PHARMACOLOGICAL TASKS (MODULE I)

Identify the drug, its pharmacological group and indication. Explain mechanism of action.

1. A derivative of the para-aminobenzoic acid (PABA). It is not soluble in water, used in aspersions, ointments, pastes, tablets, capsules, and suppositories. It is used topically and reduces feeling of pain and itch.

2. An amorphous phytogenous powder of brown color which is water and spirit-soluble. It coagulates mucous surface layer with albuminate forming, causes local vasoconstriction, decreasing of permeability and inflammatory.

3. A plant origin substance (alkaloid) causes pupil dilatation, paralysis of accommodation, an increase of intraocular pressure, an increase of heart rate, decreases the tone of the smooth muscles. Sweat gland secretions are greatly reduced, bronchial and salivary secretions are decreased. It is used in the case of intestinal colic, renal colic, cholecystalgia, gastric and duodenal ulcer.

4. A substance, which acts as a mediator, causes vasoconstriction, stimulates heart, increases blood pressure, relaxes gastrointestinal and bronchiolar smooth muscles, and causes hyperglycemia and an increase in tissue metabolism. It is used in the case of allergic reaction, hypoglycemic coma, shock, and collapse. Topically it causes vasoconstriction.

5. A substance, which acts as mediator, causes vasoconstriction, an increase in blood pressure. It has a weak stimulatory effect on the heart and practically does not cause bronchodilatation. It is used in the case of shock, collapse, and hypotension.

6. A synthetic adrenoblocker. It decreases the heart rate, cardiac output and oxygen consumption. It prevents influence of adrenaline on the heart, increases the tone of the bronchial smooth muscles. It is used in the case of angina pectoris, arrhythmias, and essential hypertension.

7. A phytogenous or synthetic substance which causes iris-contraction, spasm of accommodation, decreases intraocular pressure, increases secretory activity, increases the tone of the smooth muscles. It does not influence on the transmission of the nerve impulses in ganglions and myoneural junctions. It is used I the case of glaucoma, stomach, intestinal, and bladder atony. In the case of poisoning by this substance atropinum is used.

8. A phytogenous substance, which inhibits the release of neurotransmitter from peripheral adrenergic neurons and acts via catecholamine depletion. It has hypotensive action and is used for treatment of hypertension. Patient may develop orthostatic [postural] hypotension, and diarrhea.

9. A synthetic drug which decreases blood pressure, increases peripheric circulation, decreases intestinal and stomach motility, reduces secretion of the glands, inhibits receptors of the chromaffin tissue of the adrenal glands and carotid sinuses. It has no influence on M-cholinergic receptors but inhibits N-cholinergic receptors. It is used to decrease blood pressure in the case of hypertensic crisis and in the case of peripheral vasospasm (obliterating endarteritis). It may cause disorder of accommodation, intestinal and bladder atony, orthostatic hypotension.

10. A synthetic drug which acts by blocking transmission at the neuronal junction, its duration of action is 5-10 min, and anticholinesterase drug strengthen its action. It is used to relax muscles. Side effects: myalgia in the postoperative period, arrhythmia.

11. A 32-year-old patient was intravenously administered a drug, which is a derivative of barbituric acid. It is a white powder with tints of blue. It is produced in sterile vials. Intravenous administration causes narcosis in a few minutes without stage of excitation. It tonicizes vagus nerve, causes laryngospasm, and hypersecretion. It is used for intravenous and rectal narcosis.

12. A 20-year-old patient with renal colic was administered subcutaneously a neogalenical drug which is a derivative of opium and contains about 50% of morphine. It is effective in cases of traumatic and spasmodic pain. It causes habitation and addiction.

13. A schizophrenic 26-year-old patient was prescribed a derivative of phenothiazine in dragee. It has antipsychotic properties, antiemetic, antihistamine and hypothermic action, anticonvulsant potency, decreases motor activity. It potentiates action of hypnotics, opioid analgesics and local anesthetics.

14. A 19-year-old patient with neurosis was prescribed a derivative of benzodiazepine. This drug has anxiolityc, antianxiety, antiphonic, and anticonvulsant properties. It reduces delirium and hallucinations.

15. A 30-year-old patient suffering from hypotension was prescribed a drug derived from a plant. It is a hypotoxic alkaloid which is similar to natural metabolites. It's a psychotonic. It acts mainly on the cortex of cerebrum but along with that it stimulates vital centers of the medulla oblongata. It has central and peripheral action on the cardiovascular system.

