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GENERALIZED ANALYSIS OF AUTHORIZED MEDICINES FOR THE THERAPY OF COVID-19 IN THE WORLD AND UKRAINE

Popova I.A.*, Nazarkina V.N., Kurylenko Yu. Ye, Vynnyk O.V. and Mischenko V.I.

Associate Professor, Department of Organization and Economics of Pharmacy, National University of Pharmacy, Ukraine.

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***Corresponding Author**
Popova I.A.
Associate Professor, Department of Organization and Economics of Pharmacy, National University of Pharmacy, Ukraine.

ABSTRACT

The purpose of the study is a generalized analysis of recommended drugs for the treatment of coronavirus disease. Materials and methods - analysis of scientific publications on the stated topic, generalization of the results. Results. In 2020, the key factor influencing the development of the world's economy was the COVID-19 pandemic and related quarantine restrictions. The pharmaceutical industry, along with health care, has been at the forefront of the world's pandemic fight. Conclusions. In addition to opening up new opportunities for pharmaceuticals in the fight against COVID-19, such as vaccine development and clinical trials of existing drugs for the treatment of COVID-19, the pandemic has deeply affected the supply chain and distribution in the industry and posed significant risks to non-treatment activities. coronavirus.

KEYWORDS: COVID-19, therapy, drugs, pharmaceutical market.

INTRODUCTION

In December 2019, a new coronavirus disease (COVID-19) was detected and identified in Wuhan, China. On March 11, the outbreak of COVID-19 was described by the World Health Organization (WHO) as a global pandemic.[1] In the following months, COVID-19 spread rapidly around the globe and infected about 2.5 million people by April 23, 2020.[1] Colds to severe acute respiratory syndrome. According to a study on the origin of the coronary virus SARS-CoV-2, which caused the pandemic, according to a report by the World Health Organization, four versions of the origin of the virus have been identified.

MATERIAL AND METHOD

The study used materials from scientific publications from databases such as Pubmed and Cochrane; treatment protocols. Methods - analytical and generalization of information.

RESULT AND DISCUSSION

Currently, clinical trials are underway worldwide for drugs from COVID-19 caused by the coronavirus SARS-CoV-2. Clinical trials are being conducted to study the effectiveness of drugs in the treatment of patients with COVID-19 disease. To date, there are 31 such studies, a list of which can be found on the website of the State Expert Center of the Ministry of Health of Ukraine on the test profile "COVID-19".

Clinical trials help to detect and confirm the properties of drugs, detect reactions to them and more. They are needed to confirm the safety and effectiveness of drugs. However, before involving people in testing, scientists conduct a preclinical study of drugs. It involves chemical, physical, biological, microbiological, pharmacological, toxicological and other scientific studies and studies their specific activity and safety.

The results of a study conducted by the WHO made it possible to form the following list of the most common drugs and treatments Covid-19 (Fig. 1):

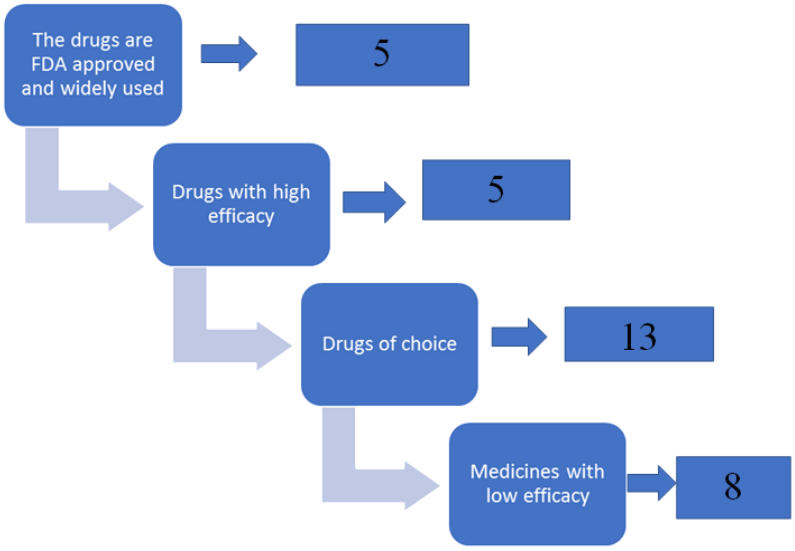

Fig.1 List of the most common drugs and treatments for Covid- 19.

