

تفريغ فارما ١

Cholinergic Antagonists

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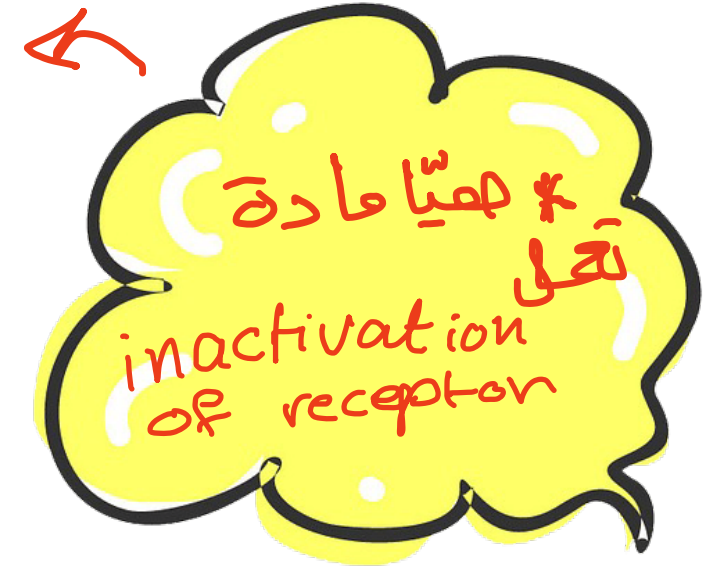
إعداد الصيدلاني / ة:



Cholinergic Antagonists

له اسماء ثالثة بالاسم :

- Also called :
- ✓ Cholinergic Blocker
- ✓ Parasympatholytics
- ✓ Anticholinergic drugs



هذه الأدوية ال effect تبعها بالجسم
يكون عكس ال parasympathetic

➤ Bind to cholinceptors, but they
do not trigger the usual receptor-mediated
intracellular effects

➤ Fall into : ← ادوية ال cholinergic antagonist موجودة في :

1. Muscarinic Antagonists
2. Nicotinic Antagonist (*clinically irrelevant*)
3. Neuromuscular - Blocking Agents (*Skeletal muscle relaxants*) → nicotinic receptor

