5 facts about Anaphylaxis you were taught that might be wrong

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Importance

* Resuscitative emergency
  * Ambulance / Emergency Dept. problem
    * 0.3% Ambulance purple or red calls / 0.5% ED presentations
* Confusion around diagnosis / definition
  * Now a consensus definition
* Persistent under-treatment
  * Reluctance to give adrenaline
  * But……. Deaths are rare despite under-treatment

Multidisciplinary Consensus Meeting Definitions of Anaphylaxis (NIH, Bethesda, Maryland, July 2005)

“Anaphylaxis is a severe (allergic)* reaction that is rapid in onset, and may cause death”

* ”allergic” in a broad sense- not necessarily IgE or even immune mediated

TABLE I. Clinical criteria for diagnosing anaphylaxis

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

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)
   AND AT LEAST ONE OF THE FOLLOWING
   a. Respiratory compromise (eg, dyspnea, wheeze-bronchospasm, stridor, reduced PEF, hypoxemia)
   b. Reduced BP or associated symptoms of end-organ dysfunction (eg, hypotonia [collapse], syncope, incontinence)
2. Two or more of the following that occur rapidly after exposure *to a likely allergen for that patient* (minutes to several hours):
   a. Involvement of the skin-mucosal tissue (eg, generalized hives, itch-flush, swollen lips-tongue-uvula)
   b. Respiratory compromise (eg, dyspnea, wheeze-bronchospasm, stridor, reduced PEF, hypoxemia)
   c. Reduced BP or associated symptoms (eg, hypotonia [collapse], syncope, incontinence)
   d. Persistent gastrointestinal symptoms (eg, crampy abdominal pain, vomiting)
3. Reduced BP after exposure to *known allergen for that patient* (minutes to several hours):
   a. Infants and children: low systolic BP (age specific) or greater than 30% decrease in systolic BP*
   b. Adults: systolic BP of less than 90 mm Hg or greater than 30% decrease from that person's baseline

A Rash or Not

* Life threatening anaphylaxis
  * 10-20 % no (apparent) rash or only very transient rash

