



Pharmacology

Subject : PHARMACODYNAMICS

Lec no : 12

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وَقَارِبْ رَدِّي عَلَاً

تجدون في guidance مادة الفارما على موقع النادي :

للوصول الى guidance الفارما و تفاريف
المادة كاملة :



كل اعمال الفريق العلمي تنشر على قناة التليغرام



شرح دكتور شريف و دكتور طارق للمادة

شرح فردة لمادة الميند

شرح فردة لمادة الفايثيل

تفاريغ دفعة اتر جدااااا قوية ، خاصة مادة الفايثيل لانها بتحتاج تفاريغ كثير ، و برضه تفاريغ جيينة بدفعة وريد قوية

جداول رح تساعدكم كتبيبيبيبي
ب حفظ الأدوية بمادة الفايثيل

كويزات الدكتوراة

قبل ما نبليش المحاضرة... عشان أنا كتير منيحة الله يرضى عني 😊😊
قررت أخليكم تكسبو أجر كبير بكل سهولة... شفتمو محسني 😊😊
طب شو هو الأجر وكيف يا لانا المتواضعة؟ 😊😊
الأجر يا حلويين أنه تتبرعو برصيد الطباعة تبعكم اذا ما بتحتاجوه لطلاب بحاجته (قلتلكم
اجر بسهولة) 💜💜
طيب شو لازم نعمل؟
أول شي لازم تفوتو ع بوابتكم ومن عند خدمات أخرى _ رصيد الطباعة
هلاً من هي الخطوة بس بدي تتأكدو انو رصيدكم موجود ولا خالص لو اعطاك (لا يوجد
اي حركات طباعة حالياً) معناها الرصيد موجود وفيكم تتبرعو فيه
طيب تمام وكيف نتبرع؟
من بوابتكم ومن عند خدمات أخرى _ الدخول لشبكة الانترنت (المختبرات واللاسلكية)
بتأخدوا اسم المستخدم (والي هو رقمكم الجامعي) وبتنسخوا كلمة السر
واخر شي بتدخلو على QR code الي تحت 📍 بتعبو فورم التبرع بالرصيد وبس.
سهلة القصة والله وفيها اجر كبير (اجر ع كل نقطة وحرف وكلمة انطبعت من رصيدك
لشخص محتاج واجر بكل حرف اندرس من الورق الي انطبع برصيدك الي انت اصلاً ما
بتستخدمه).



[7] Drug dependence:

• **Habitation:** - ^{رغبة نفسية} psychic craving of the drug. ^{تعود}

- No physical disturbance
- If sudden stoppage...> emotional distress.
e.g. coffee and tea habits.

• **Addiction:** - psychological + physical dependence . ^{إدمان}

- If sudden stoppage...> ^{أعراض انسحابية} withdrawal symptoms → action ^{غالباً يتكون عكس ال} action ^{تبع ال drug} .
e.g. morphine, barbiturates, smoking

[8] Genetic abnormalities (idiosyncrasy):

- It is **abnormal response** to drugs due to **genetic abnormality in drug metabolism**. These genetic abnormalities are revealed only by the effect of drugs.

* في عنا 4 حالات متعلقة بال Genetics .

* وخلاي بالكم انه كل حالة تقتصر على أدوية معينة .

1. Acetylation Polymorphism:

- People can be classified according their rate of acetylation reaction in liver into **Rapid** and **Slow** acetylators

• Examples, in slow acetylators:

← يستخدم في علاج TB .

هو محافظ على وظيفة NS

a. **Isoniazid** → peripheral neuropathy (due to interference with pyridoxine (vit B6) metabolism).

مرض العصبية الطرفية

b. **Hydralazine** → SLE-like (systemic lupus erythematosus-like).

