Pharma Unit

Pharmacology Top 10 Most Repeated Questions with Answers According to New Syllabus ER 2020-21

2nd Year D. Pharmacy

1) Explain oral route of drug administration with advantages and disadvantages?

Ans.

Definition: Oral Route: In this route of Drug Administration weather solid or liquid preparation is placed in mouth cavity and it is swallowed along with water or milk.

Advantages

- It is most common route of drug administration.
- It is most convenient route of drug administration.
- It is most economical route of Drug Administration.
- It is safest route of Drug Administration.
- Self-medication is possible.
- No complication is there as compared to injections.

Disadvantages

- Onset of action is slow.
- Irritant and unpalatable drugs cannot be given by oral route.
- This route cannot be employed in unconscious and uncooperative patients.
- Drug passes through first pass metabolism.
- 100% absorption is not possible.
- Drugs can be destroyed by digestive juice.

2) Explain parenteral route of drug administration with advantages and disadvantages?

Ans.

Parenteral Route: Route of Drug Administration other than alimentary or gastrointestinal tract are called as parenteral route to drug administration.

There are different types of parenteral routes; Intravenous, Intramuscular, Subcutaneous, Intradermal, Intrathecal, Inhalation route.

Advantages

- Onset of action is fast.
- Large quantity of drugs can be administered by this route.
- This route can be employed in unconscious patient.
- This route can be used in the patient who have nausea or vomiting.
- Avoidance of first pass metabolism.
- Drugs that are not absorbed by gastrointestinal tract can be given by this route

Disadvantages

- Self-medication is not possible.
- This route is less safe as compared to oral route.
- This route is expensive.
- This route may cause inconvenient to some patient.
- Danger of infection if proper care is not taken.
- This route of drug administration is not suitable for oily solution.
- Bruising can occur at injection site.
- It can produce pain at the site of injection.

3) Define local anaesthetic agent with classification, pharmacological action, dose, indication and contraindications?

Ans.

Definition: Local anaesthetics prevent the generation and conduction of impulses in the nerve by blocking voltage dependent sodium channels which prevents depolarization.

Classification:

A. Injections

- Low potency: Ex: procaine, chlorprocaine.
- Intermediate potency: Ex: Lignocaine, prilocaine
- High potency: Ex: tetracaine, bupivacaine, dibucaine

B. Surface anaesthetics: Ex: cocaine, lignocaine, tetracaine

Pharmacological Action:

1) Effect on C.N.S.: Local anaesthetics produce stimulation of CNS which causes euphoria, restlessness, and tremors.
2) Effect on CVS: All local anaesthetics produces vasodilation, except cocaine.
3) Effect on sensations: Local anaesthetics block the sensation of pain, temperature, touch, and pressure.
4) Skin and Mucous Membranes: Topical application blocks sensory nerve endings on the skin or mucous membranes, inducing temporary numbness
5) Effect on eye: Topical eye drops containing local anaesthetics provide rapid-onset anaesthesia for ophthalmic procedures like tonometry and minor eye surgeries.

Dose:

1) Bupivacaine: 1 – 2.5mg/kg
2) Lignocaine / lidocaine: 4 – 5mg/kg
3) Mepivacaine: 4 – 5mg/kg
4) Prilocaine: 5 – 7mg/kg
5) Ropivacaine: 2.5 - 3mg/kg

Indication:

- Surface anaesthesia is used to treat pain due to burns and ulcers.
- Infiltration anaesthesia is used to anaesthetize nerve ending by subcutaneous in filtration.
- Nerve block anaesthesia is used to anaesthetize nerve when injected dose to specific nerve.
- Spinal anaesthesia is used in case of spinal surgery.

Contraindications:

1) Allergy or hypersensitivity to the specific local anaesthetic agent or its components
2) severe liver disease
3) cardiac arrhythmias
4) Infection at the site of administration
5) Pre-existing neurological conditions
6) Pregnancy

4) Explain non-steroidal anti-inflammatory drugs with its classification and pharmacological action?

Ans.

Definition: These are the drugs produce relief of pain and elevated body temperature. As these drugs also produce anti-inflammatory effects they are known as NSAIDS. NSAIDs do not interact with opioid receptors.

