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According to World Statistics, the Incidence of Coronavirus in Human Blood Groups, Complication in Metabolic and Cardiovascular Diseases

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Abstract: *Worldwide, people in the* ***second group*** *are more likely to be infected with the coronavirus than others. Studies have shown that COVID-19 is more common in people with type 2 blood. In second place are the first and third blood groups. The fourth blood group has the lowest rate compared to other diseases. That is, it depends on the number of blood groups, while the second blood group has the highest score. The severity and complexity of the disease in people with cardiovascular and metabolic diseases is statistically the highest in the world.*

Keywords: coronavirus, second group, COVID-19, cardiovascular, metabolic, blood, pandemic, risk group, mutations, diseases of the cardiovascular system, fibrosis, arrhythmia, ARDS, hypercytokinemia, myocarditis, cognitive disorders, prevention.

Introduction:

Scientists studied 1,610 patients with COVID-19 from Italy and Spain, and in common they had a severe course of the disease, in some cases resulting in death. Their DNA molecules were studied. It turned out that in people with blood group II - according to the modern classification, it is also called blood group A - the risk of a severe course of COVID-19 is significantly higher. Namely, twice, compared with people with blood group I (blood group 0, according to modern classification).In Germany, about 43% of the population has a second blood group. As for the lucky ones with the first blood group, the new data does not at all indicate their immunity to the coronavirus - they only mean that they have the lowest risk of contracting COVID-19 in a severe form. By the way, it is the donor blood of group 1 that is universal, suitable for all recipients, regardless of their blood group. Group 1 blood has 41% of the population in Germany. The remaining two blood groups - III and IV, or according to the modern classification of groups B and AB - have 11% and 5% of the country's inhabitants in Germany, respectively. Patients in these two groups infected with coronavirus do not show a clear trend in the course of COVID-19.If the results of the German-Norwegian study are confirmed, it will have significant implications for the development of a method for the treatment of SARS-CoV-2 SARS, and not only it. Similar observations about the influence of the blood group on the course of the disease are available for other diseases. For example, it has been noticed that people with the first blood group rarely develop severe forms of malaria. There are also opposite examples: for example, people with the second blood group tolerate the plague more easily.In addition, new observations may change the concept of "risk group" in the current pandemic. Until now, it included patients of a certain age with chronic diseases, smokers and others. Now it is possible that this approach will have to be revised after some time. Plasma transfusion for patients of moderate severity “can more than halve the likelihood of switching to mechanical ventilation - by 63% More people die each year from cardiovascular disease (CVD) than from any other disease. According to the WHO, in 2016 they caused the death of almost 18 million people, which is one third of all deaths in the world. In 85 percent, death was from a heart attack (heart attack) or stroke. CVDs include coronary artery disease, in which the blood vessels are unable to supply blood to the heart muscle, and disease of the vessels that supply blood to the brain.

Any infectious disease for people with similar problems can be fatal. The same applies to those who suffer from dysfunction of the heart valves: viral infections can destabilize the functioning of the entire body. The most common group is the first: 40.7% of the world's population. There are slightly fewer people with the second blood group - 31.8%, with the third group even less - 21.9%. The rarest blood group is the fourth, in 5.6% of people.

The new data does not at all indicate the immunity of people with the first blood group to coronavirus. But they have the lowest risk of being ill with COVID-19 in a severe form. By the way, it is the donor blood of the first group that is universal, suitable for all recipients, regardless of their blood type (if they have Rh-positive blood). In patients with the third and fourth blood groups (according to the modern classification of groups B and AB), infected with coronavirus, no clear trends in the course of the disease were found. If the interim results of the German-Norwegian study are confirmed, this will give serious grounds for developing a method for treating pneumonia caused by SARS-CoV-2, and not only it. Similar observations about the influence of the blood group on the course of the disease were recorded in relation to other diseases.

For example, it has been noticed that people with the first blood group rarely develop severe forms of malaria. There are also opposite examples: people with the second blood group more easily tolerate the plague disease. In addition, new observations could change the concept of a risk group in the current pandemic. People with the second blood group are more vulnerable to coronavirus due to a special mutation.