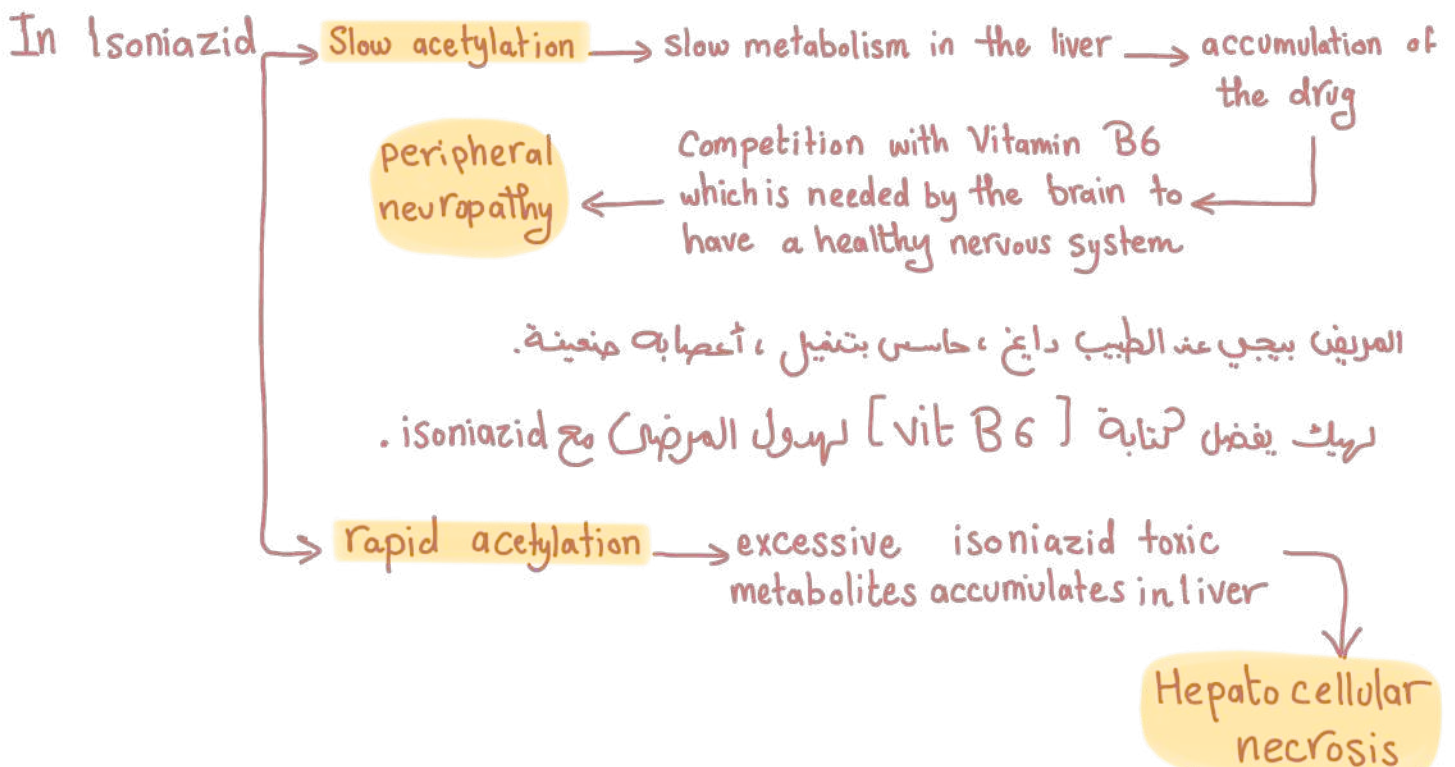
→ in this disease, the immune starts attacking body tissues

← أعراضنا مشابهة لـ SLE



• Examples in rapid acetylators:

a. **Isoniazid** → hepatocellular necrosis (due to accumulation of toxic metabolites)



فيجى المريض عند الدكتور عنده Jaundice ، فيه بوجعه اعنه اسهال ، اسهك .

2. Hemolytic Anemia due to G6PD Deficiency

- Glucose-6-phosphate dehydrogenase (G6PD) is an important source of reduced glutathione which protects RBCs from hydrolysis by oxidizing drugs.
- Congenital (G6PD) deficiency → acute hemolysis in presence of some oxidant drugs as **antimalarials, sulfonamides and fava beans** (favism).

* G6PD مهمته يحول NADP إلى NADPH ← التي تساعد RBCs لتتحافظ على integrity بتعبرها

* عدم وجود هذا الإنزيم يعني عدم وجود مقاوم لعمليات Oxidation التي يمكن التعبير عن الخلية لهيك لو المريض أخذ oxidant drugs حيسير عن Hydrolysis لـ cell membrane لـ RBCs.