Classification:

A) NON-SELECTIVE COX-I INHIBITORS
- Salicylates and Congeners Ex: Salicylates, Aspirin, Salicylic Acid, Sodium Salicylate
- Para-Amino Phenol Derivatives Ex: Paracetamol
- Pyrazolon Derivatives: Ex: Aminopyrine, Antipyrine, Phenylbutazone
- Miscellaneous: Ex: Indomethacin, Ibuprofen, Diclofenac, Nimesulide

B) SELECTIVE COX-II INHIBITORS: Ex: celecoxib, rofecoxib, valdecoxib

Pharmacological action:

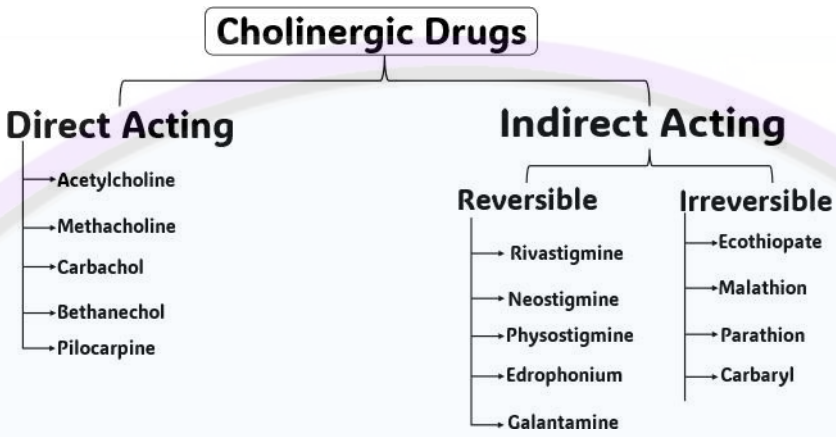
1) Analgesic: aspirin is a good analgesic and effective only in dull achieving pain of low intensity.
2) Antipyretics: In fever salicylate bring down the temperature to normal level. But in normal individual there is a no change in temperature.
3) Respiration: salicylate stimulate respiration indirectly and directly and increase respiration rate and volume and may lead respiratory alkalosis.
4) G.I.T: aspirin causes gastric irritation and produces pain, nausea, vomiting, salicylates also cause gastric ulceration and haemorrhage.
5) Anti-inflammatory action: at higher dose of 4-6gm/day aspirin act as anti-inflammatory agents and suppressed the sign of swelling erythema and pain.
6) Kidneys: in low dose it depresses uric acid excretion whereas in high dose it enhances uric acid excretion.
7) C.V.S: No effects at normal dose, toxic doses produce paralysis of vasomotor centres.
8) Blood: salicylate lower erythrocytic sedimentation rate (ESR). They also increase Prothrombin level of plasma prolong bleeding time.
9) Endocrines: salicylate stimulates the release of adrenaline, adrenal medulla ACTH. They interference with the binding of thyroxine depresses the secretion of thyroid stimulating hormones.
10) Local action: salicylate having antiseptic, fungi statics and keratolytic affects.

5) Explain cholinergic drugs with its classification and pharmacological action?

Ans.

Definition: Cholinergic drugs are the substances that enhances the action of acetylcholine. Acetylcholine is the main neurotransmitter of parasympathetic nervous system. Cholinergic drugs are also called as parasympathomimetic drugs. Cholinergic drugs act by 2 main mechanisms viz. By directly binding to cholinergic receptors and by inhibiting acetylcholinesterase enzyme

Classification:



Pharmacological action:

The pharmacological action of cholinergic drugs are divided into 2 parts, Muscarinic action and nicotinic action

A. Muscarinic Action:

1. Heart: Cholinergic drugs decrease heart rate and force of contraction by acting on M2 receptors.
2. Blood vessels: Cholinergic drugs dilate all blood vessels in the body. It produces vasodilation by which blood pressure decreases.
3. GIT: Cholinergic drug produces contraction of smooth muscles of GIT. It increases peristaltic movements and tone of the gut. It also increases GT secretions.
4. Bronchi: It produces contraction of bronchial muscles and produces bronchospasm.
5. Urinary tract: It contract smooth muscles of GIT and increase peristalsis movement.
6. Glands: It increases glandular secretions, it increases sweating, salivation, lachrymation.
7. Eyes: It produces miosis by acting on M3 receptors.

B. Nicotinic action:

1. Skeletal muscle: It stimulates skeletal muscle contraction.
2. Autonomic ganglia: It stimulates both sympathetic and parasympathetic ganglia.

