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CLINICAL PHARMACOLOGY OF ANTIVIRAL DRUGS

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Abstract: This article discusses a rather interesting topic, such as antiviral drugs. At the moment, viral diseases are one of the most important medical problems and more difficult to treat than the same bacterial diseases. Among the leading viral diseases are influenza and acute respiratory diseases. Concepts about the mechanism of action, the route of penetration and reproduction of viruses give us the opportunity to create new antiviral drugs. At the moment, humanity has a large arsenal of antiviral drugs to combat a wide variety of viruses. But viruses don't sit still and evolve very quickly, forcing us to create new drugs that can defeat new types of viruses. All currently presented antiviral drugs are intended for the treatment and prevention of viral diseases.

Key words: infections, organs, rhinovirus, coronavirus, respiratory syncytial, adenovirus, influenza, parainfluenza,

Viral diseases and causes of their development

Viral infections are a group of diseases that are transmitted primarily from person to person and affect a variety of organs and systems. Among them:

● Acute respiratory viral infections: rhinovirus, coronavirus, respiratory syncytial, adenovirus, influenza, parainfluenza. They affect the respiratory tract, cause a runny nose and cough, and make you feel worse. The pathogen is transmitted mainly by airborne droplets.

● Viral hepatitis - infections that affect the liver. The most dangerous types (B and C) are transmitted hematogenously (through blood), sexually, through a medical instrument during various manipulations. Viruses cause chronic inflammation, which often ends in liver cirrhosis or cancer. Hepatitis A virus is the most common of all viral hepatitis. It is transmitted by the fecal-oral route (through dirty hands, poorly washed vegetables and fruits). Causes an acute infection that can affect a person many times.

● Herpes virus infection. Depending on the type of pathogen, it can affect any organs and tissues: skin, pharynx, eyes, nerve fibers, lymph nodes, genitals. The infection is transmitted by airborne droplets, household contact, and sexual contact.

● HIV infection. It affects the cells of the immune system and, in the absence of adequate antiviral therapy or the aggressive course of the infection, can lead to the development of acquired immunodeficiency syndrome - AIDS. The modes of transmission of the disease are the same as for viral hepatitis.

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The causative agents of each disease have their own characteristics, but they have one thing in common: the virus cannot live and multiply outside the cells of the human body. It penetrates the cell membrane and transfers its genetic material to it. It is impossible to destroy most viruses without eliminating many cells.

Even in the last century, many viral diseases were considered incurable. But science has created antiviral drugs that neutralize viruses and stimulate the immune system to fight infection. Thanks to them, people infected with the flu survive the disease much easier, and people with HIV or viral hepatitis can now live happily into old age.

What are antiviral drugs

Viral disease is a challenge for drug therapy. The fact is that the virus can live and reproduce only inside the host cell, changing its metabolic processes. Therefore, for a long time it was believed that it was impossible to influence viruses without causing significant harm to the body.

Over time, this hypothesis was revised. Since the second half of the last century, scientists have been developing antiviral drugs that act at different stages of the virus life cycle - they prevent the virus from attaching to the cell, the penetration into and exit of mature viral particles from the cell, and disrupt reproduction (replication).

The effect of these drugs in a therapeutic dose is detrimental to the virus and is practically safe for the body.

Drugs with direct antiviral action

M2 channel blockers[2]

This class includes the first drug developed in the last century for influenza chemotherapy - amantadine. Studies conducted in accordance with the principles of evidence-based medicine have confirmed its effectiveness against influenza viruses type A. In our country, amantadine is not used in the treatment of influenza. Soviet scientists created a new drug based on it - rimantadine. This drug has higher antiviral activity and relatively less toxicity.

Operating principle. The medicine is taken orally - in the form of tablets, syrup. It penetrates the blood, and then spreads throughout the body and accumulates in the secretions of the nasal cavity. The active substance binds M2 proteins. This is a kind of “key” in the virus shell, which opens the “door” to the cell nucleus through ion channels in its membrane. The virus penetrates the cell, but the drug blocks access of the virus's genetic material to the cell's DNA. Without this, the microorganism cannot reproduce, so the concentration of viruses in the body does not increase. In addition, the medicine has an antitoxic effect.

Application. In order for the medicine to have a good therapeutic effect, the tablets should be taken no later than two days after the first symptoms of the flu appear. They are taken twice a day for five days. Children aged 1–14 years are given baby syrup.

Contraindications:

- hypersensitivity to the active and auxiliary components of the drug;
- acute liver pathologies;
- acute injury and chronic kidney disease;
- hyperfunction of the thyroid gland;
- pregnancy and breastfeeding;
- age up to one year.

Side effects. Amantadine often causes a number of negative side reactions:

- irritability;

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- weakening of concentration;
- sleep disturbance;
- loss of appetite;
- nausea.

The toxic effect on the central nervous system is enhanced in older people who are simultaneously receiving antihistamines and anticholinergic drugs (medicines that control bronchial asthma, Parkinson's disease, stop vomiting, and are used in the treatment of chronic obstructive pulmonary disease). Another undesirable effect is the formation of resistance in the infectious agent. Over time, some viruses become resistant to the drug.

Neuraminidase inhibitors[3]

These include zanamivir (not currently used in Russia) and oseltamivir. Both types of antiviral drugs have a similar mechanism of action and indications and are effective against influenza A and B viruses. Compared to the previous group, they are not as toxic and have a number of contraindications.

Operating principle. Neuraminidase is one of the main enzymes responsible for the replication of both types of influenza viruses. By blocking it, the medicine temporarily slows down the spread of infection throughout the body. The drug is taken orally. It interacts well with other medications and is often used as part of complex therapy.