3. Porphyrins

- Normally, **porphyrins precursors** ^{المادة الخام لتصبح الـ Heme} $\xrightarrow[\text{(ALA) synthase}]{\text{delta-aminolevulinic acid}}$ **porphyrins** $\xrightarrow[\text{enzyme}]{\text{second}}$ **heme** ← تصيح الـ Heme
- Genetic **deficiency of second enzyme** → ↑ level of **porphyrins** with some drugs **stimulating (ALA) synthase** → **cyanosis, severe CNS disturbances & may cause death.** الأعراف خطيرة لهيك بدنا ننتبه للمرضى التي عندهم porphyrin
- **Barbiturates and sulfonamides** precipitate porphyria.

مرض للعصلات

4. Succinylcholine Apnea ^{توقف التنفس}

- **Pseudocholine esterase enzyme** is responsible for breakdown of neuromuscular blocker (succinylcholine). In genetic defect of the enzyme, **Succinylcholine** → respiratory muscle **paralysis** with apnea. ^{العصلات موقارة تفعل contraction}

Succinylcholine is a neuromuscular blocker metabolized by pseudocholesterase enzyme. Some individuals with deficient PsChE, when they take succinylcholine, severe muscle paralysis occurs due to lack of succinylcholine metabolism, and may lead to death from respiratory paralysis (succinylcholine apnea).

* مشكلة يرجع Ca^{+2} الى SR بعد ما استخدمناها بالcontraction

5. Malignant Hyperthermia

- Genetic disorder in which skeletal muscles fail to sequester Ca^{++} in sarcoplasmic reticulum following administration of **succinylcholine** and **halothane** → marked muscle rigidity & sever hyperthermia. الحرارة أعلى من 42

Drug hypersensitivity

[9] Drug allergy: جهاز المناعة يبدأ بمهاجمة الدواء

- It is **Abnormal response to drug** mediated by **immunogenic** mechanisms.
- Drug allergy is **dose-independent** and occurs in minority of patients
لحتى تحدث مو لازم يكون عندي جرعة كبيرة ولكن ال severity تعتمد على ال dose
- Cross-allergy** may occur within a group of chemically related drugs.

أشهر مثال مجموعة penicillin ومجموعة cephalosporin هذول مجموعتين شبه بعض بالتركيب (عندهم بتركيبهم beta-lactam ring) لو في مريض وعنده allergy من ال penicillin وبدك تعطيه دواء غيره... ما بينفع تعطيه cephalosporin لأنهم نفس التركيب فمممكن يكون عنده allergy من cephalosporin برضو

Type	Mechanism	Examples
Type I Reaction (immediate type; anaphylactic)	Antigen/IgE reaction on mast cell → degranulation → release of allergotoxins e.g. histamine → fever, rash, urticaria, angioedema & even anaphylactic shock	Penicillins

Type II Reaction (cytotoxic)	Antigen + IgG or IgM antibodies + complement are fixed to a cell → cell lysis e.g. hemolytic anemia in RBCs	Methyldopa ↳ to treat ↑ blood pressure ↳ adverse effect: hemolytic anemia.
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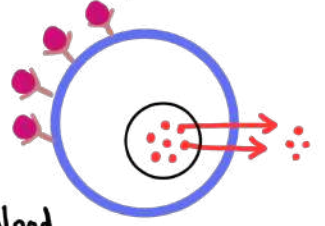
Type III Reaction	Antigen + IgG antibodies + complement are fixed to <u>endothelium</u> → vasculitis, glomerulonephritis	Sulfonamides and Penicillin
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Type IV Reactions (Delayed type; cell-mediated)	Antigen + sensitized T-cells → release lymphokines → inflammation e.g. allergic contact dermatitis Pumpers مثل التواب الأطفال من Make-up مثل بعض أنواع	topically applied drugs
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التوضيحات بالصحة التالية

→ Penicillins

Type I: the antigen such as allergen drug binds the IgE antibodies attached to the surface of mast cells [Basophils] → this binding will induce a cascade of IC reactions resulting in the release of large amounts of Histamine from the storage vesicles → that will induces various allergic reactions, such as: rash, fever



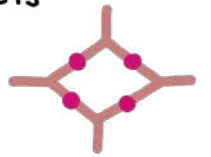
Type II: the antigen isn't an external allergen floating in the blood but rather certain molecules attached to external surface of the patient cells. Binding of IgG or IgM antibodies stimulates a cascade of immune reactions → resulting in the activation

of
 → the complement system
 → natural killers
 → macrophages
 } which induce further damage that affect tissues.