Approved by FDA-1 and widely used

REMDESIVIR, manufactured by Gilead Sciences under the Veklury brand, is the first and so far the only drug to receive full FDA approval for the treatment of Covid-19. The National

Institutes of Health suggests that remdesivir be used only in patients who are hospitalized and need oxygen. They do not recommend starting treatment for critically ill patients.

REGEN-COV. The researchers found that treatment reduced the risk of symptomatic infection by 81%. The FDA has approved REGEN-COV for the prevention of Covid-19 in people exposed to the virus.

BAMLANIVIMAB AND ETESEVIMAB. The NIH's Covid-19 guidelines now recommend these drugs for hospitalized patients with Covid-19 who are at high risk for worsening symptoms. They also recommend giving the cocktail to unvaccinated high-risk patients who have been exposed to the virus.

SOTROVIMAB. This antibody-based drug, developed by GSK and Vir Biotechnology, is retained in the lungs and can attack the coronavirus when it enters the body. Sotrovimab reduces the risk of hospitalization or death by 79%. Sotrovimab can be used in patients at high risk of COVID-19.

DEXAMETHAZONE. The National Institutes of Health recommends that dexamethasone be used only in patients with Covid-19 who are on mechanical ventilation or receiving supplemental oxygen. The results of the study led to the widespread use of dexamethasone in critically ill patients. In an analysis conducted in March 2021, the British government estimated that the drug saved a million lives worldwide.

***Preparations with*high efficiency**

AZD7442. With the support of the federal government, AstraZeneca has identified two antibodies that have shown a potent response to the coronavirus. They then chemically modified each molecule to keep it longer in patients, providing greater protection against Covid-19. The company combined two antibodies into one cocktail called AZD7442, which could be injected into muscles as a vaccine. AZD7442 reduces the chance of contracting Covid-19 by 77%.

MOLNUPIRAVIR (also known as MK-4482, formerly EIDD-2801) is an antiviral drug originally designed to fight influenza. Molnupiravir halves the risk of hospitalization and death. On November 4, the United Kingdom became the first country to issue an emergency response for the use of molnupivir.

PAKSLOVID (also known as PF-07321332) In the early 2000s, Pfizer developed the drug as a potential treatment for SARS-CoV coronavirus pneumonia. Paxlovid reduces the risk of hospitalization or death by 89% when administered within three days of symptoms. The vaccine is very effective in preventing infections and serious illnesses. Paxlovid is a separate drug that blocks the virus from multiplying inside cells.

BARICITINIB - Olumiant, is an anti-inflammatory drug for rheumatoid arthritis. It reduces inflammation by blocking a protein in the immune system called interleukin-6. The National Institutes of Health recommends baricitinib to hospitalized patients who are severely ill and require oxygen through a high-velocity device or non-invasive ventilation.

TOCILIZUMAB - Actemra, is another arthritis drug that blocks interleukin-6. Analysis of clinical trials has shown that it can reduce mortality from Covid-19. The World Health Organization recommends tocilizumab for people with severe illness. Alternatively, they recommend treating patients with a similar arthritis drug called sarilumab, sold under the brand name Kevzara.

Drugs of choice.

PLASMA containing antibodies to coronavirus could theoretically stop the progress of Covid-19. But after a year of research, the recovering plasma did not live up to those expectations, at least for people who are sick enough with Covid-19 to require hospitalization. Healing plasma can reduce the likelihood of severe disease in humans. But a larger study published in September involving more than 1,800 patients did not show that plasma recovery reduces the risk that hospitalized patients will have to be intubated or die from Covid-19. The American Society of Infectious Diseases recommends not using plasma that recovers in hospitals and has said that there is no evidence to support its use in people in the early stages of infection.