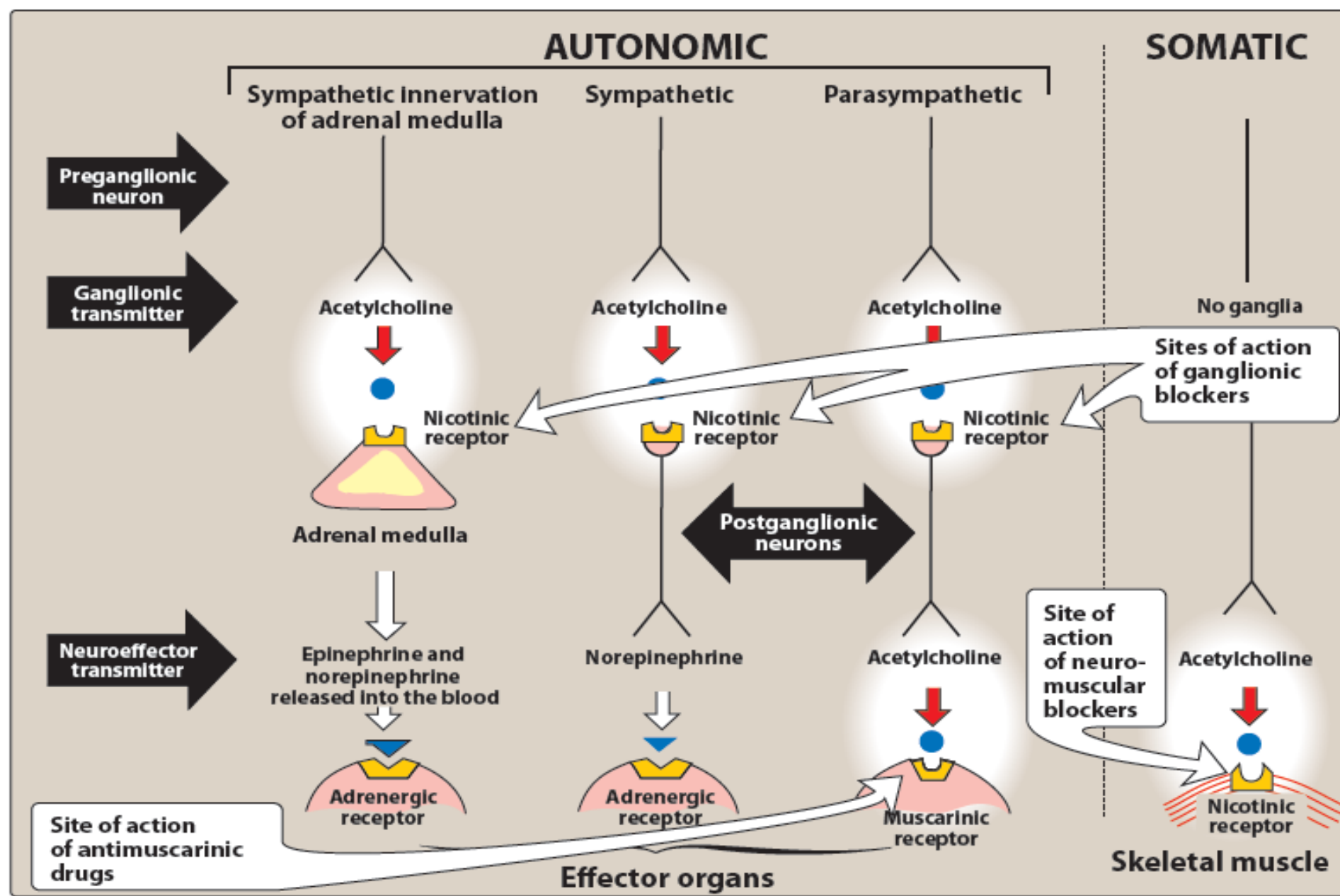


Figure 5.2
Sites of actions of cholinergic antagonists.

ANTIMUSCARINIC AGENTS

→ Block of Muscarinic receptor

هو دواء Lipophilic
يدخل إلى CNS بالمادة
يكون له side effect
كثير

❖ Atropine

- ✓ Tertiary amine Belladonna Alkaloid
- ✓ Competitive Antagonist to Ach on the muscarinic receptor
- ✓ Acts both centrally and peripherally effect
- ✓ Its general actions last about 4 hours
- ✓ Topical eye application renders it effective for days
- ✓ Mostly effective in bronchial tissues → الربو broncodilation يجعل