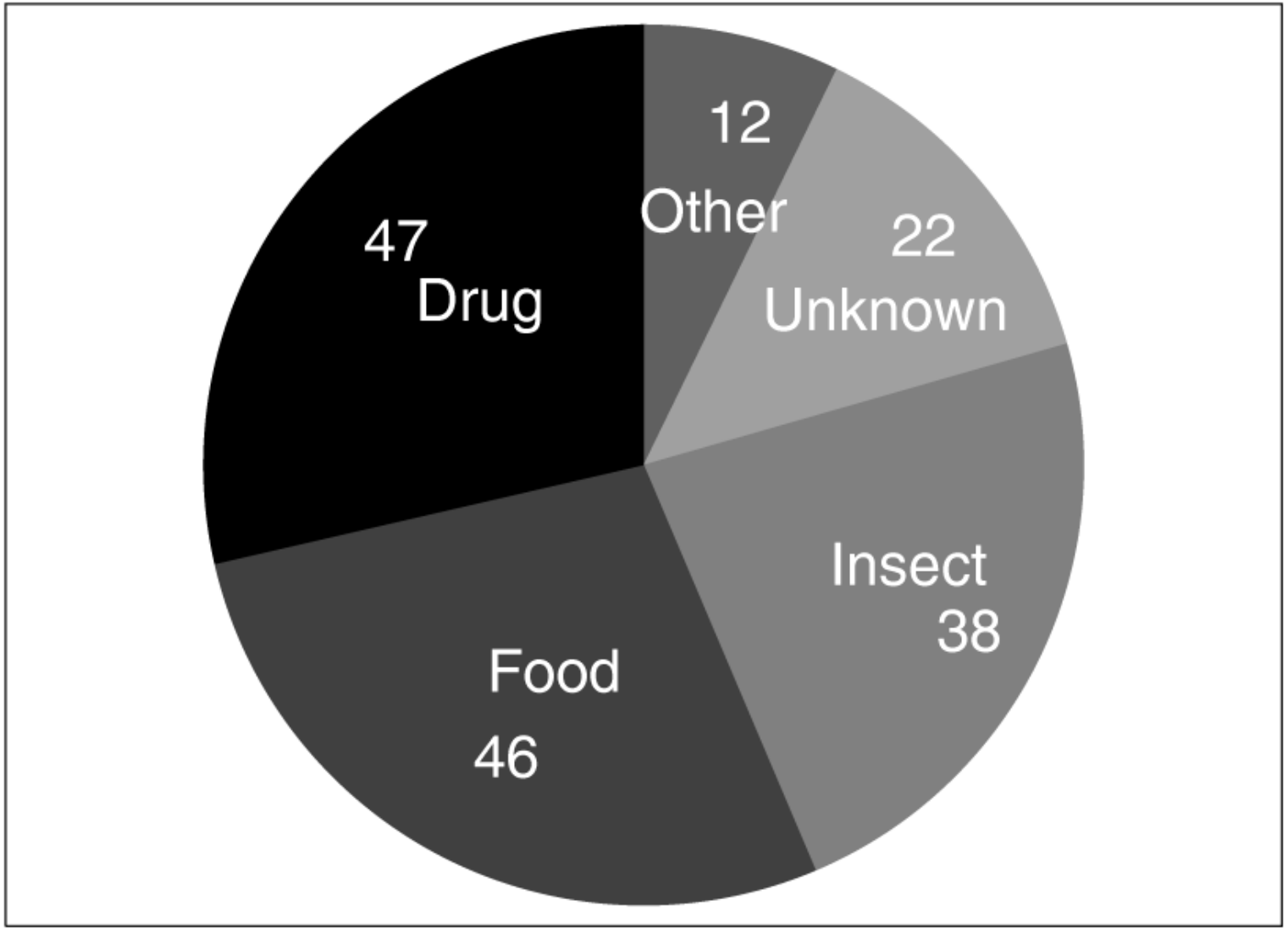
Hypotension in isolation

* Consensus definition makes allowance for hypotension in isolation BUT only if history of previous reaction
  * What if it is the first reaction?
  * Does it make it any less Anaphylaxis?

Hypoxia in isolation

* Case:
  * 26 year old woman.
  * Mild well controlled asthma. Last episode 10 years ago.
  * No regular medications
  * Sudden severe SOB / wheeze / Peri-arrest

  * Asthma or Anaphylaxis?


12
Other
22
Unknown
47
Drug
Insect
38
Food
46

5 Facts?

1. Histamine release causes the main features of Anaphylaxis

Histamine release causes the features of anaphylaxis

* Traditional teaching is that MAST cell degranulation releases histamine and this causes the classic anaphylaxis presentation.

* Much more complicated than that:
  * Multiple mediators involved:
    * Histamine
    * PAF
    * TNF receptor 1
    * MCT
    * Interleiukins – IL 2 / 6 / 10

* Different patterns of mediators with different presentations and severity of disease
  * Hard to measure
  * Histamine peaks early / IL peak later

  * Hypotensive
    * IL 10 / 6 / TNF-1 / MCT / Histamine (reducing amounts)
  * Respiratory
    * Less clear – all mediators in similar proportions.
    * Hard to measure – likely due to peak concentrations in respiratory mucosa

2. Anaphylaxis is distributive shock

Anaphylaxis is just distributive shock

* Textbook classification of shock in anaphylaxis is a type of distributive shock – classic exam question
* Not as clear cut as that….
* A different type may predominant in any given individual:
  * Distributive shock – vasodilation
  * Hypovolaemic shock – 3rd space fluid loss
  * Cardiogenic shock – direct intrinsic myocardial depressant effect
  * Obstructive shock – vasospasm of the pulmonary vasculature

3. “Let the patient adopt the position of most comfort”

“Let the patient adopt the position of most comfort”

* Classic management advice for most conditions with respiratory elements to their presentation
* Sitting position / change to more upright position is a risk factor / precipitant for sudden death in anaphylaxis
  * Recurrent finding in several large mortality studies.(Pumphrey)
* Simple management principle of lying flat if tolerated and not rapidly changing position should be advocated.

