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Neurological Consequences of Arvi

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ABSTRACT

This work includes consideration of neurological consequences of acute respiratory viral infection (ARVI), such as meningitis, encephalitis, headache, sleep disorders and mental disorders. The authors are based on existing studies showing that ARVI can cause inflammatory processes in the nervous system and lead to long-term health consequences. The article also discusses methods of diagnosis and treatment of neurological manifestations of ARVI. The research results may be useful for doctors treating patients with acute respiratory viral infections, as well as for people who want to understand the possible consequences of this disease. In addition, the authors note that the neurological consequences of ARVI can be especially dangerous for certain groups of patients, such as children, the elderly and people with concomitant diseases. Therefore, it is important to pay attention to the neurological symptoms of ARVI and to carry out timely diagnosis and treatment. The paper also notes that possible causes of neurological manifestations of ARVI may be not only viruses, but also immune mechanisms, as well as other factors such as stress and lack of physical activity during the disease. In general, the article provides an overview of the neurological consequences of ARVI, indicating their severity and the need for additional research in this area. This information can be useful both for doctors and for the general public, helping to understand the importance of prevention and timely treatment of acute respiratory viral infections.

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INTRODUCTION

Acute respiratory viral infection (ARVI) is one of the most common diseases in the world. It is caused by various viruses and can lead to a wide range of symptoms, such as cough, runny nose, headache, fever and others. However, in addition to these well-known manifestations, ARVI can also have neurological consequences, such as meningitis, encephalitis, sleep disorders, mental disorders and others. Despite the fact that neurological manifestations of ARVI are quite rare, they can have serious consequences for the patient's health and lead to long-term neurological complications, therefore, it is important to understand the nature of these manifestations, conduct timely diagnosis and treatment, and develop effective methods of preventing these complications [1].

Among the most common neurological complications of ARVI are headache, seizures, meningitis, encephalitis and paresis. Headache is the most common neurological symptom that can be caused by ARVI. Seizures may occur as a result of high fever, which may accompany ARVI.

Meningitis and encephalitis are more serious complications that can lead to severe headaches, impaired consciousness and even death. Paresis can occur as a result of damage to the nervous system of ARVI, which can lead to impaired movement and sensitivity. In general, neurological complications of ARVI are serious and can lead to a significant deterioration in the quality of life of patients. Therefore, it is very important to properly treat and prevent ARVI in order to reduce the risk of these complications [2].

In this context, the purpose of this article is to review the neurological consequences of ARVI, including their causes, manifestations and methods of diagnosis and treatment. This information can be useful both for medical professionals and for the general public, helping to raise awareness of the severity of neurological manifestations of ARVI and to take measures to prevent and treat them in a timely manner.

MATERIALS AND METHODS

When writing this study, literary sources were analysed, the authors of which were specialists in the field of medicine, the data were systematized and generalized through the use of comparative and analytical research methods.

RESULTS

Neurological consequences of various diseases can be very diverse and range from mild, temporary symptoms to serious, long-term complications. They can be caused by both the disease itself and its treatment. For example, neurological consequences of infectious diseases may include meningitis, encephalitis, paresis, seizures, sleep disorders, mental disorders and others. These manifestations can occur as a result of the action of the virus itself on the nervous system, and in response to immune responses to infection [3].

Neurological consequences can also be associated with head injuries, brain tumors, stroke, dementia and other diseases of the nervous system. They can manifest themselves in the form of impaired coordination of movements, limb weakness, speech disorders, memory changes and other symptoms.

Neurological consequences can significantly limit the patient's quality of life and lead to significant social and economic costs for treatment and care. Therefore, it is important to carry out timely diagnosis and treatment of these complications, as well as to develop effective methods of prevention and early detection of diseases of the nervous system [4].

The causes of neurological manifestations of ARVI can be associated with both the action of the virus itself and the body's reaction to infection. For example:

1. The direct effect of the virus on the nervous system. Some viruses can enter the nervous system and cause inflammatory processes in the brain and spinal cord, which can lead to meningitis, encephalitis and other neurological complications.

