Anaphylaxis

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| emergency,immunology,intensive care,onthepods

Anaphylaxis is a severe, potentially life-threatening hypersensitivity reaction that occurs due to systemic mast cell mediator release. It is a common presentation and requiring prompt recognition and urgent management.

James chats to Associate Professor Roger Garsia about anaphylaxis in this podcast.

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About Roger

Roger Garsia is a Co athologist at Royal Prince Alfred Hospit lasian College of Physicians and Roya ogy. Roger is the Head of the Central Former President of Australasian Society

With Associate Profes fred Hospital, Sydney, Australia.

Introduction

Anaphylaxis is a seve ction which occurs due to systemic mast cell mediator release. It is a common presentation to the Emergency Department and on the wards, requiring prompt recognition and urgent management. Appropriate monitoring, patient education and follow up is also critical to manage complications and prevent further episodes.

Case

A 4-year-old girl presents to the Emergency Department with urticaria, angioedema, swollen tongue and widespread wheeze. She is in obvious respiratory distress. She has been brought in by a family friend who is unsure whether she has any allergies.

1. What signs and symptoms indicate anaphylaxis versus a less severe allergic reaction?

- Bronchospasm, urticaria and angioedema are signs of systemic antihistamine release suggesting anaphylaxis
- Important to also identify features of the most severe sign, shock – this can be challenging in children

2. How does angioedema relate to anaphylaxis?

- Angioedema is common – not all cases will be associated with cardiovascular decompensation
- Causes include abnormalities in the complement system, granulomatous conditions, and local manifestations of an allergic reaction
- Important to consider risk of airway obstruction and possibility of a systemic reaction

3. W d?

- This is a medica ced immediately
- Most important
  - Dosed 1 ove this (i.e. 0.3mL o
  - Peak lev idence of respons
  - May nee or repeated dosing r
- Other treatment
  - Lie the patient flat if possible (may need to sit up if airway or breathing is compromised)
  - IV fluid resuscitation
  - Nebulised salbutamol may help bronchospasm
  - Glucagon may be helpful in adults on beta blockers
  - Steroids are slower acting and not critical to immediate management but have a role in preventing rebound symptoms due to biphasic anaphylaxis
- Nil evidence that IV antihistamines improves outcomes in anaphylaxis – can worsen hypotension and obscure assessment

4. The patient improves post adrenaline. What monitoring should take place?

- Adrenaline side effects include tachycardia and hypertension – can be particularly problematic in the elderly
- Despite resuscitation the patient may remain unstable and require monitoring for consequences of shock e.g. myocardial ischaemia
- There is also the possibility of a secondary anaphylaxis phase due to ongoing stimulation of mast cells and basophils – can consider corticosteroids for 48 hours (e.g. prednisone 50mg or hydrocortisone 100mg)
- Duration and location of monitoring depends on the patient and the severity of reaction
    - If anaphylaxis has been treated and resolved quickly and the patient is otherwis harge (e.g. in ED sh
    - If compl idities or it is after ho a period of observa)
    - Patients

5. W

- It is extremely in r a patient has had an episode d determine precipitant in a
- It is important t inform the patient if allerge

6. What medications can precipitate anaphylaxis?

- Broad range of precipitants including commonly used drugs e.g. paracetamol, aspirin, NSAIDs, antibiotics
- Anaesthetic reactions are also common and it can be difficult to determine the exact precipitant due to multiple medications being given simultaneously
- Many patients report antibiotic allergies
    - Always better to avoid giving these or related medications if possible
    - The majority of people with 'penicillin allergies' are able to tolerate penicillins on skin testing

7. How can we avoid anaphylaxis in the hospital?

- It is important to document reactions accurately and in detail (i.e. medication, type and severity of reaction). This involves taking a detailed history including how long ago the reaction occurred, what symptoms the patient developed, the need for medical treatment and whether they have tolerated similar medications; collateral history from family and the GP may also be of benefit.
- Medical records should be updated, including delisting allergens which patients have been shown to tolerate.
- Important to be aware that anaphylaxis can occur anywhere in the hospital and be prepared.

8. Ar ng anaphylaxis?

- Anaphylaxis is a theless, some bloods may be h agnosis of anaphylaxis.
- Mast cell tryptas
    - Can be u lear e.g. during a reasons for hypoten
    - Not alwa naphylaxis.
    - A high b sis, a rare disorder
- C3 and C4 levels demonstrate C1 esterase deficie

9. Should the patient go home with an Epipen? What education should be given?

- If the patient has had anaphylaxis and the trigger can not be avoided or there is a high risk of recurrence, you should leave the patient with adrenaline device and appropriate follow up.
- Several adrenaline devices available including Epipen and adrenaline auto-injectors – these use different techniques and it is crucial to train patients and carers in their proper use.
    - Epipen Jr (150microg) recommended for children between 10 and 20kg.
    - Epipen (300microg) recommended for children and adults >20kg.

- To access subsidised adrenaline devices via the PBS, this needs to initially be prescribed by or in collaboration with an immunologist, respiratory physician or paediatrician.
- The patient should also be given an Anaphylaxis Action Plan – this can be found on the ASCIA website.

10. How might isolated angioedema be managed as opposed to anaphylaxis?

- Isolated angioedema is often bradykinin mediated, rather than histamine-mediated, and consequently may not respond to the same treatment as angioedema due to an allergic reaction.
- If there is an isol… patient should be monitored ca… …re systemic involvement or a…
- C1 esterase defi…
    - Observe… …e product if more se…
- ACE inhibitor an…
    - Bradyki… …ykinin inhibitor… …nologist on call as n…

Take…

- A patient's first … …t allergic reaction – we ca… …g the patient about mild reactions in the past.
- It is important to consider what the patient was doing at the time of anaphylaxis – some forms of anaphylaxis only occur in the setting of exercise.
- Do not be afraid of using adrenaline, but don't use it as a knee jerk response – there are risks associated with adrenaline (especially in the elderly) and its use is not always appropriate.

References

- Australian Society of Clinical Immunology and Allergy. Acute management of anaphylaxis guidelines. 2017. (Available at: https://www.allergy.org.au/health-

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