16. A derivative of barbituric acid that is not readily solved in water and is produced in tablets. It causes 6-8 hours sleep. It has ability to cumulate. Also it has antiepileptic, antihypertensive, and sedative properties.

17. A 56-year-old patient with Parkinson's disease was prescribed an antiparkinson's drug, which readily penetrates through blood-brain barrier and into neurons. In neurons it turns into dophamine that is an inhibitory transmitter.

18. A 20-year-old patient with endogenous depression was prescribed a drug which has tricyclic structure. It does not influence monoamine oxidase. It has mood elevating properties along with prominent sedative action. It has M-cholinoblocking and antihistaminic action. It does not cause aggravation of delirium and hallucinations. It does not disturb sleep and is used in the case of agitation and depression.

19. A derivative of pyrazolone readily solved in water. It is produced in ampoules and tablets and is prescribed orally and parenterally. It has rapid onset but short duration of action and is used in the case of headache, toothache, neuralgia, and myalgia. Its side effects: leukopenia, drug agranulocytosis, allergic reactions. Anaphylactic shock is possible.

20. A 2-year-old child with high temperature was prescribed a derivative of aniline. It has analgesic and antipyretic properties but almost does not have anti-inflammatory action. It is used in the cases of headache, myalgia, neuralgia, and fever. Its side effects: cyanosis, methemoglobinemia, anemia, leukopenia, allergic reactions, jaundice, collapse, kidney affection.

21. A derivative of GABA that readily penetrates through blood-brain barrier. It has narcotic, analgesic, sedative, and hypnotic action. Duration of action is 1.5-3 hours.

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32. A second-generation H_1 histamine antagonist drug used to treat allergies. Structurally, it is closely related to tricyclic antidepressants. The drug is available as tablets, oral suspension, and syrup; is indicated for the symptomatic relief of allergy such as hay fever (allergic rhinitis), urticaria (hives), and other skin allergies. For allergic rhinitis (hay fever) is effective for both nasal and eye symptoms: sneezing, runny nose, itchy or burning eyes. As a 'non-sedating' antihistamine, the drug causes less but still significant sedation and psychomotor retardation than the older antihistamines (first-generation) because it penetrates the blood brain barrier only to a smaller extent.

33. A drug is an analogue of natural hormone produced by the pancreas which is central to regulating carbohydrate and fat metabolism in the body. The drug is used medically to treat all patients with type 1 diabetes and over 40% of those with type 2 diabetes. The drug is now manufactured for widespread clinical use by recombinant DNA technology. It cannot be taken orally because, like nearly all other proteins introduced into the gastrointestinal tract, it is reduced to fragments, whereupon all activity is lost. The drug is usually taken as subcutaneous injections.

34. A synthetic corticosteroid drug (without fluorine atoms) that is particularly effective as an immunosuppressant. It is used to treat certain inflammatory diseases and allergic reactions, but has significant adverse effects. Because it suppresses the immune system, it leaves patients more susceptible to infections. It is usually taken orally but can be delivered by intramuscular injection or intravenous injection.

35. A naturally-occurring fatty acid ester form of fat-soluble vitamin with potential antioxidant, antineoplastic and chemopreventive activities. Night blindness—the inability to see well in dim light—is associated with a deficiency of this vitamin. Too much dose of this vitamin in retinoid form can be harmful or fatal, resulting in what is known as hypervitaminosis.

36. A drug of C-21 steroid hormone involved in the female menstrual cycle, pregnancy (supports gestation) and embryogenesis. It is used to treat recurrent pregnancy loss, and for prevention of preterm birth in pregnant women. The hormone transforms proliferative endometrium into secretory endometrium, inhibits (at the usual dose range) the secretion of pituitary gonadotropins, which in turn prevents follicular maturation and ovulation. It is contraindicated to patients with thrombotic disorders (thrombophlebitis, cerebrovascular disorders, pulmonary embolism, and retinal thrombosis).

37. A drug of vitamin, which occurs naturally in foods such as citrus fruit, tomatoes, potatoes, and leafy vegetables. It is important for bones and connective tissues, muscles, and blood vessels. It also helps the body absorb iron. There are two forms of the vitamin which are believed to be important in oxidation-reduction reactions. Vitamin deficiency results in scurvy. Collagenous structures are primarily affected, lesions develop in bones and blood vessels. Administration of the drug of vitamin completely reverses the symptoms of deficiency.