2. Autoimmune reactions. Some neurological manifestations may be caused by autoimmune reactions to infection. Sometimes the body perceives its own tissues as foreign and begins to attack them with the help of immune cells and antibodies. This can lead to various neurological manifestations, such as paresis, seizures and sleep disorders.

3. Poisoning of the body by products of viral vital activity. During the reproduction of the virus, toxins are released in the body, which can negatively affect the functioning of the nervous system and cause neurological symptoms.

4. Weakening of the body. ARVI can be accompanied by high body temperature, vomiting, diarrhea and other symptoms that can lead to dehydration, electrolyte imbalance and other disorders in the body that can negatively affect the nervous system.

5. Side effects of treatment. Medications used to treat acute respiratory viral infections can cause side effects that can affect the functioning of the nervous system and lead to neurological complications [5].

All these reasons can increase the risk of developing neurological manifestations of ARVI and create additional problems for the health of patients. Therefore, it is important to carry out timely diagnosis and treatment of these

The mechanisms of development of the neurological consequences of ARVI can be diverse and depend on the specific type of virus, the degree of its impact on the nervous system and the characteristics of the individual patient's body. One of the most common mechanisms is the penetration of the virus into the nervous system through blood or lymph. The virus can lead to inflammation of the brain and spinal cord, which can cause various neurological complications. For example, with the flu, the virus can lead to encephalitis or meningitis, causing seizures, insomnia, headache and other symptoms.

Another mechanism is associated with the toxic effect of the decay products of the viral cell. When the virus multiplies, toxins are released in the body, which can negatively affect the functioning of the nervous system. As a result, various neurological manifestations may occur, such as dizziness, insomnia, impaired coordination of movements, anxiety, etc. [6].

In addition, neurological complications can be caused by autoimmune reactions of the body. Sometimes the immune system perceives its own tissues as foreign and begins to attack them with the help of immune cells and antibodies. This can lead to various neurological manifestations, such as paresis, seizures and sleep disorders.

Finally, the neurological consequences of ARVI may be associated with a general weakening of the body and a violation of the electrolyte balance in the body. For example, a prolonged increase in body temperature can lead to dehydration, which in turn can cause disorders in the nervous system.

Thus, the neurological consequences of ARVI can be caused by various mechanisms, and in each case it is necessary to conduct

a thorough diagnosis in order to determine the specific causes and mechanisms of the development of neurological manifestations.

It is important to note that the risk of developing neurological complications in ARVI depends on many factors, including age, general health, the presence of other diseases, the presence of risk factors (for example, smoking, alcohol and drug use), as well as the characteristics of a particular type of virus. In the presence of neurological manifestations in ARVI, it is necessary to consult a neurologist who will diagnose and prescribe appropriate treatment. Treatment may include the use of antiviral drugs, anti-inflammatory drugs, immunomodulators, means to improve cerebral circulation and other drugs, depending on the specific symptoms and causes of neurological complications [7].

In general, the neurological consequences of ARVI can be serious and require careful attention to their health and timely access to a doctor when appropriate symptoms appear. At the same time, it is necessary to observe preventive measures, such as frequent hand washing, avoiding contact with patients, the use of masks and other protective equipment.

Neurological symptoms of ARVI can be diverse. These are:

- headache - may have different intensity and frequency of occurrence;

- dizziness - feeling of instability, loss of balance;

- sensitivity disorders - the appearance of numbness, tingling, feeling of "cold" or "hot" spots on the skin;

- convulsions - involuntary muscle contractions, often accompanied by loss of consciousness;

- movement coordination disorders - difficulty in performing habitual movements, loss of movement accuracy;

- mental disorders - mood changes, increased irritability, sleep disorders;

- visual and hearing impairments - blurred vision, decreased auditory sensitivity;

- speech disorders - difficulty pronouncing words, loss of ability to form speech;

- memory and attention disorders - difficulties in memorizing information, distractibility, inability to concentrate;

- disorders of consciousness - loss of consciousness, fainting, hypersomnia [8].