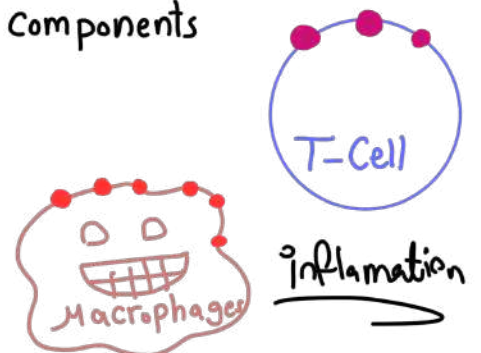
Type III: - the small antigen antibody complexes float through the blood and accumulate in various tissues such as
 → Joints
 → Glomeruli
 → Blood vessels
 this accumulation triggers the complement system to attack the hot tissues.

in their endothelium



Type IV: isn't antibody mediated but mainly cell mediated immunity. In this type T-cells recognize the intracellular antigens. the stimulated T-cells release cytokines or lymphokines which activates various immune system components

Such as phagocytes
 → engulf affected body cells



Diagnosis of Drug Allergy

1. History and type of reaction.

٢٠ فحوصات للتأكد من حساسية دواء معين.

2. Intradermal and conjunctival tests. بتنعمل مع الأدوية المشهور فيها الحساسية



Treatment of anaphylactic shock

Epinephrine- hydrocortisone - antihistamines.

Physiological antagonist of histamine

Quiz Time



1) Failure of the patient to breath after surgical operation may be due to:

- A. Pseudocholin esterase deficiency
- B. Methemoglobin reductase deficiency
- C. G-6-PD deficiency
- D. VitaminK epoxide reductase deficiency
- E. Monoamine oxidase deficiency

2) Failure of some children with rickets to respond to therapeutic doses of vitamin D is most likely to be due to:

- A. Differences in sex
- B. Differences in body weight
- C. Genetic variation
- D. Tolerance
- E. Intolerance

3) Which of the following best describes what the term “tachyphylaxis” means?

- A. An increase in the rate of the response, for example, an increase of the rate of muscle contraction
- B. Immediate hypersensitivity reactions (i.e., anaphylaxis)
- C. Prompt conformational changes of the receptor such that agonists, but not antagonists, are able to bind and cause a response
- D. Quick and progressive rises in the intensity of drug response, with repeated administration, even when the doses are unchanged
- E. Rapid development of tolerance to the drug’s effects

4) A 44-year-old black male is brought to the emergency department with 6 h of worsening lethargy and confusion. Past medical history is significant for easy bruising, 3 months of bone pain, and frequent pneumococcal infections. Labs were ordered, revealing serum calcium of 17 mg/dL (normal: 9.0 to 10.5 mg/dL). To rapidly lower his serum calcium, you administer calcitonin. However, calcitonin alone is insufficient because it is known to rapidly and suddenly lose its effectiveness within 2 to 3 days of repeated dosing. For this reason, a bisphosphonate, which takes 2 to 3 days to become effective, is added simultaneously. What is the term for the rapid decrease in response to calcitonin?

- (A) Anaphylaxis
- (B) Prophylaxis
- (C) Tachyphylaxis
- (D) Tolerance

5) Regarding the use of a daily baby aspirin, oral fiber supplements, and a daily “water” pill in an 89-year-old man with hypertension and coronary artery disease, which of the following statements is true regarding pharmacology in the elderly patient?

- (A) Coexisting disease states are unlikely to produce additive impairment
- (B) Elderly patients are less sensitive to drug effects
- (C) Elderly patients are less sensitive to drug side effects
- (D) Elimination of drugs becomes impaired with age
- (E) Responses to compensate for drug accumulation are satisfactory

6) Which of the following drug equations exemplifies the concepts of potentiation?