Application. It is recommended to take tablets (suspension prepared from powder) from the first symptoms of infection - no later than 48 hours from the initial manifestations, otherwise the use of neuraminidase inhibitors is inappropriate. The medicine is taken for 5 days, 2 times a day.

Contraindications:

- individual intolerance to any components of the dosage form;
- severe renal and liver failure;
- age up to one year.

Side effects. Most often (in 10–12% of cases) patients complain of nausea and vomiting after the first dose of the medicine. Other adverse reactions (in 1–2.5% of patients):

- headaches;
- dizziness;
- weakness;
- insomnia;
- feeling of nasal congestion;
- cough;
- sore throat.

Hemagglutinin inhibitors 4,5

In Russia, the group of inhibitors is represented by the old domestic drug umifenovir, which acts against viruses type A and B, and a number of other pathogens of acute respiratory viral infections. However, a study by Russian and British scientists showed that there is a possibility of mutations leading to the emergence of umifenovir-resistant strains of viruses. Resistance was due to the inability of umifenovir to bind to mutated hemagglutinin.6 Another drug with a similar spectrum of action is enisamium iodide. This drug is claimed to be highly effective and well tolerated, with no resistant strains.

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Operating principle. The drugs act on the virus's hemagglutinin, a protein that ensures the fusion of its genetic material with cellular DNA. Hemagglutinin inhibitors block infection already at the initial stage, preventing the penetration of the viral particle into the cell.

In addition to the main one, both drugs have additional effects in the fight against the virus: they stimulate the synthesis of interferons and increase the body's resistance to infection. These properties are especially pronounced in enisamium iodide. The drug is quickly absorbed after oral administration and circulates in the blood for a long time (up to 14 hours), preventing the spread of viral infection throughout the body.

Application. The drugs are used in the treatment of influenza and other acute respiratory viral infections. Umifenovir is taken orally in the form of capsules, tablets, or powder for the preparation of a suspension. The dose, interval, and duration of taking the medication are determined individually by the attending physician. Doctors prescribe enisamia iodide in film-coated tablets, which must be taken orally three times a day for 5–7 days.

REFERENCES:

1. Шестакова И.В. Противовирусные препараты // Журнал для непрерывного медицинского образования врачей – https://cyberleninka.ru/article/n/protivovirusnye-preparaty/pdf

2. Хатхоху М.Г. Противовирусные препараты: учебное пособие // Майкопский государственный технологический университет – 2014 – https://mkgtu.ru/sveden/files/Farmakologiya._Uchebno-metodicheskoe_posobie._Protivovirusnye_sredstva...

3. https://mkgtu.ru/sveden/files/Farmakologiya._Uchebno-metodicheskoe_posobie._Protivovirusnye_sredstva....

4. Ленева И.А., Пшеничная Н.Ю., Булгакова В.А. Умифеновир и коронавирусные инфекции: обзор результатов исследований и опыта применения в клинической практике // Терапевтический архив - №11, 2020 - https://cyberleninka.ru/article/n/umifenovir-i-koronavirusnye-infektsii-obzor-rezultatov-issledovani...

5. Turdimuratov B. et al. DIGITALIZATION OF THE MEDICAL FIELD IN UZBEKISTAN //Mejdunarodnaya konferenstiya akademicheskikh nauk. - 2022. - T. 1. – no. 29. - S. 25-27.

6. Asfandyorov J. et al. ON GENERAL CHARACTERISTICS OF ADENOCARCINOMA DISEASE //Current approaches and new research in modern sciences. - 2022. - T. 1. – no. 4. – S. 70-72.

7. Asfandyorov J. et al. SOME CONSIDERATIONS ABOUT PYLOnephritis DISEASE AND ITS CONSEQUENCES //Akademicheskie issledovaniya v sovremennoy nauke. - 2022. - T. 1. – no. 15. - S. 55-57.

8. Choriyeva Z. et al. INFORMATION ON DIABETES DISEASE. THE ORIGIN OF DIABETES DISEASE AND MEASURES APPLIED IN THIS DISEASE //Theoretical aspects in the formation of pedagogical sciences. - 2022. - T. 1. – no. 4. – S. 96-99.

9. Rakhmon oğ A. M. et al. PHYSIOLOGY OF THE HEART, AUTOMATIC HEART, ELECTROCARDIAGRAM //SUSTAINABILITY OF EDUCATION, SOCIO-ECONOMIC SCIENCE THEORY. - 2022. - T. 1. – no. 4. – S. 4-8.

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2023-5.384 ResearchBib IF: 8.848 / 2023

VOLUME-4, ISSUE-1

10. Mirzaali son A. J. et al. THE LAST BRAIN, ITS CHANGES DEPENDING ON AGE. RELIEF OF PLASH. LATERAL WHITE MATTER OF THE BRAIN. BASAL STEMS //PEDAGOG. - 2022. - T. 5. – no. 6. - S. 319-326.

11. Tashboltaevna A. S. et al. STUDY OF SEASONAL BIOLOGICAL BACTERIAL INTESTINAL INFECTIONS IN THE EXAMPLE OF ESHERICHIA //Journal of Universal Science Research. - 2023. - T. 1. – no. 3. - S. 110-115.

12. Mirzaali o‘g‘li, A. J., Begzod o‘g‘li, M. M., & To’ramurodovich, H. F. (2023). SCIENTIFIC BASIS OF MORPHOLOGICAL CHANGES IN THE LIVER DUE TO DIABETES DISEASE. *Web of Semantics : Journal of Interdisciplinary Science*, *1*(1), 25–28. Retrieved from https://web.semanticjournals.org/index.php/wos/article/view/6