However, not all of these symptoms are necessarily associated with neurological manifestations of ARVI. For example, a headache can be caused by other causes, such as tension, migraine, hypertension, etc., therefore, when appropriate symptoms appear, it is important to consult a neurologist who will diagnose and determine the specific cause of the symptoms.

Stress and lack of physical activity during the disease can aggravate the neurological consequences of ARVI. Stress, especially prolonged and intense, can worsen the mental state and cause neurological symptoms such as headache, dizziness, aggressiveness and depression. In addition, stress can cause changes in the immune system and reduce its protective properties, which can lead to a longer and more severe course of ARVI [9].

Lack of physical activity can also worsen the condition of a patient with ARVI. Lack of movement can lead to poor blood circulation and lack of oxygen in the tissues, which can worsen neurological symptoms such as dizziness and headache. In addition, physical activity can contribute to the production of endorphins, hormones of joy that improve mood and promote faster recovery, therefore, to prevent or reduce the neurological consequences of acute respiratory viral infections, it is important to control stress levels, adhere to a healthy lifestyle and be sure to follow the doctor's recommendations, including regarding the physical activity regime.

DISCUSSION

Activation of immune mechanisms can help prevent or reduce the neurological consequences of ARVI. It is important to understand that the immune system plays a key role in the fight against infectious diseases, including SARS. It helps the body fight viruses, preventing their spread and reproduction.

To activate immune mechanisms, it is recommended to follow a few simple rules [10]:

- observe the diet. It is necessary to eat foods rich in vitamins and minerals that support the health of the immune system. For example, vitamin C contained in citrus fruits and kiwi strengthens the immune system;

- engage in physical activity. Regular moderate physical activity can strengthen the immune system and reduce the risk of neurological symptoms;

- observe hygiene. It is necessary to wash your hands before eating, after walking outside, use masks and disinfectants to prevent infection with the virus;

- avoid stressful situations. Stress can weaken the immune system, so you need to be able to manage your emotions and eliminate the causes of stress;

- take immunomodulatory drugs. The doctor may prescribe immunomodulators that will strengthen the protective properties of the body and help prevent the neurological consequences of ARVI.

But it is important to understand that taking medications and activating immune mechanisms should take place under the supervision of a doctor. He will prescribe the optimal course of treatment, taking into account the peculiarities of the disease and the individual characteristics of the patient [11].

Treatment of the neurological consequences of ARVI should be prescribed individually, depending on the nature and degree of symptoms. Usually, several methods are used for treatment:

– symptomatic treatment aimed at reducing pain, lowering temperature, improving sleep, etc. Various medications can be used for this, including analgesics, antipyretics, sleeping pills, sedatives, etc.;

– the appointment of neurotropic drugs, such as gamma-aminobutyric acid (GABA), which improve the functioning of the central nervous system and help to cope with neurological symptoms;

– rehabilitation therapy, which includes a set of measures aimed at restoring functions and reducing the manifestation of neurological symptoms. These include: physiotherapy, massage, therapeutic gymnastics, etc.;

– intake of vitamins and minerals, because to maintain the health of the nervous system, it is necessary to eat food rich in vitamins and minerals. In some cases, the doctor may prescribe special vitamin and mineral complexes;

– psychotherapy, which can help the patient cope with the possible psychological consequences of acute respiratory viral infections, such as anxiety, depression, panic attacks, etc. [12].

It is important to remember that the treatment of the neurological consequences of ARVI should be carried out under the supervision of a qualified doctor and only after a thorough examination of the patient.

Rehabilitation and psychotherapy play an important role in the treatment of patients with neurological complications of ARVI. Rehabilitation therapy can help the patient restore the normal functioning of the nervous system and reduce the manifestation of neurological symptoms. Psychotherapy can help the patient cope with emotional problems that may arise as a result of neurological complications of ARVI.

Rehabilitation therapy may include the following methods:

– physical therapy. It involves the use of physical exercises and mechanical devices to restore the functions of the nervous system and reduce the manifestation of neurological symptoms. Physiotherapy may include massage, therapeutic gymnastics, acupuncture, etc.;

– speech therapy. if the patient has speech problems, speech therapy exercises can help him restore normal speech;

– occupational therapy. It involves the use of various tasks and exercises that help the patient to restore normal functions of the nervous system [13].