The researchers were interested in what factors can help the virus and contribute to complications in COVID-19. They compared the sets of mutations in the subjects' genes with each other and with how similar "typos" in DNA are common among healthy residents of their regions. Scientists have studied how more than 8.5 million variations in gene structure affect the likelihood and course of COVID-19.

It turned out that the probability of infection and the nature of the course of the disease are most influenced by two mutations. One of them was on the third chromosome, and the other was on the ninth. The first increased the chances of severe forms of the disease by about 1.77 times, and the second increased the likelihood of infection by 1.32 times. It was found that, judging by the location of mutations within the chromosome, the first was in the SLC6A20 gene, and the second, in the part of the genome that determines the human blood group.

The researchers explain that the SLC6A20 gene is directly related to the work of the ACE2 receptors used by the coronavirus to enter human cells. Due to similar mutations in the ninth chromosome, blood clotting usually increases, which is dangerous for those infected with COVID-19. Most often, these mutations are found in people with the second blood group. All of this explains why blood type affects the likelihood of infection and why the immune system reacts differently to infection.

During the study, experts analyzed the data of 750 thousand clients, of which 10 thousand people were infected with the coronavirus. Taking into account the gender, body weight and age of patients, the researchers found that people with the first blood group are 9-18% less likely to get sick with COVID-19.According to the researchers, this pattern applies to both positive and negative Rh factors.A group of people with an increased risk of death from coronavirus was previously named. Several scientists have studied the link genetics plays in susceptibility to coronavirus infection, and some have more specifically highlighted the role that blood type plays. All researchers came to a similar conclusion that people with the first blood group are less likely to become infected.

Two studies were conducted in Wuhan, one investigating the relationship between blood types and susceptibility to coronavirus, and the other the relationship between blood types and the risk of pneumonia as a complication of COVID-19. Another study, conducted in Italy and Spain, looked at the link between genetics and respiratory failure in this condition. unknown. Primary symptoms of the disease can appear, disappear and reappear for 30 days or more, which is significantly longer than the official two-week period indicated by WHO experts.

And for some, the disease can only mean the beginning of a long and painful struggle with the virus, which can turn into a new "post-coronavirus syndrome."

At first it seemed that this is a common respiratory disease like SARS or bird flu, but later it turned out that coronavirus (its official name is SARS-CoV-2) can affect the lungs, brain, nasopharynx, eyes, heart, blood vessels, liver, kidneys and intestines , that is, literally all the vital organs. According to the results of already conducted studies, Covid-19 is accompanied by a whole set of a wide variety of symptoms, and for those who have had a severe illness, the long-term consequences can be the most serious: from scarring of the lung tissue and kidney failure to inflammation of the heart muscle, arrhythmias, liver damage. cognitive impairments, psychosis, accompanied by a sharp change in mood, and much more.

How the disease will affect people in the long term remains to be fully understood, but already now there are many indications that the consequences of this disease continue to be experienced even by those who have had a fairly mild coronavirus. There is another important question: can the SARS-CoV-2 virus persist in the human body in a dormant state, and will it not manifest itself in a few years in one form or another?

There will be nothing surprising in this, doctors say, because viruses are known that behave in this way. For example, after a person has had chickenpox, the herpes virus that caused it does not disappear anywhere, it can quietly hide for decades, and then, if the opportunity arises, turn into painful shingles.

And the virus that causes hepatitis B can lead to liver cancer many years later.

Even the Ebola virus, discovered many months later in surviving patients in the ocular fluid, subsequently causes blindness in 40% of those infected.

Therefore, given the fact that SARS-CoV-2 prefers the lungs, doctors suspected that it was there that the virus was capable of causing irreversible changes in the first place.Back in March, specialists from Wuhan University of Technology reported that 66 out of 70 patients who survived pneumonia against the background of Covid-19, computed tomography found visible damage in the lungs.

These injuries ranged from blockage of blood vessels in the alveoli to scarring of lung tissue. This scarring, or tissue thickening, is called pulmonary fibrosis and can lead to shortness of breath. There is currently no way to stop or reverse this process. In addition, patients with severe Covid-19 can suffer such severe lung damage that it will take them up to 15 years to recover. FICM emphasized that many patients admitted to intensive care units developed acute respiratory distress syndrome (ARDS), a severe inflammation of the lungs, in which fluid from the blood enters the alveoli, making breathing impossible without a special apparatus.