- (A) $\text{DrugAB} > \text{DrugA} + \text{DrugB}$
- (B) $\text{DrugAB} = \text{DrugA} = \text{DrugB}$
- (C) $\text{DrugAB} < \text{DrugA} < \text{DrugB}$
- (D) $\text{DrugAB} = \text{DrugB} > \text{DrugA}$

7) Drug A and Drug B are of equal magnitude. If Drug A and Drug B are combined together, this would be an example of which of the following?

- (A) Additive effects
- (B) Neutralization
- (C) Potentiation
- (D) Synergism

8) Tolerance develops because of:


- a) Diminished absorption
- b) Rapid excretion of a drug
- c) Both of the above
- d) None of the above

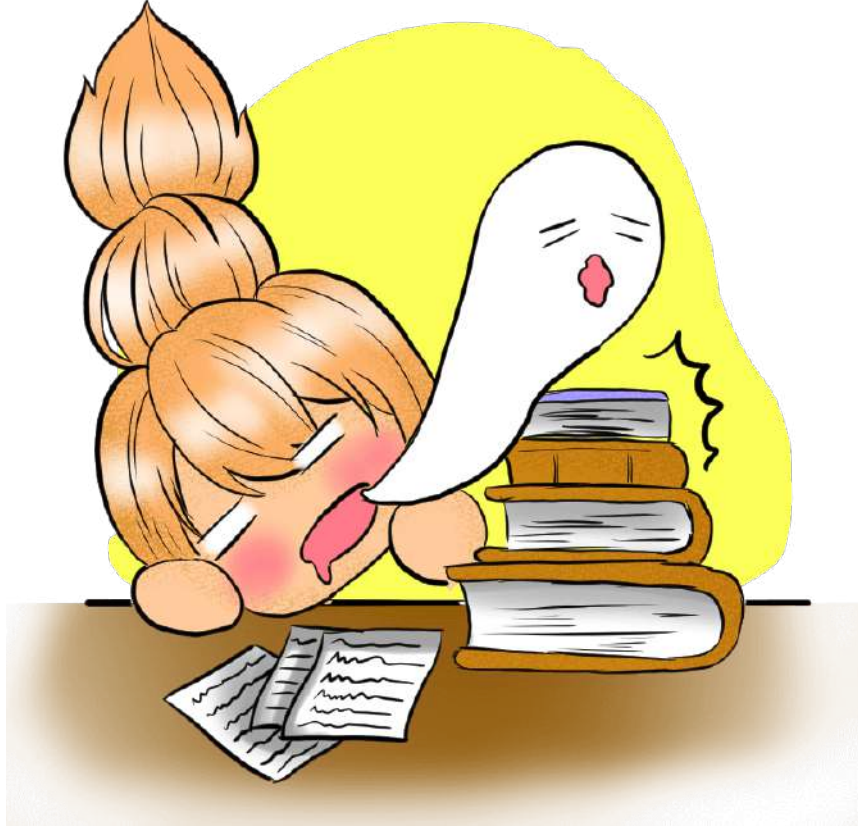
9) **Synergism** is considered to exist when the reaction to two drugs given in combination is:

- a. Less than the sum of the individual actions of the two drugs
- b. Equal to the sum of the individual actions
- c. Greater than the sum of the individual actions
- d. Less than that of either of the individual actions

10) If the adult dose of a drug is 173 mg, a child with a body surface area of 1 m^2 should receive:

- a. 100 mg
- b. 87 mg
- c. 120 mg
- d. 95 mg

قم فلا وقت للخيبة ، هناك حلم جميل ينتظرك فاسعى إليه ، قم واكسر كل شعور سيء داخلك ، لم تخلق نفسك لتعذبها ، خلقت لتكون داعماً لها في صنع المستحيل ، فكن ذا أثر. 



معلش ما قدرت ما أحطها وهي معبرة عن وضعي وانا مريضة وبكمل تدقيق هالتفريغ 🥺🥺

وهيك خلاصنا مادة الدكتور شريف الفخم الله يعطيه العافية ويجزيه كل خير ❤️
وان شاء الله الأحد رح نبلش مع دكتورة ياسمين ويارب تكون بداية خير معها 🤍

أسأل الله لكم التوفيق والفلاح في الدنيا والأخرة ✨🤍