Psychotherapy can be effective in the treatment of emotional problems that may arise as a result of neurological complications of ARVI. Psychotherapy can help the patient cope with anxiety, depression, panic attacks and other emotional problems. The type of psychotherapy that will be most effective for a particular patient will depend on his individual needs and problems.

In general, rehabilitation therapy and psychotherapy can help patients with neurological complications of ARVI to restore their health and improve their quality of life. However, before starting any form of treatment, it is necessary to consult with a qualified doctor [14].

In addition, other treatment methods can be used for neurological complications of ARVI. For example:

– drug therapy. Depending on the specific symptoms and causes of neurological complications, the doctor may prescribe medications that will help reduce the manifestation of symptoms or improve the functioning of the nervous system. For example, analgesics can be used to treat headaches, and drugs from the anxiolytic group can be used to reduce anxiety;

– diet therapy. Proper nutrition can have a positive effect on the functions of the nervous system and the general condition of the patient. The doctor may recommend a certain diet or supplements that will help improve the functioning of the nervous system and reduce the manifestation of neurological symptoms;

– alternative methods of treatment. In some cases, patients with neurological complications of ARVI may use alternative treatments such as massage, acupuncture, yoga, etc. Such methods can help improve blood circulation, relieve tension and improve the functioning of the nervous system [15].

It is important to understand that the treatment of neurological complications of ARVI should be comprehensive and individual. Each patient has their own unique needs and problems, and only a qualified doctor can develop an effective treatment plan that will help the patient quickly restore his health and cope with neurological complications.

Ergotherapy is one of the methods of treatment of neurological consequences of ARVI. This is a comprehensive approach to rehabilitation that uses various types of activities to help patients restore functions and skills that have been disrupted as a result of the disease. Ergotherapy can be effective for the treatment of neurological complications of ARVI, such as motor disorders, movement coordination disorders, decreased muscle strength, etc. This technique can help patients restore their motor activity and increase self-esteem.

One of the basic principles of occupational therapy is an individual approach to each patient. Depending on the specific needs and problems of the patient, the occupational therapist can offer various activities that will help restore the impaired functions. For example, for the treatment of motor disorders, an occupational therapist can use special exercises that are aimed at improving muscle strength and coordination of movements. To increase the level of self-esteem and improve the psychological state of the patient, the occupational therapist can offer such activities as drawing, needlework, cooking classes, etc. [16].

It is important to note that occupational therapy should be carried out only by qualified specialists who have appropriate education and experience working with patients with neurological complications. They can help the patient to restore impaired functions and return to normal life after the disease.

Physiotherapy is one of the methods of treating the

neurological consequences of ARVI. It can help patients restore impaired functions and improve their health and quality of life. One of the most effective methods of physiotherapy for the treatment of neurological complications of ARVI is physical therapy. This method uses a set of exercises aimed at restoring impaired functions and strengthening the patient's body [17].

In addition, physiotherapy may include methods such as electrotherapy, massage, acupuncture, laser therapy, etc. They can help reduce pain, improve blood circulation, relieve muscle tension and speed up the recovery process. For each patient, the physiotherapist develops an individual treatment program that takes into account his condition and specific problems. In addition, physiotherapy can be carried out both in inpatient conditions and in a polyclinic, while the patient can be assigned both individual treatment and group classes.

It is important to note that physiotherapy should be carried out only under the supervision of qualified specialists who have the appropriate education and experience working with patients with neurological complications. They can help the patient to restore impaired functions and return to normal life after the disease.

Speech therapy is an important method of rehabilitation for patients with neurological consequences of ARVI, which may include speech, voice and breathing rhythm disorders. The speech therapy approach includes the diagnosis and correction of speech disorders and speech function. With neurological complications of ARVI, such as paresis and laryngeal paralysis, voice problems may occur. Speech therapy treatment in such cases includes a set of exercises and techniques aimed at restoring the voice and correcting breathing. Such exercises may include vocal breathing exercises, singing, reading, and other techniques. If a patient has speech disorders, a speech therapist can diagnose and develop an individual treatment program, including exercises to restore phonemic hearing, articulation, etc. The goal of speech therapy is to restore normal speech and speech function of the patient [18].

