Lecture 3

Pharmacology

Noor hussein

Haneen bani younis

Second Year

Passion Batch

* Lecture notes:
  * Drug uses: treatment and prevention.
  * Drug is the active ingredient in medicine.
  * All medicines are drugs but not all drugs are medicines.
  * Therapeutic dose is the exact dose that treat the disease.
  * Indication means for whome this drug should be given.
  * Contraindications means for whom this drug can't ever never be given.
  * Adverse effect means the unwanted action for drug.
  * Therapeutic widow: تعني الفاصل بين كون جرعة الدواء فعّالة وبين كونها سامة.
  * Drug: المادة الفعالة للدواء. * Medicine: adhesive. دهانات إليها طعم أو

* Pharmacology (2):
  * Lecture notes: "Routes of administration (Ph/K)".

Slide (9):

  * Absorption: How much amout does exactly transfer from the stomach to the blood stream.
  * If we injest 100 mg to the body and 70 mg absorbed to the blood stream; the absorbtion determine another factor called "Bioavailability".
  * Bioavailability: the amount of the drug transferred to the blood stream.
  * Drug - food interaction inside the body:
    example: drinking milk after taking "Iron" ⇒ Zero absorbtion; although it is important for the patient. ↳ Iron tablets.
  * Example: warrfernine is an important Coegulant which interacts with vitamin K in the food → مثال: خضروات
    ⇒ Result: No absorbtion occurs.
  * Totally: absorbtion is important to determine the final action of the drug.

Slide (11)

* Route of administration: the way we insert the drug to the body.
  * External way: By the mouth.
  * Paraenteral ways: any other way than the mouth.
* If the drug stays in the body without elimination, it will still do the action and called "long action".
* We have to detox (detoxity) the drug to make it stop working [mainly in the liver] "metabolism".
  * Liver: change the drug from the active form to the non-active form, and from non-polar to polar to be eliminated in the urine.
* Where does the elimination happen?!
  (2 ways):
  1. Via interohepatic recycle "by bile".
  2. By the urine.

* Dosage forms:
  - what is the final shape of the drug?
  1. Tablets: (without coat / with coat (orally)) with scare: to separate it into 2 equal segments [amounts][concentrations] لونه أحمر وحلو.
  2. Capsule: Grave Gelatine (orally).
     ↳ why do we put the drug inside a capsule?!
     Because the drug is unstable with the GIT PH, to save it.
     أو لأنه طعمه مرّ ومش زاكي
  3. Solutions:
     1. Elexire: دواء بنسبة قليلة من الكحول لأنه بدون كحول ما بقدر يذوب
     2. Serup: high concentration of sugar [6.66] preservative by its self.
        طعمه زاكي.

3. Suspention: does not dissolve in solutions neither in water nor alcohol. [معلق دائماً]

عشان هيك لازم المريض انه يرج العبوة جيداً لأنه رح يترسب تحت و فالمادة اللي فيت يكون تركيزها أعلى من المادة اللي فوق و رح يكون toxic واللي فوقها حيكون تيروابين.

Subtherapeutic not therapeutic.

4. Grases: taken by inhalation for asthma's patients.

5. Suppository: taken rectally.

6. Cream, oil, Gel, Losion → بعد الغرز.

watery for intact skin. ← oily ← 100% more absorption than oil, cream.

Slide 12:

* Sublingual = IV [because it also has capellaries there => immedietly absorbed and then distribute (3-4 species)]

Slide 13:

* Orally: either absorbed immediatly or it will be controlled released.

* حبة الدوا مكونة من طبقات layers.

* These layers will transfer small amounts of drug outside this capsulated drug. عشان هيك بتطول بالجسم / مكتوب على علبة الدوا مفعول طويل لمدة 24h.