Medriases يجعل ←

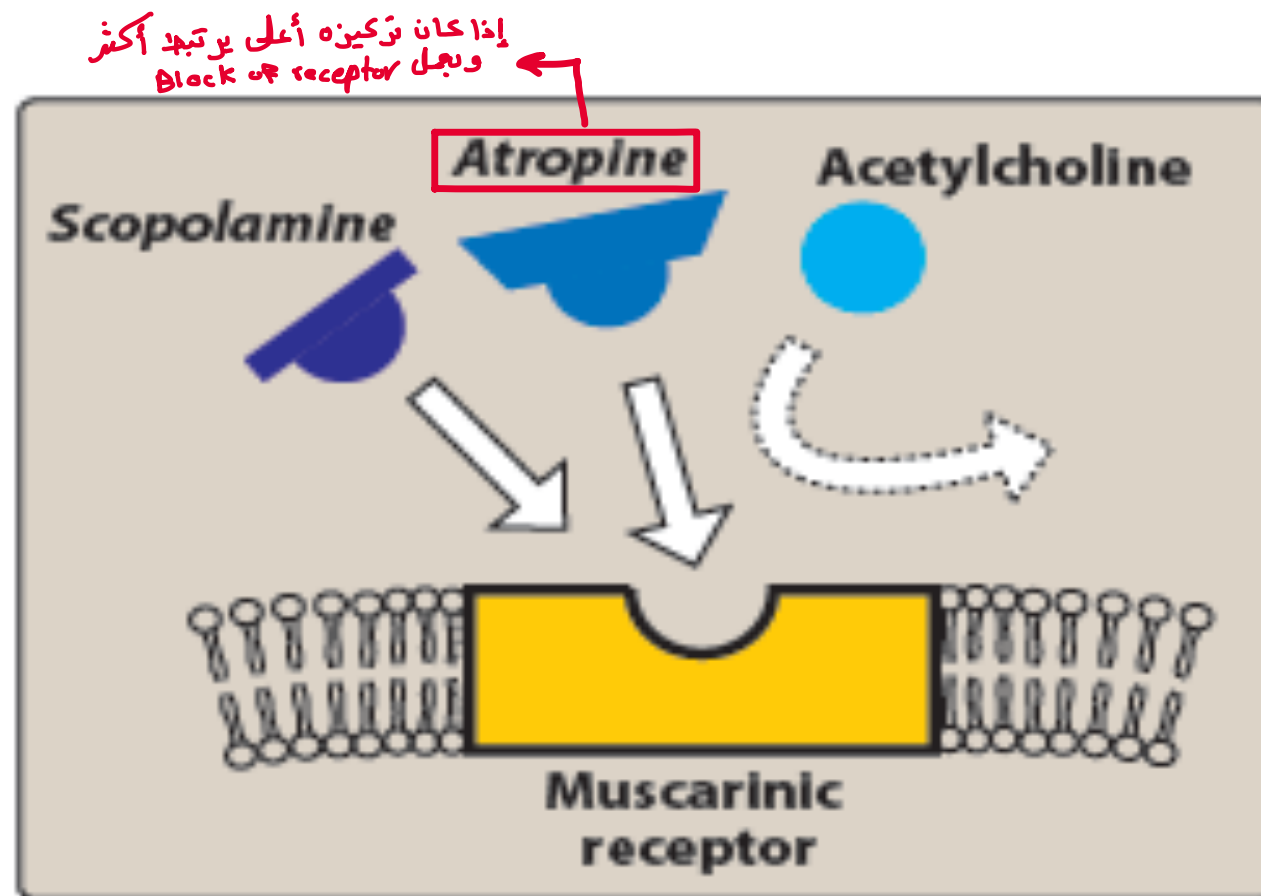


Figure 5.3

Competition of *atropine* and *scopolamine* with *acetylcholine* for the muscarinic receptor.

