Muhammad DANISH

I.D No : 14729

Paper : General Pharmacology

Question-1

Answer

Enumerate various routes of drug :

Each route has specific purposes, advantages and disadvantages.

Oral route. Many drugs can be administered orally as liquids, capsules, tablets or chewable tablets.

- Injection routes
- sublingual and buccal routes
- Rectal route.
- Vaginal route.
- ocular route.
- otic route.

• Nasal route.

Routes of drug administration:

a) External route

Oral route.
Sublingual route.

b) Parenteral:

The ~~para~~ 1- Intravenous
2- Intramuscular
3. Subcutaneous.

c) other
1. Inhalation.
2- Intranasal
3- Intrathecal
4. Topical
5. Transdermal
6- Rectal

Parenteral Routes

The parenteral route introduces drugs directly across the body's barriers defenses into

the systemic circulation or other vascular tissue.

Used for: poorly absorbed drug from the GI tract, agents that are unstable in GI tract. Also used for treatment of unconscious patients require a rapid onset of action. In addition these routes have the highest bioavailability and are not subject to first-pass metabolism or harsh GI environments.

Limitation: These routes are irreversible and may cause pain, fear and infections.

1- Intravenous:

Administering drug directly into veins most common route drugs not absorbed orally.

Advantage: Avoid GIT tract and so the first pass metabolism, rapid effect and maximum control over circulating drugs.

Date:

Day: M T W T F S S

2 Intramuscular:

Administering drug into deep muscles aqsd of drug is suspended in non-aqueous vehicle release drug slowly over time providing sustained effect.

e.g: haloperidol decanoate.

3: Subcutaneous:

Administering drug under the skin.
It is like IM injection and slower then IV.
Lower the risks associated with IV.

Question - 2

Answer

Water compartment:

The two main fluid compartments are the intracellular and extracellular compartment

About two thirds of the total body water of humans is held in the cells, mostly in the cytosol and the remainder is found in the extracellular compartment.

Types of water Compartment:

Plasma Compartment:

If a drug has a very large molecular weight or binds extensively to plasma proteins. It is too large to move out through the endothelial slit junctions of the capillaries and thus is effectively trapped within the plasma compartment.

Extracellular fluid:

If a drug has a low molecular weight but is hydrophilic. it can move through the endothelial slit junctions of the capillaries into the interstitial fluid. However

Hydrophilic drugs cannot move across the lipid membranes of cells to enter the water phase inside the cell. Therefore these drugs distribute into a volume that is the sum of plasma water and the interstitial fluid which together constitute the extracellular fluid. This is about twenty percent of the body weight or about 14L in 70-kg individual.

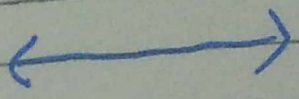
Total body water:

If a drug has a low molecular weight and is hydrophobic not only can it move into the interstitium through the slit junctions, but it can also move through the cell membranes into the intracellular fluid. The drug therefore distributes into a volume of about sixty percent of body weight or about

42L in a 70kg individual.

Other sites:

The fetus may take up drugs and thus increase the volume of distribution. Drugs that are extemely ~~liquid~~ lipid-soluble such as thiopental may also have unusually high volumes of distributions.



Question-3

Answer:

Drug Stages:

The clinical trails stage consist of three main phases and all new medicines have to go through these parts before they can be prescribed to patients. The clinical phases there to establish the dose and best form of the drug, its safety

how it is absorbed by the body and furthermore whether the treatment works.

Phase 1

Trials are often the first time a drug is administered to humans and usually involve a small number of volunteers. who are given compensation for their participation.

Phase 1 is mainly about understanding whether the drug is safe to use in humans rather than how effective it may be at treating a specific disease.

Phase 2

Trials involve patients and the number of participants is heighes than in the previous stage. This stage aims to assess how well the drug works

at treating a particular disease and the more about the best method for delivery.

Phase 3

Trials require much larger groups of patients, from hundreds to thousands: and they aim to compare the effects of the new drug to either a placebo or a standard treatment.

Total body clearnce:

The total body clearnce CL Total or CLt, is the sum of the clearances from the various drug-metabolizing and drug-eliminating organs.

Major kidney organ.

Sometimes liver also contributes to drug loss through metabolism and/or excretion into the bile.

A patient in renal failure may sometimes benefit from a drug that is excreted by this pathway into the intestine and feces, rather than through the kidney, Some drugs may also be reabsorbed through the circulation, thus prolonging their half-life.

Total clearance can be calculated by using the following equation.

$Cl_{total} = Cl_{hepatic} + Cl_{renal} + Cl_{pulmonary} + Cl_{other}$

$Cl_{total} = K_e V_d$.