Speech therapy treatment is carried out by qualified speech therapists. They have the appropriate education and experience working with patients with neurological complications. Treatment can be carried out both individually and, in a group, depending on the patient's condition and specific problems. It is important to note that speech therapy is a long process, and results can be achieved only with regular classes and hard work on the part of both the speech therapist and the patient. However, with the right approach, speech therapy treatment can help the patient restore impaired functions and improve the quality of life [19].

Neurological complications of ARVI can have serious consequences for the patient's health, so it is important to develop and improve methods of their treatment and prevention. Here are some directions for improving the treatment and prevention of the neurological consequences of ARVI:

1. Early detection and diagnosis of neurological complications of ARVI. Regular examinations and observations of patients who have undergone ARVI can help identify neurological complications at an early stage and begin treatment.

2. Individual approach to the treatment of neurological complications of ARVI. Each patient has unique symptoms and problems, so treatment should be individual and based on the specific needs of each patient.

3. A multimodal approach to treatment. Treatment of neurological complications of ARVI should include several methods, such as physiotherapy, occupational therapy, speech therapy and others, to achieve maximum results.

4. Preventive measures. It is important to prevent the occurrence of neurological complications of ARVI by preventing the infection itself, as well as taking measures to strengthen immunity and maintain overall health.

5. Research and development of new methods of treatment and prevention. Continuous research and development in the field of treatment and prevention of neurological complications of ARVI can lead to the emergence of new methods of treatment and more effective methods of prevention [20].

In general, the treatment and prevention of neurological complications of ARVI is a complex task that requires a multimodal approach and an individual approach to each patient.

One of the ways to improve the treatment and prevention of the neurological consequences of ARVI is the development of new drugs aimed at improving the immune system of the body and preventing the development of complications. Also, research in the field of neuroprotection and neuroregeneration can contribute to the development of new methods for the treatment of neurological complications of ARVI [21].

However, it is important to note that the prevention of the neurological consequences of ARVI is possible not only through new treatment methods, but also through widespread and timely vaccination of the population. Carrying out preventive measures, such as regular hand washing and compliance with hygiene standards, also helps to reduce the risk of disease and the development of neurological complications.

In addition, it is important to improve the availability of treatment and rehabilitation for patients with neurological complications of ARVI, especially in regions with a low level of medical care. The development and implementation of rehabilitation programs aimed at improving the physical and psychological condition of patients can also significantly improve the prognosis of the neurological consequences of ARVI [22].

Thus, in order to prevent neurological complications of ARVI, a comprehensive approach to the treatment and prevention of this disease is necessary, including not only new methods of treatment, but also preventive measures, rehabilitation and psychotherapy for patients with neurological complications.

CONCLUSION

The neurological consequences of ARVI are a serious problem that can leave a patient with long-term and sometimes irreversible consequences. Therefore, it is important not only to correctly diagnose and treat the disease itself, but also to prevent and treat neurological complications. To do this, you need to monitor your health, strengthen the immune system, observe hygiene rules, lead a healthy lifestyle, and immediately seek medical help when the first symptoms of neurological complications appear.

Methods of rehabilitation, physiotherapy, speech therapy, psychotherapy and occupational therapy are widely used in the treatment of neurological complications of ARVI. These methods can significantly reduce the risk of complications and improve the patient's condition. There are also a number of areas in which research is being conducted to improve the treatment and prevention of neurological complications of ARVI, such as the use of immunomodulators, in-depth study of the mechanisms of complications, as well as the development of new treatment methods.

In general, ARVI diseases are a serious problem not only in terms of their prevalence, but also potential neurological consequences that can be quite serious and permanently change the quality of life of the patient. Therefore, it is important to take measures not only to prevent the disease, but also to prevent the development of its complications.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

All authors contributed in reviewing the final version of this paper

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