4. Treatment is adrenaline, fluids, anti-histamines and corticosteroids

Treatment is adrenaline, fluids, anti-histamines and corticosteroids

* No evidence for routine use of steroids
  * Does not reduce biphasic response or speed of recovery
  * Translation directly from Asthma

* No evidence for routine use of anti-histamines
  * Animal models = consistent increase in mortality
  * Parental antihistamines may cause hypotension
  * Has a role for urticarial itch post-resuscitation

* Adrenaline is life saving – but we are not sure who in.
  * Some people will get better without : ? Who
  * Some people will die without: ? Who
* IM adrenaline if your hypotensive probably doesn't help much
  * Most require repeated IM doses or IV adrenaline
  * No evidence SC works for anybody

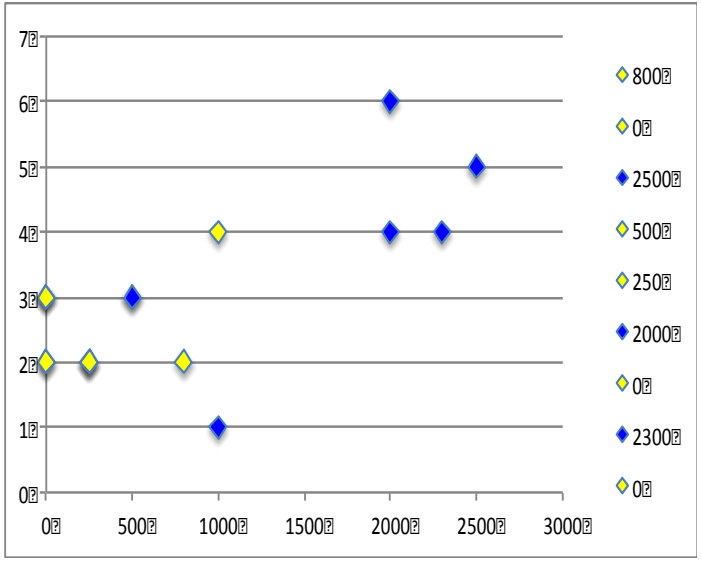
* Fluids for hypotension
  * Anaesthetic literature suggests that fluids alone often sufficient
  * Consistently under dosed from volume perspective.

5. The Universal ACLS Cardiac Arrest algorithm covers Anaphylaxis

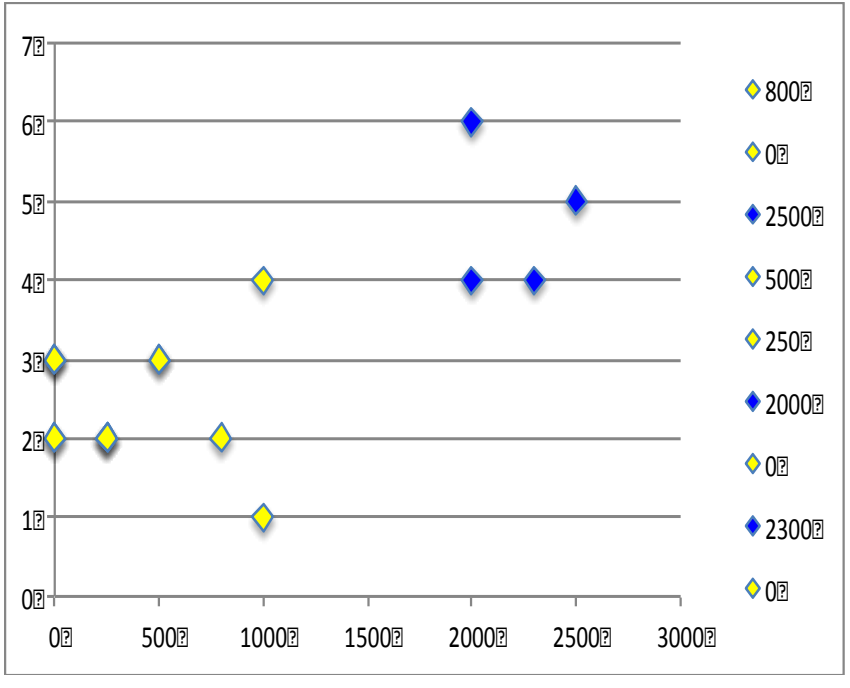
The Universal ALS Cardiac Arrest algorithm covers Anaphylaxis

* More fluid + More adrenaline = better outcome
* Small amounts of adrenaline + small volumes of fluid = worse outcomes
* Small study / strong suggestion of effect
  * Problem is Cardiac arrest from Anaphylaxis is rare and hard to study

* Survival to ROSC
  * Count 19 dead / 10 ROSC



* Survival neurologically intact
  * More pronounced
  * Count: 22 dead / 7 alive



Questions ?

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