NO Date 6th lec: pharmacokinetics II

Distribution:- distribution of the substance throughout the body compartments → ① Vascular
② Vascular + interstitial (extracellular)
③ Vascular + interstitial + intracellular

1- Vascular compartment:

small Vd ≈ 4 L

drugs with this Vd are: ① hydrophilic ② ionized in plasma

Heparin

2- Vascular + interstitial compartment:

moderate Vd ≈ 4 + 10 ≈ 14 L

drugs with this Vd are: ① hydrophilic ② lesser ionization ③ small MW

Neostigmine

3- EC compartment + IC compartment:

Large Vd ≈ 4 + 10 + 26 ≈ 40...42 L

drugs with this Vd are: ① Lipophilic ② non-ionized

▲ BARBITURATES

⊕ BBB only lipid soluble + non-ionized drugs pass it

⊕ Placental B:- drugs pass it may cause:

during pregnancy → Teratogenicity, embryotoxicity

during Labor → Neonatal Asphyxia, Jaundice → Kernicterus

NO Date

- **Redistribution:** characteristic of highly lipid souluble drug like **theopental** that is caused redistribution of drug to less perfused tissue after distribution of it to CNS.

⊕ **Volume of distribution (Vd) :-**

$$V_d = \frac{\text{Amount of drug in body}}{\text{Plasma concentration}}$$

Importance of (Vd)

- **Loading dose** = Tc x Vd
- **corrective dose** (desired plasma − achieved plasma) x Vd
- **treat drug toxicity**
  - high Vd → ~~hemodialysis~~
  - moderate Vd → peritoneal dialysis
  - low Vd → hemodialysis

Factors affecting drug distribution :-

① **Libophilicity :-** Diffusion

lipophilicity ∝ distribution

② **Tissue affinity :-**

- Chloroquine is concentrated in Liver
- Iodides = = = Thyroid

③ **Plasma protein binding (PPB)**

PP bound form	free form
reservoir, (Not) excrete diffuse + metabolte	active, diffusible ...

* taking Aspirin + Warfarin may cause bleeding