INTERFERONS are molecules that our cells produce naturally in response to viruses. Synthetic interferon injections are now the standard treatment for a number of immune diseases. The British pharmaceutical company Synairgen has announced that an inhaled form of interferon called SNG001 reduces the risk of severe Covid-19 in infected patients in a small clinical trial.

FAVIPIRAVIR (also known as Avigan). Originally designed to fight the flu, favipiravir blocks the virus's ability to copy its genetic material. Some small studies have shown that the drug can remove coronavirus from the airways, which has led to a number of countries, including Japan, Kenya, Ukraine, Saudi Arabia and Thailand, approving favipivir for Covid-19. The Canadian company Appili Therapeutics conducted a phase 3 trial, during which it gave 1231 drugs to a volunteer with a new diagnosis. In November 2021, the company announced that favipiravir did not accelerate recovery from Covid-19.

RECOMBINANT ACE-2. Scientists have created artificial proteins ACE-2, which can act as bait, removing coronavirus from vulnerable cells. Recombinant ACE-2 proteins have shown promising results against Covid-19 in experiments on cells and animals, and previous clinical trials have shown that they are safe for humans. Their effectiveness is now undergoing extensive testing.

FLUVOXAMINE is a cheap drug that has long been used to treat depression. The drug reduced the need for hospitalization or long-term medical supervision by a third.

LENZILUMAB. Lenzilumab is an antibody designed to fix a signaling molecule that triggers uncontrolled inflammation. The drug reduces the likelihood that patients under the age of 85 who have not yet developed a cytokine storm, connected to a ventilator did not die. Humanigen, a company that makes lenzilumab, has applied for an emergency license.

EXO-CD24. Researchers in Israel conducted a small pilot study of EXO-CD24 to see if it could reduce inflammation caused by Covid-19. In February 2021, they announced that 31 of the 35 hospitalized patients had been discharged after three to five days of drug treatment. But it was impossible to know if the drug helped them because the study was small, blind, or placebo-controlled.

LERONLIMAB. Leronlimab is an antibody that was originally tested as a treatment for HIV. It captures a protein on the surface of cells called CCR5, which the virus typically uses to penetrate them. Typically, CCR5 plays a role in cytokine signaling, which increases the likelihood that leronlimab may attenuate a cytokine storm caused by Covid-19. "The available data do not support the clinical benefit of leronlimab for the treatment of Covid-19," the FDA said in a statement.

STEM CELLS. Some types of stem cells can correct anti-inflammatory molecules. The NIH's Covid-19 guidelines recommend that mesenchymal stem cells not be used to treat Covid-19, except in clinical trials, while the FDA warns that unproven stem cell therapies may pose a risk to patients.

COLCHICIN. The results showed that colchicine could lead to a moderate reduction in hospital stays, but outside experts doubt whether the results were accidental. However, studies of colchicine continue. In March 2021, another large-scale trial of people with early-stage Covid-19 was launched in the UK.

VITAMIN AND MINERAL SUPPLEMENTS. Our body needs vitamins and minerals to work properly. Some researchers are studying whether supplements can help against Covid-19, but so far there is no convincing evidence that they prevent infections or speed up recovery from them.

One of the vitamins that has attracted a lot of attention is VITAMIN D. Vitamin D is important for our health, promotes good bone health and helps immune cells to function. The NIH's treatment guidelines state that there is insufficient evidence to recommend vitamin D against the disease.

ZINC helps proteins to function throughout the body, and people with zinc deficiency are at higher risk of contracting infectious diseases. Zinc can inhibit virus replication in cells. In February, researchers at the Cleveland Clinic published a randomized clinical trial that found no benefit from zinc. In the same test, no help was found for vitamin C.

Medicines with low efficacy

IVERMECTIN - a potent drug against parasitic worms. Cell studies have shown that ivermectin can kill viruses. A number of large-scale randomized clinical trials are currently underway that may provide a clearer picture. In August, the National Institutes of Health began testing - the drug is prescribed to people aged 30 and older who test positive for Covid-19 for ten days and who have at least two symptoms in a week or less. Shortly before this study was launched, another trial of 1,500 patients showed no benefit from ivermectin.