يتنافس مع الـ Acetylcholine على receptor

Atropine Actions

- persistent mydriasis

- caution in glaucoma → بترديد الحالة للناس الحاصبين

The most potent antispasmodic → مضاد قوي للتشنجات رجم
يعمل الحركة للدماغ

urinary
retention ← يعمل

- Decrease bladder contraction

- Inhibit secretion of saliva and sweat

يعتمد التأثير على
المجرعة المعطاة

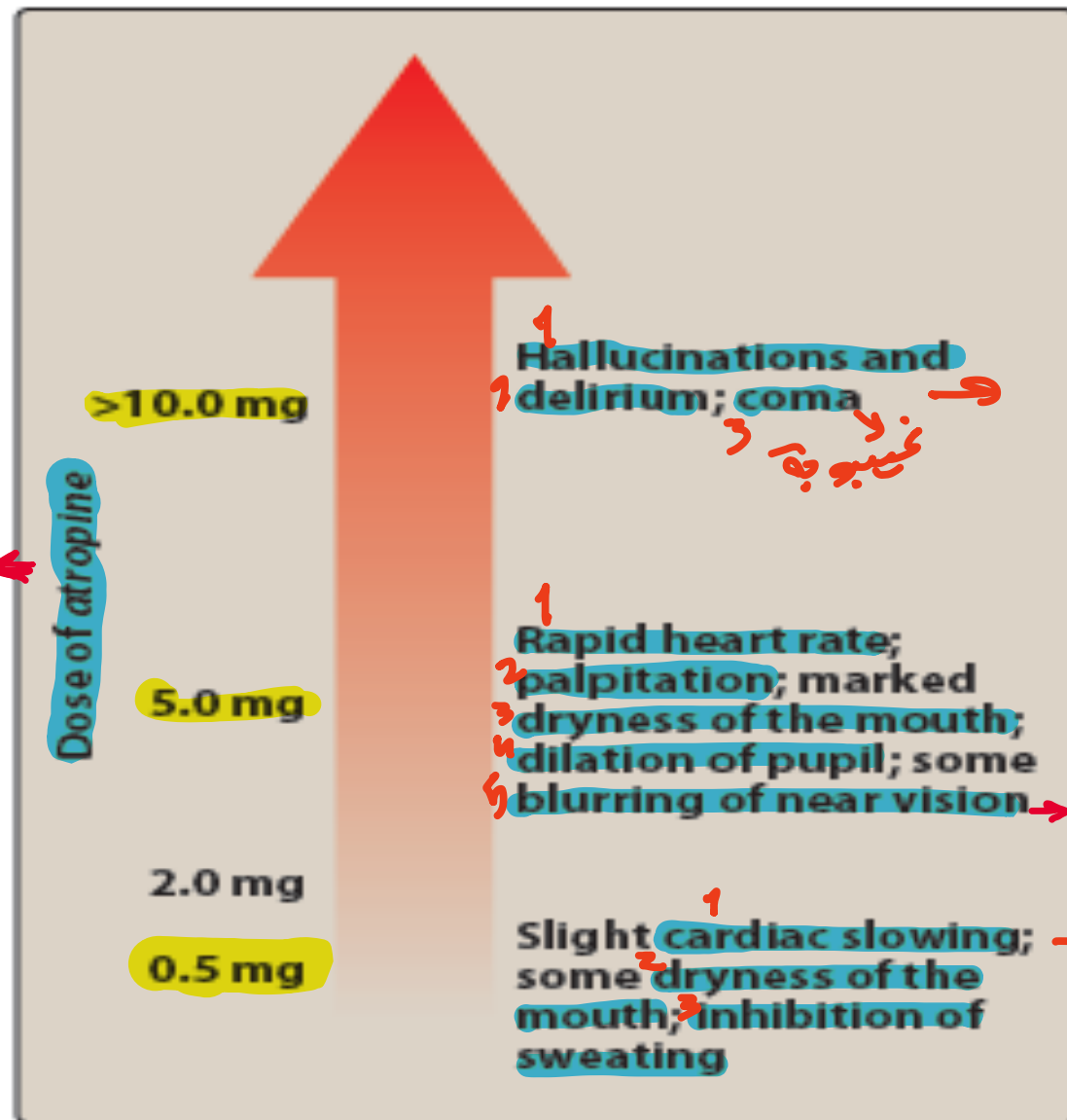


Figure 5.4

Dose-dependent effects of *atropine*.

Atropine Actions →

تأثيراته

- Cardiovascular :

- At low doses : Bradycardia → بطء في نبض القلب

- At higher doses: Tachycardia → زيادة / عدم انتظام في النبض

عاباً لا يؤثر
blood
pressure

- Arterial blood pressure is unaffected

- Atropine is the Antidot for cholinergic agonist → في حالة زيادة / زيادة الجرعة دواء تتسم

- treatment of overdoses of cholinesterase inhibitor as insecticides

- some types of mushroom poisoning

لأنه يمكن استخدامه كعقار ضد سموم الفطر

Adverse effects

آثار الضارة

❖ Dry mouth

❖ Blurred vision → عدم وضوح الرؤية

❖ Urinary retention

❖ Constipation → إمساك

❖ CNS related: restlessness, hallucinations,,

هلوسة

❖ exacerbate glaucoma

يزيد حالة
الضمور البقعي

❖ increase body temperature

↓
تزيد لانها تقلل من ال Sweat

عدهم

Scopolamine

اُحد اُنواع الـ anti muscarinic agent

- ✓ another tertiary amine plant alkaloid
- ✓ scopolamine has greater action on the CNS
- ✓ Scopolamine is one of the most effective anti-motion sickness drugs available
- ✓ In contrast to atropine, scopolamine produces sedation. → يسبب مغاس

دواء البحر
او الضيق
عند السفر

- يكون شكله patches ويصل ك dose معينة
ويصح استخدامه مع motion-sickness
ك precaution

✓ it is much more effective prophylactically than for treating motion sickness once it occurs.

✓ administered as patches

له لصقات

يُعطى الدواء عند
الشخص ما بالشخص الدواء لازم
استعمله قبل ما يمرض

Ipratropium and tiotropium

له علاج بلوغ

مرق و حبة

❑ Quaternary derivatives of *atropine*

❑ Inhaled products → بخاخات

❑ Approved as bronchodilators for maintenance treatment of

• COPD → الـسداد الرئوي

• Chronic bronchitis → السعال بالسحاب هوا مزمن

• Emphysema

تلف انتفاخ الرئة

➤ *Tiotropium is administered once daily, a major advantage over ipratropium, which requires dosing up to four times daily.*

Muscarinic blockers

Trihexyphenidyl
Benztropine

- Treatment of Parkinson disease

Darifenacin
Fesoterodine
Oxybutynin
Solifenacin
Tolterodine
Trospium

- Treatment of overactive urinary bladder

Cyclopentolate
Tropicamide
*Atropine**

- In ophthalmology, to produce mydriasis and cycloplegia prior to refraction

*Atropine**

- To treat spastic disorders of the GI and lower urinary tract
- To treat organophosphate poisoning
- To suppress respiratory secretions prior to surgery

Scopolamine

- In obstetrics, with *morphine* to produce amnesia and sedation
- To prevent motion sickness

Ipratropium

- Treatment of COPD

Ganglionic blockers

Nicotine

- None

مطلوب
لکھ

nicotinic
receptor

GANGLIONIC BLOCKERS

→ مسكن كثير الاستدخدامها حالياً
يعني فائدة لها أدوية

- Nicotine :

هو الوحدة التي يتنافس ACh
على ال nicotinic receptors الموجوده في Ganglia

- A component of cigarette smoke →

موجود بالجائون

- It is without therapeutic benefit and is deleterious to health.

