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Paper : Pharmacology

Q no 1 :

various routes of drug administration:

Ans :: A route of administration in pharmacology and toxicology is the path by which a drug, fluid, poison, or other substance is taken into the body. Routes of administration are generally classified by the location at which the substance is applied. Common example include oral and intravenous administration.

oral route many drug can be administration orally as liquid capsules tablets or chewable tablets.

- injection Routes
- Rectal routes
- Sublingual and
- buccal route
- vaginal route
- ocular route
- otic route
- Nasal route.

* Parenteral Routes :-

" Parenteral route of administration include the Subcutaneous, intramuscular, and intravenous routes. for the route to be viable, a medication must be water-soluble or in Suspension the intravenous route of administration bypasses the ab-sorption step, resulting in fast bioavailability another advantage is the rapid onset of action. these routes of drug administration may not always be viable because of inconvenience and cost. also the drug adverse effects are not reduced compared with the effects after oral administration. other disadvantage of parenteral routes are patient discomfort, the need for sterile condition, and parenteral risks to health care practitioners from blood borne pathogens. in some cases however, these routes of administration may be the only way to achieve therapeutic concentration at the target tissue Such as with Some anti-infective agents and in emergency

Qno 3 :-

Q(a) :- Total body clearance means :-

Ans:- The significance of the total body clearance is studied based on a physiological pharmacokinetic model. in the absence of evidence to the contrary, and for the sake of uniformity, it is proposed that the elimination rate of the drug at any time after various routes of dosing be assumed to be proportional to its systemic arterial plasma (blood) concentration with a proportionality constant equal to cl. the cl, calculated by the intravenous dose divided by the AUC, is defined as the hypothetical volume of the systemic arterial plasma (blood) completely cleared of drug per unit time even though the drug is eliminated by the lung and venous plasma is assayed.

Q NO: 3

Q NO: 1 Drug Elimination:

Drug elimination can be defined as the (irreversible) transfer of a drugs from the site of measurement (usually plasma or blood) by either excretion (e.g., renal, biliary, pulmonary, sweat and milk excretion) or metabolism.

⇒ Renal excretion:

Drug elimination also changes during pregancy due to a significant increase in renal excreation. During progancy, there is an increase in the flow of blood to various organs including a - 50-80% increase in effective renal plasma flow which result in a corresponding 40 to 65% increase in the glomerular filtration rate (Conrad, 2004). This is increase in renal clearnce can have notable effect on drugs that are elimination rate. That range from 20-60 have been reported for ampicillin, Cefuroxime, Cepharadine, Cefazolin, piperacillin, atenolol, digoxin, Lithium and many others

Q No: 2 Water Compartment.

Ans:-

* Plasma Compartment:-

if a drug has a very large molecule weight or binds extensively to plasma protien. it is too large to move out through the endothelial slit junction of the capillaries and thus is effectively trapped with in the plasma (vascular) compartment. as a consequence, the drug destributes in a volume (the plasma) that is about six percent of the body weight or, in a 70 kg individual about 4 L of body fluid.

* Extracellular fluid:-

if a drug has a low molecule weight but is hydrophilic, it can move through the endothelial slit junction of the capillaries into the interstitial fluid. However hydrophilic drug cannot move across the lipid membrane of cell to enter the water phase inside the cell.

* Total Body Water:-
if a drug has a low molecule weight but is hydrophilic it can move through the interstitium through the slit junction but it can also move through the cell membrane into the intracellular fluid. the drug therefore distributes into a volume of about sixty percent of body weight or about 42 L in a 70 kg individual. Ethanol exhibits this apparent volume of distribution.

* Other Sites:-
" in pregnancy the fetus may take up drug and thus increase the volume of distribution. Drug that are extremely lipid soluble, such as thiopental may also have unusually high volume of distribution.