

DRUGS USED IN ANAPHYLAXIS ANAPHYLAXIS

N.B.

ركز على اللون الأحمر الغامق مهم جدا وكرره كم مرة الدكتور
والأزرق للتوضيح والشرح



بالتوفيق ^_^

SHOCK

Generalized circulatory derangement causing multiple organ HYPOPERFUSION [Inadequate oxygen delivery to meet metabolic demands] & strong sympathetic activation

•Hypoperfusion will decrease oxygen then it will cause acidosis result in more damage to the organs.

•بمعنى آخر: اذا صار مثلاً (Hypoperfusion) مثلاً في القلب او الكلية يحدث عطل في العضو.

ANAPHYLACTIC SHOCK

Is a sudden, severe allergic reaction affecting the whole body

Or A life-threatening allergic reaction that causes shock (hypoperfusion انخفاض تدفق الدم) and airway swelling

The severe allergic symptoms including:

- Rash
- Mucosal swelling
- Difficulty breathing
- Reduced blood pressure

Hinshaw and Cox Classification of Shock:

- # **Hypovolemic** بسبب نقص حجم الدم
Haemorrhage / fluid loss (plasma, ECF)
- # **Cardiogenic** بسبب اعتلال القلب
Inability to contract & pump → myocardial infarction
- # **Obstructive** بسبب انسداد أو عائق
Extracardiac obstruction → Pul. Embolism انسداد الشريان الرئوي بتجلط الدم,
cardiac tamponade
- # **Distributive** >> very very important
- # ↓ PR → septic shock, neurogenic, anaphylactic shock

N.B.

septic shock: like a person have an infection the same bacteria will cause vasodilatation.

ANAPHYLACTIC SHOCK THERAPY PROTOCOL

ركز على الجدول !!

1ST LINE	2ND LINE	ADJUVANT TO 2 ND LINE
Adrenaline or epinephrine	Chlorphenamine : antihistamine	Bronchodilators
	Hydrocortisone : anti-inflammatory	Glucagon
		H ₂ Blockers

N.B. always given injection.

ANAPHYLACTIC SHOCK THERAPY PROTOCOL

أي مساعدة للسكند لاين

ADJUVANT TO 2ND LINE

Glucagon

For patients taking β -blockers & with refractory hypotension

- ✚ To support the respiratory & circulatory deficits
- ✚ To halt the existing hyper-reaction
- ✚ To prevent further hyper-reaction of immune system

Objective of Therapy

Biphasic phenomenon

2nd release of mediators without re-exposure to antigen (in up to 20%)
Clinically evident 3-4h after the initial manifestations clear

N.B.

شرح: هي إعادة إفراز الـ mediators (بعد أخذ الدواء) بدون التعرض للأنتي جين

ADRENALINE

A **Sympathomimetic**.

1ST LINE

Mechanism

A nonselective AD agonist [α_1 , α_2 , β_1 , β_2]

Actions

As an α -AD agonist →

+ ↓ **vasodilation**

+ ↓ **edema** → angioedema in nasopharynx & larynx

As a β -AD agonist →

+ **Dilates bronchial airways** + ↓ histamine & leukotriene release from mast cells → β_2 effect

+ ↑ **force of myocardial contraction** → β_1 effect



PHYSIOLOGICAL ANTAGONIST

Attenuates the severity of IgE-mediated allergic reactions.

ADRs

Dysrhythmias عدم انتظام نبضات القلب

Indication

DRUG OF CHOICE

ADRENALINE

1ST LINE

Administration

Best is (**IM = intra-muscler**) route in anaphylaxis. **Why ?**

- + Easily accessible
- + Greater margin of safety ➔ no dysrrhythmias
- + No need to wait for IV
- + Repeat every 5-10 min as needed

Patients **observed** for 4-6 hours. **Why ?**

Fear of biphasic anaphylaxis*

ADRENALINE

N.B.

If hypotension persist despite NE → start dopamine. >> very important

not noradrenalin !! >> FOR TWO REASON

1- no benefit of it on bronchiole (no β_2 agonist)

2- vasoconstriction decrease blood diffusion in the kidney which cause renal failure

N.B.