فائدة الاستدخدام

يحدث نقص بالهبة

- depolarizes autonomic ganglia, causing stimulation (increase release of NTs) and then paralysis of all ganglia

- Nicotin has complex stimulatory action

- Effects include :

▪ Increase BP & HR

▪ Loss of appetite → فقدان الشهية

▪ Sexual Arousal

▪ Mood modulation → بهتگی بسیار و گمان
هو، قات

NEUROMUSCULAR-BLOCKING DRUGS

nicotinic $\rightarrow$ μ receptors
receptor

- Block cholinergic transmission between motor nerve endings and cholinergic receptors in the skeletal muscles on the endplate **NMJ**

في قديم نوعين

- They include :

❖ **Nondepolarizing (competitive) blockers**

→ depolarization
مايجل ولا contraction
موجوده بس 1V

❖ **Depolarizing agents**

بشغلو زي
ان ACH
contraction

Nondepolarizing (competitive) blockers

- ¹ - Curare : a toxin used to primarily to paralyse animals
- ² - Pancuronium (long acting)
- ³ - Atracurium and ⁴ vecuronium (intermediate acting)

(IV)
علاج!

- binds to nicotinic receptors at NMJ and inhibit Ach binding.
- Inhibits muscle contraction
- Its action can be reverse (competitively) by increasing Ach dose or using AchE inhibitors
- High doses lead to further irreversible blockade

- ^{شلل} Paralysis starts with muscles of the face and eyes
- Then subsequently spreads to fingers, neck trunk
- Finally the diaphragm becomes paralyzed
- These blockers are used therapeutically as adjuvant drugs in anesthesia during surgery to relax skeletal muscle.
↓
التخدير خلال العمليات الجراحية

أدوية
عصبية

- NM blockers are administered IV.
- Poor penetration of cells, BBB → وابخترت
- Poorly metabolized agents
- *pancuronium* is excreted unchanged in urine.

side effect

❖ S/E : hyperkalemia, IOP,

↓
Intraocular pressure
الضغط داخل العين

Drug interactions → قناعات الأدوية

- AchE inhibitors ✓
- Aminoglycosides ✓
- CCB

↓
Calcium
channel
Blocker

2- Depolarizing agents حوامل إزالة الأستيل ستيفين

- Act as Ach , but with longer duration of action due to more resistance to AchE → مقاومة الأستيراز
- Succinylcholine is the only depolarizing agent is used.
- The depolarizing agent first causes the opening of the sodium channel associated with the nicotinic receptors, which results in depolarization of the receptor (Phase I). (fasciculations).

ارتفاع الجهد

- Continued binding of the depolarizing agent renders the receptor incapable of transmitting further impulses.
- **With time**, continuous depolarization gives way to **gradual repolarization** as the sodium channel closes or is blocked. This causes a resistance to depolarization (**Phase II**) and flaccid paralysis.

نہ جلا

- the respiratory muscles are paralyzed last
- Normally, the duration of action of **Succinylcholine** is extremely short, because this drug is rapidly broken down by plasma pseudocholinesterase →
- Because of its rapid onset and short duration of action, succinylcholine is useful when rapid endotracheal intubation is required

← قليلة جداً

أول شيء يكسر الدواء
في البلازما
بسرعة نسبية
اصنافه عارضة
اسمه مشتق من
كاذب ← pseudo

يستخدم إذا بهم يعملوا عملية تنفيس ففلا
داخل الجسم بها يكون أنهم يدخلوا Tube حوا
الجسم فالجسم يعمل رد فعل لا إرادي أنه العضلات
يصير لها contraction فهذا الدواء يستخدمه قبل
العملية فشان يعمل relaxation للعضلات

- Succinylcholine is injected **intravenously**
- sometimes given by **continuous infusion** to maintain a longer duration of effect. Drug effects rapidly disappear upon discontinuation

الاضيق
للمرء
بسرعة

نسيب
عسقم
زى
لصلى



Adverse effects

- ❖ Hyperthermia → ارتفاع الحرارة
- ❖ Apnea (in genetically susceptible patients) → انقطاع التنفس
- ❖ Hyperkalemia
ارتفاع نسبة البوتاسيوم في الدم