks, the symptoms and the emergency treatment of anaphylaxis.

## References

1. Boros C A, Kay D, Gold M S. Parent reported allergy and anaphylaxis in 4173 South Australian Children. *J Paediatr Child Health* 2000; 36:36-40.
2. Shimamoto S R, Bock S A. Update on the clinical features of food induced anaphylaxis. *Curr Opin Allergy Clin Immunol* 2002; 2(3):211-216.
3. Anaphylaxis. *Circulation* 2000; (suppl 1):241-243.
4. Sampson H. Peanut allergy. *N Engl J Med* 2002; 346(17):1294-1299.
5. Douglas R G, O'Hehir R E. Peanut allergy. Education, avoidance and adrenaline are the mainstays of management. *Med J Aust* 1997; 166:63-64.
6. Grundy J. Peanut allergy in 3 year old children. A population based study. *J Allergy Clin Immunol* 2001; 107(Suppl):S231 abstract.
7. Brown A F, McKinnon D, Chu K. Emergency department anaphylaxis: a review of 142 patients in a single year. *J Allergy Clin Immunol* 2001; 188 (5):861-866.
8. <http://www.rch.unimelb.edu.au/clinicalguide/media/allergycareplan>
9. Stark B J, Sullivan T J. Biphasic and protracted anaphylaxis. *J Allergy Clin Immunol* 1986; 78:76-83.
10. Wuthrich B, Ballmer-Weber B K. Food induced anaphylaxis. *Allergy* 2001; 56(Suppl)67:102-104.

AFP

## REPRINT REQUESTS

Chris Hogan  
94 O'Shanassy Street  
Sunbury, Vic 3429  
Email: [chris.hogan@racgp.org.au](mailto:chris.hogan@racgp.org.au)