6) Define general anaesthetic agents with its classification and pharmacological action?

Ans.

Definition: General anaesthetics are the agents which produce reversible loss of sensation and consciousness.

Classification:

A) Inhalation anaesthetics

- Volatile liquids: Ex: ether, halothane, enflurane, isoflurane
- Gases: Ex: nitrous oxide, Cyclopropane

B) Intravenous anaesthetic

E.g.- thiopentone, propofol, Ketamine, benzodiazepines.

Pharmacological action:

a) Heart: General anaesthetic agents can depress myocardial contractility and reduce cardiac output. Some anaesthetics can also induce cardiac arrhythmias, especially at higher doses.

b) Blood Pressure: general anaesthetics generally cause vasodilation, which leads to a decrease in systemic vascular resistance and blood pressure. They can also depress the baroreceptor reflex, further contributing to hypotension. Certain agents, such as ketamine, may increase blood pressure due to their sympathomimetic effects.

c) Lungs: General anaesthetics typically depress respiratory and cause respiratory depression. They can decrease tidal volume and minute ventilation, leading to hypoventilation.

d) Gastrointestinal Tract (GIT): Anaesthetics can inhibit gastrointestinal motility and secretion. They may delay gastric emptying and impair bowel peristalsis, which can lead to postoperative ileus.

e) Eyes: general anaesthetics cause pupillary dilation (mydriasis) by inhibiting the parasympathetic tone. General anaesthetics can also reduce lacrimation and blink reflexes, potentially leading to dry eyes during surgery.

7) Define sedative and hypnotic with its classification and pharmacological action?

Ans.

Definition:

- Sedative: these are the drugs which reduce excitement without producing sleep.
- Hypnotics: these are the drugs which produces sleep resembling natural sleep.

Classification:

A) Barbiturates:

- Long action barbiturates (duration of action in 8hrs or more): Ex: barbitone, Phenobarbitone.
- Intermediate acting barbitone (4 hrs or more): Ex: amylobarbitone, cyclobarbitione
- Short acting barbitone (less than 4 hrs): Ex: hexobarbitone, secobarbitone.
- Ultra short acting barbiturates. (less than 1 hrs) Ex: thiopentone, methohexitone.

B) Non- barbiturates:

- Benzodiazepines: Ex: diazepam, nitrazepam, alprazolam.
- Alcohol: Ex: chlorhydrate
- Aldehydes: Ex: paraldehyde

Pharmacological Action

a) C.N.S: barbiturates produce C.N.S depression such that from mild sedation to even coma.
b) Sleep: barbiturates induce sleep resemble natural sleep, but it decreases the time spent on REM sleep.
c) C.V.S: they depress cardiac activity and in higher dose cause fall in BP.
d) Respiratory system: in higher dose they depress respiratory centre in brain and may produces death.
e) Kidneys: large dose decrease urinary output due to decrease in glomerular filtration and release of ADH (anti diuretics hormone).
f) Liver: large dose may produce hepatic dysfunction.

8) Explain anti-convulsant drugs with its classification and pharmacological action?

Ans.

Definition: The medication used to control or prevent seizures (convulsions) are called as anti-convulsant drugs.

Classification:

- Hydrations: Ex: phenytoin
- Barbiturates: Ex: Phenobarbitone, primidone
- Iminostilbenes: Ex: carbamazepine
- Succinimides: Ex: ethosuximides
- Aliphatic carboxylic acids: Ex: sodium valproate
- Benzodiazepines: Ex: clonazepam, diazepam
- Newer antiepileptic: Ex: lamotrigine, gabapentin
- Miscellaneous: Ex: trimethadione, Acetazolamide

Pharmacological action:

- Central Nervous System (CNS): Anti-convulsant drugs Stabilize brain activity to prevent seizures.it inhibit abnormal electrical activity, which helps prevent seizures. It Modulate neurotransmitters to balance brain signals.
- Heart: Anti-convulsant drugs generally, do not directly affect the heart. Some drugs such as phenytoin may rarely cause irregular heartbeats.
- Blood Pressure: Anti-convulsant drugs do not impact blood pressure. Some drugs, like gabapentin and pregabalin may cause mild increases in blood pressure.
- Lungs: May cause respiratory depression rarely.
- Gastrointestinal Tract (GIT): Anti-convulsant drugs Can lead to nausea, vomiting, diarrhoea, or constipation.
- Eyes: Anti-convulsant drugs can occasionally cause visual disturbances or eye-related side effects.

