



Pharmacology Test Bank

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Adrenergic Drugs

Q1:As a cardiovascular drug, dopamine can produce remarkably different effects depending on the dose administered. At high doses the predominant effect of dopamine would be to cause vasoconstriction by stimulating:

- A) alpha adrenergic receptors
- B) beta-1 adrenergic receptors
- C) beta-2 adrenergic receptors
- D) dopamine receptors

Answer : a

Q2:You are suddenly frightened by a neighborhood dog while jogging through your neighborhood. Which physiological response will likely occur?

- A) constriction of skeletal muscle arterioles
- B) decrease in pain threshold
- C) decreased fat metabolism
- D) miosis
- E) stimulation of glycogen breakdown by the liver

Answer : e

Q3: Both norepinephrine and epinephrine (noradrenaline & adrenaline) can be given i.v. to produce pressor responses. While both work equally well in many cases, what receptor subtype is stimulated by epinephrine, but is not stimulated by norepinephrine?

- A) alpha-1
- B) alpha-2
- C) beta-1
- D) beta-2

Answer : d

Q4: Several drugs used to treat non-cardiovascular conditions have alpha-blocking "side effects". If epinephrine is injected into such patients, it will likely produce a change in blood pressure resembling that produced by:

- A) dobutamine
- B) dopamine
- C) norepinephrine
- D) isoproterenol
- E) phenylephrine

Answer :d

Q5: A 16 year old patient arrives in the emergency department suffering from an anaphylactic reaction. The patient is having difficulty breathing, has severe urticaria, and is hypotensive. Which of the following is a drug of choice for treating this patient's potentially life-threatening condition?

- A) epinephrine
- B) isoproterenol
- C) norepinephrine
- D) phenylephrine
- E) terbutaline

Answer : a

Q6: Epinephrine namely stimulates the _____ in the autonomic nervous system

- A) Kappa receptors
- B) Mu receptors
- C) Cholinergic receptors
- D) Adrenergic receptors

Answer: d

Q7: Stimulation of beta 1-adrenergic receptors leads to:

- A) Nothing
- B) Decreased blood pressure
- C) A slow heart rate
- D) A fast heart rate

Answer : d

Q8: Stimulation of beta 2-adrenergic receptors causes:

- A) Pain relief
- B) Hypoglycemia (decreased glucose levels in the bloodstream)
- C) Bronchoconstriction
- D) Vasodilation

Answer: d

Q9: stimulate ... cause vasodilatation.

- A) Alpha 1 receptor
- B) Alpha 2 receptor
- C) Beta 1 receptor
- D) Beta 2 receptor

Answer : d

Q10: stimulate ... cause tachycardia.

- A) Alpha 1 receptor
- B) Alpha 2 receptor
- C) Beta 1 receptor
- D) Beta 2 receptor

Answer : c

Q11: A 7-year old child with a previous history of bee sting allergy is brought to the emergency department after being stung by 3 bees. Which of the following are probable signs of the anaphylactic reaction to bee sting?

- A) Bronchospasm, tachycardia, hypotension
- B) Bronchodilation, tachycardia, hypertension, vomiting, diarrhea
- C) Bronchodilation, bradycardia, hypotension, diarrhea
- D) Bronchospasm, bradycardia, hypotension, diarrhea
- E) Bronchodilation, tachycardia, vomiting, diarrhea

Answer: a

Q12: A 30-year-old man is admitted to the emergency department after taking a suicidal overdose of reserpine. His blood pressure is 50/0 mm Hg and heart rate is 40 bpm. Which of the following would be the most effective cardiovascular stimulant?

