# MIDTERM COLLECTED QUESTIONS OF PHARMACOLOGY 019

1) **A 63-year-old patient with a terminal cancer has been suffering from continuous pain and started a treatment with morphine. After few days of treatment, the initial dose was no longer effective and the physician gradually increased the dose, knowing that pharmacodynamic tolerance most likely occurred. Which of the following statements best explains the mechanism of tolerance in this patient?**
   a. Accelerated morphine metabolism
   b. Decreased morphine receptor density
   c. Decreased concentration of morphine in the brain
   d. Decreased binding of morphine to plasma proteins
   e. Increased affinity of receptors to morphine

2) **Which of the following terms best describes an antagonist that interacts directly with the agonist and not at all with the receptor?**
   a. Partial agonist
   b. Physiological antagonist
   c. Noncompetitive antagonist
   d. Pharmacological antagonist
   e. Chemical antagonist

3) **The number of half-lives required to move from one steady-state drug level to 94% of another steady-state level is about**
   a. Three drug half-lives
   b. Four drug half-lives
   c. Five drug half-live
   d. Two drug half-lives
   e. One drug half-life

4) **If your patient is elderly and has a reduction in total body water and increase in total body fat, in comparison with a normal adults, which of the following is incorrect?**
   a. For a fat soluble drug the concentration of the drug in the fat is usually higher than that in the normal patients.
   b. For a water soluble drug, the half life is shorter.
   c. For a water soluble drug the volume of distribution is higher.
   d. For a water soluble drug the serum level is usually higher than that in the normal patients.
   e. For a fat soluble drug the half life is longer.

5) **Generally, the effects of drugs that bind to which of the following receptor can persist for hours or days after the agonist concentration has been reduced to zero?**
   a. Ligand-gated ion channels receptors
   b. Enzyme-linked receptors
   c. Intercellular receptors
   d. G protein-coupled receptors
   e. All of the above

6) **Some drugs exhibit zero order kinetics at high doses because**
   a. Because they have a long half life
   b. Because they are toxic at high dose
   c. Because they have short half life
   d. They have an elimination site that is saturable
   e. Because they bound to circulating proteins

7) **Which of the following statements is correct?**
   a. Competitive antagonism is produced by antagonists that have the ability to activate receptor
   b. Taking too little of the prescribed drug may cause an adverse effect
   c. You should always consider a pill for every ill
   d. The risk benefit: ration for any drug is constant for the human life stages.
   e. It is safe to give doses in excess of drug with narrow therapeutic index

8) **Grapefruit juice may increase the bioavailability of cyclosporine. Which of the following is the most reasonable mechanism of this effect?**
   a. Reduction of distribution into tissues.
   b. Enhancement of lipid solubility.
   c. Inhibition of the efflux transporter, P-glycoprotein.
   d. Reduction of plasma protein binding.
   e. Prevention of renal excretion.

9) **The figure below shows the Time course of drug concentration of oral, intravenous, intamascular, and subcutaneous routs.The arrow in the figure is pointed toward the time course of drug concentration of**
   a. oral.
   b. Intra-arterial.
   c. Intravenous
   d. Subcutaneous.
   e. Intamascular.

**10) IF your patient is taking drug A and prescribe him drug B, after which he start to suffer from a side effect that known to be caused by drug A. Which of the following is not a possible cause?**

a. Drug B may displace drug A from the albumin binding site.
b. Drug B enhanced the enzyme that responsible for drug A metabolism
c. Drug A and B are actively excreted from the same nephritic site.
d. Drug B has the same side effect
e. Drug B increase the absorption of drug A

**11) Concerning competitive antagonism, which of the following sentence is correct?**

a. Competitive antagonism is produced by antagonists that have the ability to activate receptors
b. With competitive antagonism, maximal drug effect cannot be obtained, even at high agonist concentrations
c. Competitive antagonism is based on reversible drug/antagonist binding at receptor sites
d. With competitive antagonism, the dose-effects curve is shifted to the left.
e. All of the above.