Given the history of lung injury in patients with SARS and MERS, a medical team led by radiologist Melina Hosseini at the University of California, Los Angeles strongly recommends that patients who recover from Covid-19 be monitored and their lungs checked "for long-term or permanent damage. including fibrosis ".

As doctors try to assess the damage done to various organs of patients who have recovered from Covid-19, they are faced with a very expected problem: people suffering from diseases of the lungs, heart, kidneys or blood, as a rule, became the first victims of the coronavirus, and in In their case, the disease was most often difficult. Therefore, it is not always possible to determine what the virus has led to, and what has already been damaged before it. However, one thing is clear: when the symptoms of infection begin to manifest, the functions of many organs are disrupted, and the failure of one leads to the failure of others.

The acute inflammatory process also plays a role, which leads to strokes and heart attacks. According to a March report published in the specialized medical journal JAMA Cardiology, heart muscle injuries were noted in nearly 20% of the 416 patients examined in Wuhan hospitals. In the same place, but already in intensive care units, arrhythmia was noted in 44% of 36 patients.

Doctors associate this with hypercytokinemia, or cytokine storm, a potentially fatal reaction of the body, which triggers uncontrolled activation of immune cells, which leads to the destruction of the tissues of the inflammatory focus. This reaction has been observed in some patients with coronavirus. In particular, inflammation of the heart muscle (myocarditis) occurs, which knocks down electrical impulses, leads to arthymia and disrupts blood circulation, causing shortness of breath.

Complications to the cardiovascular system are not unique to Covid-19: many viral diseases can cause myocarditis. Although most patients recover, some have permanent damage to the heart muscle. Moreover, Covid-19 negatively affects the blood itself. Of the 184 coronavirus patients admitted to intensive care in the Netherlands, 38% had increased blood clotting, and almost a third of them had blood clots. Although the coronavirus primarily affects the lungs, in some patients the infection has spread to the kidneys. According to a sample study in China, 27% of 85 patients admitted to Wuhan hospitals with coronavirus had kidney problems.

Another study found that 59% of nearly 200 patients hospitalized in Hubei and Sichuan provinces had protein in their urine, indicating infection, and 44% also had blood, indicating serious kidney damage. Moreover, in patients with acute renal failure (ARF), the risk of death was 5 times higher than in ordinary patients with coronavirus.

Of the 214 Covid-19 patients studied, a third showed neurological symptoms, including dizziness, headache, and cognitive impairment. So far, scientists are only wondering what exactly caused these symptoms. However, the existing theories focus on how the virus affects neurons - nerve cells. The loss of taste and smell, and inflammatory processes (in this way, our immune system reacts to the virus), and the lack of oxygen, which some patients felt, are also mentioned.

Cognitive disorders can be associated with the stay of patients in intensive care, this is also called temporary clouding of the mind, or delirium, when a person has hallucinations, however, this is more often observed in older people. Although symptoms tend to resolve over time, some of them may persist. According to doctors, the restoration of cognitive functions in patients with coronavirus strongly depends on age, comorbidity (that is, the coexistence of two or more diseases or disorders in a patient) and the severity of the course of the disease itself.

Conclusion:

The number of coronaviruses in the world is increasing day by day. In recent weeks, the number of cases has almost tripled, and the death toll has reached 600,000. Studies have shown that the most effective way to fight coronavirus is to save the world's population by paying special attention to the medical culture of the population and maintaining our own health. taking into account that the first blood group is relatively low in humans 9-18% less.In previous studies it was said to be specific only for positive factors, at the same time this rhesus factor is equally characteristic for those who are positive and negative. The world's leading causes of death from cardiovascular disease, diabetes, chronic lung disease, and obesity as a result of eating disorders are at an all-time high. Older people and people with low levels of immunity are suffering severely. In short, the solution to the problem in the world is to follow the rules of quarantine, to pay attention to medical culture and to prevent the spread of the disease.

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