- A) Norepinephrine
- B) Amphetamine
- C) Clonidine
- D) Cocaine
- E) Tyramine

Answer : a

Q13: Your patient is to receive a selective Beta-2 stimulant drug. Beta2-selective stimulants are most commonly used in:

- A) Asthma
- B) Angina due to coronary insufficiency
- C) Chronic heart failure
- D) Delayed or insufficiently strong labor
- E) Raynaud's syndrome

Answer : a

Q14: Your patient is set to receive a selective beta-2 stimulant drug. In considering possible drug effects in this patient, you would note that beta-2 stimulants frequently cause:

- A) Skeletal muscle tremor
- B) Direct stimulation of renin release
- C) Hypoglycemia
- D) Increased cGMP (cyclic guanine monophosphate) in mast cells
- E) Vasodilation in the skin

Answer : a

Q15: An adrenergic agonist is ordered for a patient in shock . the nurse will note that this drug has had its primary Intended effect if which expected outcome occurs ?

- A) volume restoration
- B) increased blood pressure
- C) decreased urine output
- D) reduced anxiety

Answer : b (because the sympathetic leads to renal vasoconstriction)

Q16 :The nurse is caring for a patient who has asthma and administers a selective beta2-adrenergic agonist to treat bronchospasm. The nurse will expect this drug to also cause which side effect?

- A) Increased blood glucose
- B) Increased blood pressure
- C) Increased heart rate
- D) Increased gastrointestinal (GI) motility

Answer :a

Q17:The nurse administers epinephrine to a patient who is experiencing an anaphylactic reaction. The nurse should expect which of the following?

- A) Bradycardia
- B) Decreased urine output
- C) Hypotension
- D) Nausea and vomiting

Answer b

Q18:

6.4 Which of the following is correct regarding responses mediated by adrenergic receptors?

- A. Stimulation of α_1 receptors increases blood pressure.
- B. Stimulation of α_1 receptors reduces blood pressure.
- C. Stimulation of sympathetic presynaptic α_2 receptors increases norepinephrine release.
- D. Stimulation of β_2 receptors increases heart rate (tachycardia).
- E. Stimulation of β_2 receptors causes bronchoconstriction.

Correct answer = A. Stimulation of α_1 receptors, mostly found in the blood vessels, causes vasoconstriction and increase in blood pressure. Stimulation of α_2 receptors on the sympathetic presynaptic terminal reduces the release of norepinephrine. β_2 receptors are not found in the heart, so activation of β_2 receptors does not affect heart rate. Stimulation of β_2 receptors found in the bronchial tissues causes bronchodilation, not bronchoconstriction.

Q19:

6.5 An asthma patient was given a nonselective β agonist to relieve bronchoconstriction. Which of the following adverse effects would you expect to see in this patient?

- A. Bradycardia.
- B. Tachycardia.
- C. Hypotension (reduction in blood pressure).
- D. Worsening bronchoconstriction.

Correct answer = B. A nonselective β agonist activates both β_1 as well as β_2 receptors. β_1 activation causes an increase in heart rate (tachycardia), contractility, and subsequent increase in blood pressure. It relieves bronchoconstriction because of the β_2 receptor activation.

Q20:

6.7 A 12-year-old boy who is allergic to peanuts was brought to the emergency room after accidentally consuming peanuts contained in fast food. He is in anaphylactic shock. Which of the following drugs would be most appropriate to treat this patient?

- A. Norepinephrine.
- B. Phenylephrine.
- C. Dobutamine.
- D. Epinephrine.

Correct answer = D. Norepinephrine has more α agonistic effects and activates mainly α_1 , α_2 , and β_1 receptors. Epinephrine has more β agonistic effects and activates mainly α_1 , α_2 , β_1 , and β_2 receptors. Phenylephrine has predominantly α effects and activates mainly α_1 receptors. Dobutamine mainly activates β_1 receptors and has no significant effects on β_2 receptors. Thus, epinephrine is the drug of choice in anaphylactic shock that can both stimulate the heart (β_1 activation) and dilate bronchioles (β_2 activation).

Q21:

7.1 A 60-year-old female patient started on a new antihypertensive medication recently. Her blood pressure seems to be under control, but she complains of fatigue, drowsiness, and fainting when she gets up from the bed (orthostatic hypotension). Which of the following drugs is she most likely taking?

- A. Metoprolol.
- B. Propranolol.
- C. Prazosin.
- D. Clonidine.

Correct answer = C. α -Blockers (prazosin) are more likely to cause orthostatic hypotension compared to β -blockers (metoprolol, propranolol) and α_2 agonists (clonidine).