Patients taking β -blockers may give rise to:

- + Refractory (no response to Epi)
- + Rebound hypertension → [unopposed α effect]

لأنك قفلت البيتا (epinephrine) يروح لـ (α) فيسبب severe vasoconstriction واحتمال
يعطي hypertension

CORTICOSTEROIDS

2ND LINE

It can not be used alone ➔ not life saving
Given slowly I.V or I.M .

Effects (advantage) :

- Reverse hypotension & bronchoconstriction.
- ↓ release of inflammatory mediators. >> **important**
- Also decrease mucosal swelling and skin reaction.

MOA:

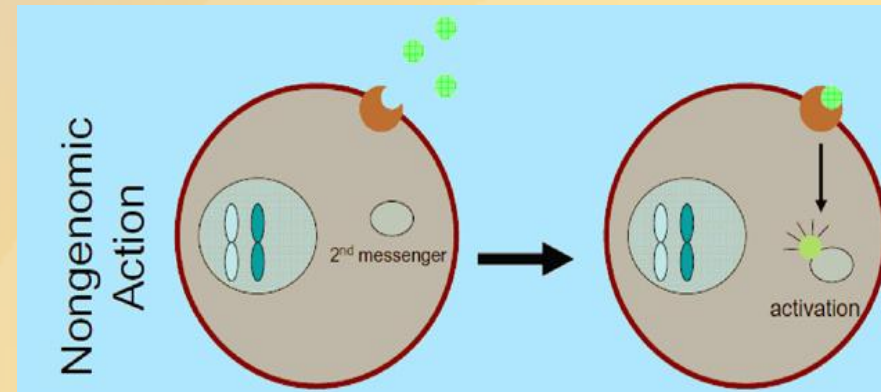
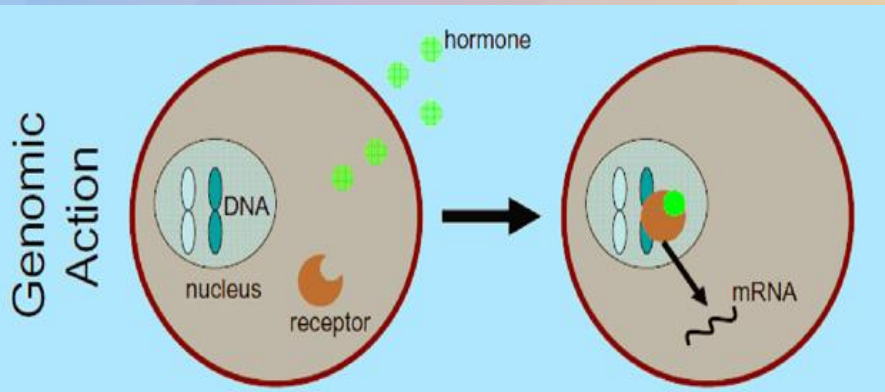
Genomic action: (RNA synthesis) appears its effect in **hours or days** (long acting)
Treat asthma but not anaphylactic shock

وبالتالي لابد من وجود طريقة لظهور التأثير في زمن اقل وهي ::

Non Genomic action : appears its effect within **second or minutes**

MOA of Non Genomic:

تشتغل على cell wall and inhibit the second messenger وبالتالي يعطينا التأثير بسرعة



N.B.

May help to limit biphasic reactions ➔ ↓ allergic mediators

H₁ BLOCKERS

2ND LINE

It **can not** be used alone ➔ not life saving

Given slowly **I.V** or **I.M** .

Though mast cells have already de-granulated, yet these drugs can still help to counter act histamine-mediated **vasodilation & bronchoconstriction**.