1. XR: extended release.

2. EC: don't eat, split this tablet or ← للعدة PH فيغلف بجيها من capsul => عشان حتفقد الحماية تاعتها.

* المفروض بعد الامتصاص ينتشر في كل الجسم ثم للكبد عشان يصير له أثر ولكنه إذا أخذ عن طريق الفم و بروح أول إشي للكبد وبذلك يكون دخل interahepatic cycle.

Circulation GIT → liver

↳ اللي رح يحولها non-active وقد يبقى بعض منها active رح ينتشر ولكن كمية قليلة.

* Infant: 6 months => 2 years. * Newborn: 0 - 6 months.

بياخدوا الدوا عن طريق الـ Serup ⇐ الـ (IV) صعب للأطفال عشان الأوردة و الشعيرات بتكون ضعيفة جدًا.

*What is the drug inscription that can enter your blood?

⇐ بمعنى آخر: ليش بعطي IV ومرات بعطي IM مثلاً؟

⇐ على حسب طبيعة المواد إللي رح أدخلها على الدم مباشرة.

1. Particle size must be very small.

2. Compatable with RBC's.

3. Isotonic [not hypertonic, not hypotonic].

4. Solution [not suspention, not oily structure]

ذائب.

* 3 certain medicines: (SC) => subcutaneous.

1. Insulin.

2. Heparine.

3. Penicellen G. => in low PH will be ionized => can't be absorbed.

↳ are not inserted orally.

* all hormons in our body are proteins, so => all hormons can't be taken orally except Steroidal hormons => Sex hormons. مثل موانع الحمل

* Nitro glycerrine [subliagual] angaina:

(abs - dis - met) ⇐ بمشي بطريق آخر غير الطريق الصح

first - Pass metabolism (abs - met - dis) هو طريقة

↳ it is metabolized before doing its action [distributed] رح ينتهي المفعول قبل البدء

حتى لو أعطينا جرعة عالية، لأنه رح يصير في side effect.

↳ شو بعمل؟! بوسع الأوعية الدموية وبالتالي بقلل ضغط الدم وما بعطي نتيجة ⇐ ما بقدر أحدد كم رح يكون في amount عشان هيك بيتاخد تحت اللسان.

Slide 19:

* ways to use IV:

1. IVP: Intravenous Push.

(one shot منحل الدوا بالإبرة مرة وحدة وخلصنا).

2. IV infusion:

2h - 4h - 24h أنا بعطي بال canula لمدة طويلة علشان

in this small amount ⇒ injected slowly.

to avoid the side effects.

*hemolysis ⇒ لون أزرق ظاهر ← نزيف تحت الجلد كان بدون حل

السبب بظهور اللون الأزرق.

* Thrombosis: تجلطات عكس الإنحلال

حل الهاحل Heparine solution غسيل ب

لا يكون بالأول صحيح.

Slide 20:

If the drug is solution in (IM) ⇒ Rapid onset of rex.

If it is oily (BR) will be stored inside the ~~muscle~~ muscle and this storage will release small amount of this drug by time.

⇒ [for weeks ⇒ dilation. مرة تكونه بدون تأخير]

Slide 21:

*Species of drugs in (SC):

1. Heparine ميعاات

2. ~~Insulin~~ Insulin and his brothers ?! -_-

Where ?!

1. Abdomen. 2. Upper arm. 3. Thigh.

3. Contraseptive drugs.

Paraenteral routes:

- Intravenous (IV): directly to the vein.
- Intramuscular (IM).
- Subcutaneous (SC).
- Intradermal (ID) (upper layers of skin).

Slide 22:

not all locals are systemic but some locals are systemic.

Slide 23:

الناس بتفكر إنو إذا أخدنا الدوا rectal مابروح على المعدة

تُعتبر أكثر من ال oral

↳ it is systemic but not local.

↳ there are many cappillaries. بتوصل للمعدة، ممكن

لازم تأكل قبل إبرة الفولترين ↲

1) to blood stream.

2) inhibit prostate gland.

3) doesn't protect.