

ANTI-INFLAMMATORY, ANTI-ALLERGIC AND DRUGS THAT INFLUENCE ON IMMUNE PROCESSES

A. Actuality. Inflammation is a neurotropic complex, vascular and metabolic reaction triggered by the penetration of pathogens into the healthy tissues of the body. It is a defence reaction and has some common mechanisms with infection and allergy. In the inflammatory process a continuous cycle is established: inflammation - tissue destruction - inflammation. In this case, anti-inflammatory drugs, widely used in therapeutics, are of particular importance. Immune system disruptions have a growing incidence in medical practice. In this context, preparation of preparations for the correction of these disturbances is current. Allergic manifestations are diverse, frequent, often very serious and require emergency assistance. For this reason, profound knowledge is required in the field of anti-allergy preparations.

B. The purpose of the training. Familiarize students with the pharmacokinetic and pharmacodynamic properties of anti-inflammatory, anti-allergic and immune system drugs, as well as the selection of medications based on disease and pathological conditions.

C. Learning objectives:

- a) The student needs **to know**: definition, classification, mechanism of action, effects, indications, contraindications and adverse reactions of anti-inflammatory, anti-allergic, immunomodulatory and immunosuppressive preparations.
- b) The student should **be able to**: prescribe anti-inflammatory, anti-allergic and anti-allergic drugs in various forms of medicine, to indicate them according to diseases and pathological conditions.

D. Initial level of knowledge required for interdisciplinary integration:

Histology. Immunological protection organs. Immune system and cellular interactions in immune reactions.

Biochemistry. Structure and function of immunoglobulins.

Human physiology, Microbiology, Virology and Immunology. Immunity. Sensitization of the body. Immune reactions. The notion of allergens and antibodies. Types of allergy. The role of lymphocytes, immunoglobulins. Basic symptoms of anaphylactic shock. Mechanisms of anaphylaxis. Local manifestations of anaphylaxis. Considerations about transplantological immunity. Allergic diseases. Particularities and Mechanisms of Delayed Hypersensitivity Reactions.

Pathophysiology. Allergy concepts. Sensitization, hypersensitivity. Mediators of allergic reactions. Allergic type reactions immediately. Mechanisms of their development. Anaphylaxis. Serum sickness. Delayed allergic reactions. Bacterial allergy. Autoallergy. Immunodeficiencies.

Inflammation. Definition. The aetiology. Phases of inflammation. Metabolic, pathophysiological and physicochemical disorders in the inflammation outbreak. Mediators of inflammation. Particularities of microcirculation in the inflammation outbreak. Exudation of white blood cells, its mechanism. Phagocytosis in the inflammation outbreak. The proliferative phase. Consequences of inflammation.

E. Self-training questions:

1. Classification of anti-inflammatory drugs.
2. Non-steroidal anti-inflammatory drugs. Classification. Mechanism of action, effects, indications, contraindications and adverse reactions.
3. Selective cyclooxygenase inhibitors. Mechanism of anti-inflammatory action. Effects, indications, contraindications, side effects.
4. Steroidal anti-inflammatory drugs. Classification. Mechanism of anti-inflammatory action. Effects, indications and contraindications. Adverse reactions
5. Specific anti-inflammatory drugs (anti-rheumatic). Classification. Mechanism of action. Effects, indications, contraindications and side effects of 4-aminoquinoline derivatives, gold preparations, thiol derivatives, sulfasalazine, monoclonal antibodies and cytostatic.
6. Classification of antiallergic drugs.
7. Drugs used in immediate-type allergic reactions: (anaphylactic shock, bronchial asthma, urticaria, etc). Classification, pharmacodynamic peculiarities and indications of alpha-beta and beta-adrenomimetics, methylxanthines, M-cholinoblockers.
8. Glucocorticoids: mechanism of antiallergic action, effects, indications, adverse reactions.
9. H1-antihistamines: classification by chemical structure and generations. Mechanism of action, effects, indications, contraindications and adverse reactions.
10. Acute intoxication with H1-antihistamines: clinical picture, treatment. Peculiarities of poisoning in children.
11. Inhibitors of mast cell degranulation: classification, mechanism of action, effects, indications, contraindications, adverse reactions.
12. Drugs used in delayed type allergic reactions. Classification.
13. Minor immunodepressants. Classification. Mechanism of action, effects, indications, contraindications and adverse reactions of quinoline derivatives, gold salts, thiol derivatives.
14. Major immunodepressants. Classification. Mechanism of action, effects, indications, contraindications and side effects of glucocorticoids and cytostatics.
15. Classification of immunomodulatory drugs (drugs with influence on the immune system).
16. Immunomodulators of bacterial origin: classification, immunostimulatory action, indications, contraindications, adverse reactions.
17. Immunomodulators of fungal and plant origin: immunostimulatory action, indications.
18. Immunomodulators of animal and synthetic origin: immunostimulatory action, indications.
19. Recombinant immunomodulators and interferons: immunostimulatory action, indications.
20. Entomological drugs as immunomodulators.