9) Define antihypertensive drugs with its classification and pharmacological action?

Ans.

Definition: The drugs which reduce elevated blood pressure to normal level are called antihypertensive drugs. Or The drugs used in the treatment of hypertension are called antihypertensive drugs.

Classification

1) Drugs acting centrally: e.g. clonidine, methyldopa.
2) Drugs acting on autonomic ganglia, i.e. ganglion blocking agents, e.g. hexamethonium, mecamylamine, pempidine, trimethaphan.
3) Drugs acting on post-ganglionic sympathetic nerve endings:
   - Adrenergic neuron blockers, e.g. guanethidine.
   - Catecholamine depilators, e.g. reserpine.
4) Drugs acting on adrenergic receptors:
   - Alpha Adrenergic blockers: e.g. phenoxybenzamine, phentolamine.
   - Beta Adrenergic blockers, e.g. propranolol.
5) Drugs acting directly on vascular smooth muscles(vasodilators): e.g. Hydralazine, diazoxide, minoxidil, sodium nitroprusside.
6) Drugs acting by stimulating baroreceptor, e.g. veratrum.
7) Drugs which block renin angiotensin aldosterone axis, e.g. saralsin, spironolactone, captopril, enalapril.
8) Oral diuretics: e.g. thiazides (hydrochlorothiazide).
9) Miscellaneous: e.g. MAO inhibitors (pargyline), nifedipine, sodium nitroprusside.

Pharmacological action:

a. Heart: Antihypertensive drugs can reduce the workload on the heart by decreasing blood pressure, reducing myocardial contractility
b. Blood vessels: They relax blood vessels, making them wider, which lowers blood pressure by allowing blood to flow more easily.
c. Lungs: Some drugs may affect breathing in some people, causing tightness in the chest and produce bronchoconstriction
d. Gastrointestinal Tract (GIT): Antihypertensive drugs generally don't directly affect the gut, but they may cause stomach upset or diarrhoea in some patient.
e. Eyes: Antihypertensive drugs may cause vision changes or eye discomfort in some individuals.
f. Kidneys: Antihypertensive drugs can act on the kidneys to decrease sodium retention and decreases blood pressure.

10) Define anti neoplastic agents with its classification indication and contraindication?

Ans.

Definition: The drugs which are used in the treatment of cancer are called antineoplastic agents/anticancer agents.

Classification:

A. Alkylating agents
- Nitrogen mustards: Mechlorethamine, cyclophosphamide, melphalan, mustard, chlorambucil.
- Ethyleneimines: Triethylenemelamine, triethylene thiophosphoramide.
- Alkyl sulfonates: Busulfan.

B. Antimetabolites
- Folic acid antagonist: Methotrexate.
- Purine antagonists: 6-mercaptopurine, azathioprine.
- Pyrimidine antagonists: Fluorouracil, cytosine arabinoside.

C. Radioactive isotopes: Radioiodine, radio phosphorus, radiogold.

D. Antibiotics: Actinomycin-D, rubidomycin, mitomycin, bleomycin.

E. Hormones: Androgens, oestrogens, progestins, corticosteroid.

F. Enzymes: L-asparaginase.

G. Miscellaneous agents
- Vinca alkaloids: Vincristine, vinblastine, Taxol
- Others: Hydroxyurea, cisplatin.

Therapeutic uses:
- Used in the treatment of Breast cancer.
- Used in the treatment of Hodgkin's disease.
- Used in the treatment of Lung cancer.
- Used in the treatment of Neuroblastoma.
- Used in the treatment of Cancer of ovary.
- Used in the treatment of Ewing's sarcoma.
- Used in the treatment of Malignant lymphomas.
- It is used as an immunosuppressive agent.
- Used in the treatment of Chronic leukaemia's.
- Used in the treatment of Chronic granulocytic leukaemia.
- Used in the treatment of Chronic myeloid leukaemia.

Contraindications: Pregnancy, Breastfeeding, Immunosuppression, Allergic reaction, organ disfunction.

All The Best For Your Exam

Very Imp Note:

- Please Read All the chapters very carefully before Pharmacology Exam.
- These questions are only for the reference purpose.