OLEANDRIN is a compound made from oleander bushes. The drug is effective in the culture of kidney cells of monkeys infected with coronavirus. There is still no evidence that

oleandrin is safe and effective for the treatment of Covid-19, and the FDA has not approved it for the treatment of this disease.

LOPINAVIR AND RITONAVIR. Twenty years ago, the FDA approved this combination of drugs to treat HIV. The NIH guidelines for the treatment of Covid do not recommend the use of lopinavir and ritonavir in both hospitalized and non-hospitalized patients. The drug may also play a role in some combination therapies.

HYDROXYCHLOROCHINE AND CHLOROCHINE. At the start of the Covid-19 pandemic, researchers found that both drugs could stop coronavirus replication in cells. But after a year of high hopes and intensive research, scientific consensus has concluded that the drug does not help with Covid-19 and can cause harmful side effects. On March 2, a group of experts from the World Health Organization recommended not to use hydroxychloroquine in all patients, adding that this drug is no longer a priority for research.

BLOOD FILTRATION SYSTEMS. A group of experts urged doctors to avoid using blood filtration for regular treatment with Covid-19, arguing that it is only appropriate at this time in clinical trials.

Azithromycin is an antibiotic commonly used to fight bacterial infections. But researchers have found that the drug can reduce inflammation. This feature has made azithromycin attractive to physicians seeking potential treatment with Covid-19, which was already known to be safe. A large-scale randomized clinical trial did not show any benefit from azithromycin in patients.

The results of the study of treatment protocols for COVID-19 in Ukraine as of September 2021 proved that the following are used as medicines:

- Favipiravir is used for patients with moderate or critical coronavirus disease;
- "Hydroxychloroquine" - for patients with moderate severity;
- Dexamethasone and other corticosteroids - in severe or critical course;
- "Remdesivir" - in severe or critical course;
- Tocilizumab - in severe or critical course;
- Oseltamivir is only for co-infection with the flu virus and only for children.

Two monoclonal antibody-based drugs have recently been used in the United States for emergency use in the treatment of patients with mild to moderate COVID-19 symptoms at risk of severe disease: Bamlanivimab, developed by Eli Lilly, and REGN. -COV2 manufactured by Regeneron Pharmaceuticals, consisting of two components - Kazyriv. Both Bamlanivimab and REGN-COV2 act as a passive vaccine: their antibodies bind to the virus at the site where the adhesion protein attaches to the cells and prevent it from entering the body. It is considered most effective to use these drugs in the early stages of the disease, while patients have not yet begun to produce their own antibodies. In Ukraine, treatment protocols for COVID-19 are constantly changing,

Their mechanism of action is to block the attachment of the virus to the cell membrane, which prevents SARS-CoV-2 from entering human cells, which neutralizes the virus and prevents the development and treatment of COVID-19. These drugs act directly on the virus - the drugs bind to the adhesion proteins of the virus, preventing penetration into the cell and further reproduction, accelerate the recovery of patients with coronavirus disease and prevent complications and hospitalization.

CONCLUSION

Summarizing the above, it should be noted that currently in the world community there are 4 groups of the most common drugs and treatments for Covid-19. Thus, the first group included - 6 drugs, the second - 5, the third - 13, the fourth - 8. The transition of the drug to a higher group depends on the results of clinical trials in patients and side effects of these drugs. On this basis, it is advisable to conduct an analysis of treatment protocols for Covid-19 in Ukraine.

The results of a study of treatment protocols on Covid-19 in Ukraine has proven that of the drugs used, according to the gradation given by the WHO, remdesivir belongs to group 1, and approved by the FDA; 4 drugs are classified as high efficiency; favipravir - to the third - drugs of choice; hydroxychloroquine - to the group with low efficiency, due to the degree of influence of active substances on the body of the patient with this disease.

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