May help to limit biphasic reactions by reducing histamine release >> important

H₂ BLOCKERS

Block the effects of released histamine at H₂ receptors thus i

Ramifying the **heart** & some BV

Responsible for glandular hypersecretion. >> important

They are given in adjuvance to H₁ blockers

H₂ blocker

Ranitidine IV / **No** cimetidine in elderly, renal/hepatic failure, or if on β -blockers

لأنه يؤدي إلى

أو إذا كان يستخدم

BRONCHODIALATORS

We use them here as I.V

Inhalational

✱ **Salbutamol** → β_2 -AD agonist → short acting, rapid relief onset relax bronchial smooth muscle and may decrease mediator release from mast cells and basophils.

It may also inhibit airway microvascular leakage.

✱ **Ipratropium** → Anticholinergic → longer duration of action → ↓ secretion
Less rapid in action

Parental

Aminophylline IV → may be useful in the treatment of anaphylaxis when inhaled broncho-dilators are not effective & bronchospasm is persistent (as we mention in Asthma lecture).

Given in hospital setting as levels of drug should be **Therapeutically Monitored** → has narrow therapeutic index

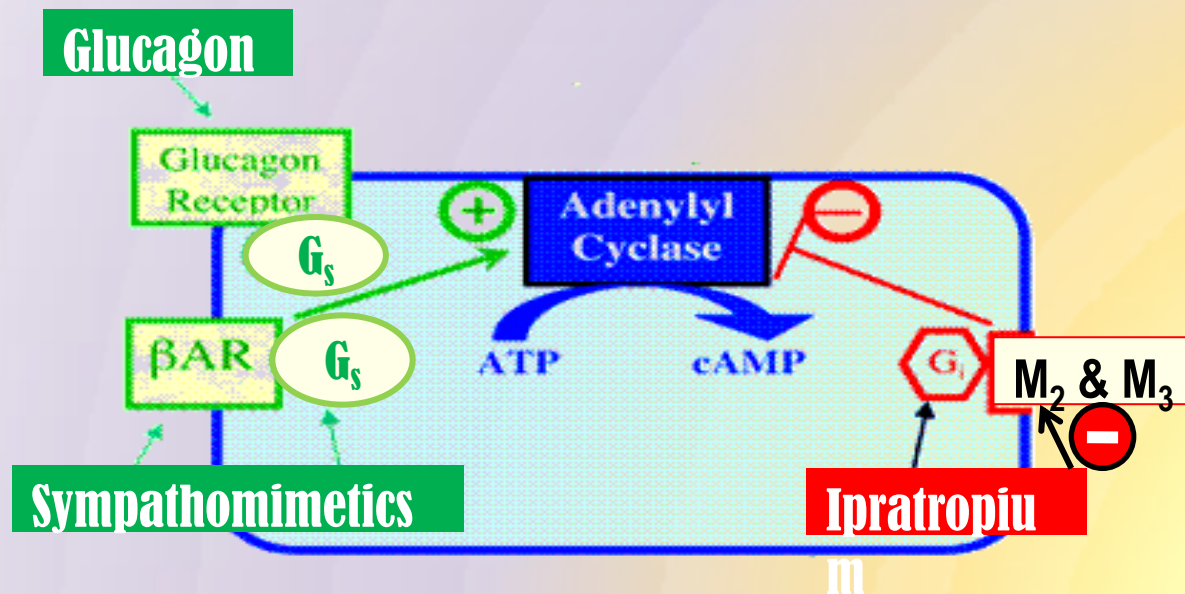
Drug of choice for severe anaphylaxis in patients taking β -blockers
 (له مستقبلات خاصة ولا يعتمد على Sympathetic، وهو عكس الانسولين)

Glucagon has both positive inotropic & chronotropic effects on heart

→ **↑ cardiac cyclic AMP** → an effect entirely **independent of AR**

That is why effective in spite of beta-adrenergic blockade.

Efficacy of acting on bronchi < < heart → no evident bronchodilation



An illustration depicting an allergic reaction. A large, purple, spiky cell (likely a mast cell) is shown with a dark blue nucleus. Numerous small, Y-shaped molecules, representing allergens, are attached to its surface and floating around it. Below the cell, a bee is shown on a yellow flower, with some of the Y-shaped molecules appearing to be interacting with it. The background is a gradient of light blue and yellow.

DRUGS USED IN ANAPHYLAXIS

GOOD LUCK