F. Individual works for the student's self-training (points 1, 2, 3 and 4 and are done in written form during the preparation process)

1) To prescribe the following drugs in all medicinal forms:

1. Diclofenac. 2. Ketoprofen. 3. Ibuprofen. 4. Meloxicam. 5. Lornoxicam. 6. Aceclofenac. 7. Celecoxib. 8. Disodium cromoglycate. 9. Ketotifen 10. Dexamethasone. 11. Hydroxychloroquine. 12. Infliximab. 13. Epinephrine. 14. Salbutamol. 15. Diphenhydramine. 16. Clemastine. 17. Mebhydroline. 18. Loratadine. 19. Cetirizine. 20. Levamisole. 21. Interferon. 22. Azathioprine. 23. Methotrexate 24. Imupurin.

<i>Nr.</i>	<i>Denumirea medicamentului</i>	<i>Forme de livrare</i>
1	Diclofenac	Tablets 0,015; 0,025; Rectal supp.0,05; 0,1; Sol. 2,5% - 3 ml in ampoules; Ointment; gel; cream 2%- 30,0;
2	Ketoprofen	Capsules and Tablets 0,05; 0,1; Gel and cream 2,5; 5%-30,0; Sol. 5% - 2ml in ampoules;
3	Ibuprofen	Tablets 0,05; 0,1; 0,2; 0,4; 0,6; 0,8; Dragees 0,2; Capsules 0,3; Syrup 2%-100; 200 ml; Suspension 2% - 60; 120 ml; 4% - 15 ml in vials (internally); Cream 5%; 10% - 20, 50, 100,0; Gel 10% - 30,0; Sup. rectale 0,06; 0,125;
4	Meloxicam	Tablets and Capsule 0,0075; 0,015; Rectal supp. 0,015; Sol. 1%-1,5 ml in ampoules; Suspension 0,15%-100 ml in vials;
5	Lornoxicam	Tablets 0,008; Lyophilized powder 0,008 in ampoules and in vials;
6	Aceclofenac	Tablets 0,1; 0,2; Powder 0,1 in envelopes;
7	Celecoxib	Capsules 0,1; 0,2;
8	Disodium cromoglycate	Aerosol 10; 15 ml; Powder 0,02 in capsules (for inhalation); Sol. 1%; 2% - 2; 10ml in ampoules (for inhalation);

		Capsules 0,1 (internally); Sol. 2% - 0,25; 5;10ml and 4% -10 ml in vials (eye drops); Sol. 2% - 15; 26 ml in vials (nasal drops);
9	Ketotifen	Tablets and capsules 0,001; Syrup 0,02% - 100; 200 ml;
10	Dexamethasone	Tablets 0,0005; Sol. 0,4% -1ml; 2 ml in ampoules; Sol. 0,5 %-5 ml in vials (eye drops);
11	Hydroxychloroquine	Tablets 0,2;
12	Infliximab	Lyophilized powder 0,1 in vials;
13	Epinephrine	Sol. 0,1% -1 ml; (hidrotartrate) 0,18%- 1ml in ampoules; Sol. 0,1%-10 ml in vials (for external use);
14	Salbutamol	Sol. 0,1%- 2,5 ml in ampoules (for inhalation); Sol. 0,1%- 2,5; 5; 10; 50ml in vials; Tablets 0,002; 0,004; 0,006; 0,007; 0,008; Syrup 0,04%- 50ml; Sol. 0,1%- 5 ml in ampoules (i/v, s/c); Aerosol 10ml (for inhalation);
15	Diphenhydramine	Tablets 0,025; 0,05; 0,1; 0,02; 0,03; Sol.1%-1ml in ampoules; Gel 1%-20,0; Ointment 2%-20,0; Rectal supp.0,025; 0,01;
16	Clemastine	Tablets 0,001; Syrup 0,013%- 60; 100 ml; Sol. 0,1% - 2 ml in ampoules; Gel 0,03%-20,0;
17	Mehhydroline	Tablets and Dragees 0,05; 0,1;
18	Loratadine	Tablets 0,01; Syrup 0,1%-100; 120 ml; Suspension 0,1% - 30; 100 ml (internally);
19	Cetirizine	Tablets 0,01; Sol. 1% - 10; 20 ml in vials (internally); Syrup 0,1%-60 ml;
20	Levamisole	Tablets 0,05; 0,15;

21	Interferon	Sol. 100 000, 500 000, 1 000 000; 3 000 000 UA in ampoules (i/m); Lyophilized powder 1000 UA in ampoules (to dissolve, intranasal use);
22	Azathioprine	Tablets 0,05;
23	Methotrexate	Tablets 0,0025; Sol. 1% -2 ml in ampoules;
24	Imupurin	Capsules 0,15;

2) List the groups and drugs used in (for): febrile states, acute periarticular diseases, arthralgias, neuralgias, myalgias, postoperative and posttraumatic pain syndrome, biliary and renal colic, rheumatism, rheumatoid arthritis, ankylosing spondylitis, gouty arthritis, deforming osteoarthritis, lupus erythematosus, organ or tissue transplantation, angioneurotic edema, allergic and contact dermatitis, urticaria, vomiting produced by drugs, motion sickness prophylaxis, asthma attacks, anaphylactic shock, chronic infections, secondary immunodeficiency states.