**12) Chronic side effect Occur**

a. Occur unpredictably and suddenly
b. Regardless the length of treatment
c. When the drug is stopped
d. Remote from the treatment
e. During prolonged treatment

**13) Which of the following is NOT an example of drug misuse**

a. Not following the instructions when taking a prescription medication
b. Taking a friend's prescription medication to treat headache
c. Taking an over-the-counter medication more often than is recommended
d. Regular use of increasing amounts of cocaine to get high
e. None of the above

**14) The development of tolerance to a drug is accompanied by an increase in which of the following parameters of that drug?**

a. Maximal efficacy
b. Therapeutic index
c. Effective dose
d. Potency
e. All of the above

**15) Which of the following statements is correct?**

a. Always you should write the drug chemical name in your prescription
b. For a drug with high plasma protein binding capacity, lower plasma protein level in children means that the free drug will be less
c. Metabolism is always more or in adults than children
d. Stopping a drug can be a cause of an adverse effect.
e. The risk benefit: ration for any drug is constant for the human life stages.

**16) The route of drug administration that gives the most rapid onset of the pharmacological effect is**

a. Intradermal injection
b. Intramuscular injection
c. Intravenous injection
d. Subcutaneous injection
e. Peroral administration

**17) Half life (t ½) doesn't depend on:**

a. drug metabolism
b. Time of drug absorption
c. Rate of drug elimination
d. Concentration of a drug in plasma
e. All of the above

**18) Ahmad is scheduled for an operation and he is using drug A that have a bad effect on such operation. If you know that drug A half live is 12 hours, Ahmad should stop drug A before**

a. 10 days
b. 8 days
c. 6 days
d. 4 days
e. 2 days

**19) If the effect of combination of two drugs is equal to the sum of their individual effects, the two drugs are exhibiting**

a. Antagonism
b. Potentiation
c. Synergism
d. Additive

**20) Which term describes the use of a drug for a purpose which it was not intended?**

a. Misuse
b. habitual
c. Addiction
d. Tolerance
e. Abuse

**21) High plasma protein binding**

a. Increases the volume of distribution of the drug
b. Facilitates glomerular filtration of the drug
c. Generally makes the drug long acting
d. Minimizes drug interactions
e. Makes the drugs more potent

**22) Which of the following statements is correct?**

a. Receptor in our bodies are in a dynamic state
b. In a patient, a response to a low dose to a drug is likely followed by an indefinitely increasing response as the dose is increased
c. Always you should write the drug trade name in your prescription
d. Regardless the tissue site of the receptor, activation of a receptor in the body always produces the same effect.
e. None of the above

**23) A patient with poor CYP2D6 phenotype and you prescribed him a pro-drug with normal (not adjusted) dose. This pro-drug is fully activated by CYP2D6. In comparison with extensive metabolizer patient, which of the following is correct?**

a. The patient has faster pro-drug clearance.
b. The patient should benefit more from the pro-drug
c. The patient has shorter pro-drug half life
d. The patient usually has less active drug concentration in blood.
e. The patient is less susceptible to the pro-drug adverse effect,

**24) The earliest evidence that a drug is stored in tissue (fat) is:**

a. An increase in plasma protein binding
b. A large apparent volume of distribution (VD)
c. A decrease in the rate of formation of metabolites by the liver
d. An increase in the number of side effects produced by the drug
e. A decrease in the amount of free drug excreted in the urine

**25) A patient with ultra rapid CYP 2D6 phenotype and you have prescribed him drug A that is fully metabolized by CYP 2D6. The metabolite of the drug A does not cause adverse effect. In comparison with extensive metabolizer patient, which of the following is incorrect**

a. The patient has higher drug A clearance.
b. For this patient, You should increase drug A dose.
c. The patient usually benefits more from drug A.
d. The patient has shorter drug A half life.
e. The patient is less susceptible to drug A adverse effect.