Q22:

7.9 Which of the following drugs is commonly used topically in the treatment of glaucoma?

- A. Atropine.
- B. Timolol.
- C. Tropicamide.
- D. Scopolamine.

Correct answer = B. β -Blockers reduce the formation of aqueous humor in the eye and therefore reduce intraocular pressure, thus relieving glaucoma. Timolol is a nonselective β -blocker that is commonly used topically to treat glaucoma. Atropine, tropicamide, and scopolamine are anticholinergic drugs that might worsen glaucoma.

Q23:

7.7 Which of the following is correct regarding α -adrenergic blockers?

- A. α -Adrenergic blockers are used in the treatment of hypotension in anaphylactic shock.
- B. α -Adrenergic blockers are used in the treatment of benign prostatic hyperplasia (BPH).
- C. α -Adrenergic blockers may cause bradycardia.
- D. α -Adrenergic blockers are used in the treatment of asthma.
- E. α -Adrenergic blockers reduce the frequency of urination.

Correct answer = B. α -Adrenergic blockers are used in the treatment of BPH because of their relaxant effect on prostate smooth muscles. Being antihypertensive agents, they are not useful in treating hypotension in anaphylaxis. α -Adrenergic blockers generally cause reflex tachycardia (not bradycardia) due to the significant drop in blood pressure caused by them. α -Adrenergic blockers have no significant effects on bronchial tissues and are not useful in treating asthma. They increase (not reduce) the frequency of urination by relaxing the internal sphincter of the urinary bladder, which is controlled by α_1 receptors.

Q24:

7.2 A 30-year-old male patient was brought to the ER with amphetamine overdose. He presented with high blood pressure and arrhythmia. Which of the following is correct regarding this patient?

- A. Amphetamine can activate all types of adrenergic receptors.
- B. β -Blockers are the ideal antidotes for amphetamine poisoning.
- C. α -Blockers can normalize the blood pressure in this patient.
- D. Miosis could be a possible symptom of amphetamine poisoning.

Correct answer = A. Amphetamine is an indirect adrenergic agonist that mainly enhances the release of norepinephrine from peripheral sympathetic neurons. Therefore, it activates all types of adrenergic receptors (that is, α and β receptors) and causes an increase in blood pressure. Since both α and β receptors are activated by amphetamine, α -blockers or β -blockers alone cannot relieve the symptoms of amphetamine poisoning. Since amphetamine causes sympathetic activation, it causes mydriasis, not miosis.

Q25: The adrenoceptor that effect to the bronchi cause bronchial relaxation:

- A. Alpha 1 adrenoceptors agonist
- B. Beta 2 adrenoceptors agonist
- C. Beta 1 adrenoceptors antagonist
- D. Muscarinic receptor
- E. None of the above

Answer : B

Q26: True about sympathetic nervous system:

- A. Ach is the neurotransmitters for all receptors
- B. Discrete system
- C. Have along preganglionic fibers
- D. Involuntary
- E. None of the above

Answer : D

Q27: When the phenylephrine is administrated by slow infusion of the therapeutic dose what can affect to the blood pressure and the heart:

- A. Increase in blood pressure and increase in heart rate
- B. Increase in the blood pressure and decrease in the heart rate
- C. Decrease in the blood pressure and decrease in heart rate
- D. Decrease in blood pressure and increase in heart rate
- E. Increase in blood pressure and no change in heart rate

Answer : B (IT ACTS ON ALPHA -1 RECEPTOR

Q28 : Antagonists of both alpha and beta adrenoreceptors:

- A. Labetalol
- B. Propranolol
- C. Prazosin
- D. Phenylephrine
- E. Dobutamine

Answer : A (it's mainly to beta-receptor , with minor effect on alpha)

Q29: which of the following is the of first choice in acute attack of glaucoma ?

- a) Propanolol.
- b) Pilocarbine.
- c) Physostigmine.
- d) Neostigmine

Answer : A (Physostigmine also right , but the Q asked about first choice)

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