**26) All of the following statements about plasma protein binding of a drug are true except**

a. Displacement of a drug from plasma protein binding sites makes more free drug available for glomerular filtration
b. Drugs that are highly bound to plasma proteins generally have a greater VD compared with drugs that are highly bound to tissue proteins
c. Displacement of a potent drug that is normally more than 95% bound may cause toxicity
d. Displacement of a drug from plasma protein binding sites results in a transient increased volume of distribution (VD)
e. Albumin is the major protein involved in protein binding of drugs

**27) The pharmacokinetic alternations in elderly are due to**

a. Increase cytochrome P450 enzymes.
b. Increase in percentage of body fat.
c. Increase in lean body mass and total body water.
d. Increase creatine clearance.
e. None of the above.

**28) Which of the following terms best describes a drug that blocks the action of epinephrine at its receptors by occupying those receptors without activating them ?**

a. Partial agonist
b. Physiological antagonist
c. chemical antagonist
d. Pharmacological antagonist
e. Noncompetitive antagonist.

**29) Which of the following statements is correct?**

a. The pharmacodynamic of drugs in children and the adults is always similar as the drug targets does not differ with age.
b. The increase in total body fat usually results in an increase in the half-life of water soluble drugs.
c. Generally, Reduction in the oxidative metabolism through cytochrome P450 system result in a reduction in the drugs clearance.
d. The metabolism of drugs in children is always less than that in adults.
e. If 10 mg of drug A produces the same response as 100 mg of drug B, drug A is more efficacious than drug B.

**30) The therapeutic index of a drug is a measure of its**

a. Dose variability
b. Additive
c. Safety
d. Potency
e. Efficacy

**31) Which of the following processes occurred before the drug enters the systemic circulation?**

a. Distribution
b. Drug therapeutic effect
c. First pass metabolism
d. Drug elimination through kidney
e. Protein binding

**32) Which of the following statements is correct?**

a. hypersensitivity reactions is classified as augmented (dose dependent) drug reaction.
b. Variation in response to a drug among different individuals is most likely to occur with a drug showing narrow therapeutic index.
c. If the TD50 is much higher than the ED50 then the drug is described as a narrow therapeutic drug
d. Potency is indicated by the height of the log dose response
e. It is safe to consume as much as you want from the OTC drugs.

**33) Which of the following statements is correct?**

a. Tolerance causes withdrawal symptoms
b. None of the above
c. Drugs may have physical dependence without having psychological dependence
d. If the drug has a psychological dependence property , it should also have physical dependence property
e. For the drugs to be addictive, they must induce tolerance

**34) A 65-year-old man suffering from osteoarthritis has been taking Naproxen 500 mg twice a day for one month. For some reasons, the physician decided to try another drug that work on the same receptor and prescribed him celecoxib that has 5 times more potent than naproxen. Which of the following was most likely the dose of celecoxib prescribed to the patient?**

a. 1000 mg
b. 10 mg
c. 50 mg
d. 5 mg
e. 100 mg

**35) Loading doses are employed;**

a. To decrease the drugs toxicity
b. To increase drug efficacy
c. To increase drug potency
d. To increase the half live of the drug
e. To reach drug steady state more rapidly

**36) Amer was poisoned with a drug that antagonize receptor A irreversibly, which of the following is an appropriate pharmacological intervention?**

a. To give drug that increase the metabolism of Drug A
b. To give receptor A non-competitive antagonist
c. To give receptor A non-competitive agonist
d. To give another drug that is an agonist to a different receptor, such receptor has the same physiological function as receptor A
e. To give another drug that is an agonist to a different receptor, such receptor has opposite physiological function to receptor A

# Answers

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|---|---|---|---|
| 1 | | 19 | |
| 2 | | 20 | |
| 3 | | 21 | |
| 4 | | 22 | A |
| 5 | | 23 | |
| 6 | D | 24 | |
| 7 | | 25 | |
| 8 | C | 26 | |
| 9 | | 27 | |
| 10 | B | 28 | D |
| 11 | C | 29 | |
| 12 | | 30 | |
| 13 | | 31 | C |
| 14 | | 32 | |
| 15 | D | 33 | C |
| 16 | | 34 | |
| 17 | | 35 | E |
| 18 | | 36 | |