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**PREVENTION OF ADVERSE EFFECTS ON THE BONE SYSTEM  
AFTER THE DISEASE COVID-19**

**Annotation:** The appearance of COVID-19 in the world has set tasks for specialists of various health care profiles related not only to rapid diagnosis and treatment, but also to the provision of high-quality medical care, including rehabilitation measures after and during the transfer of coronavirus infection.

**Key words:** COVID-19, health care, medicine, bone system, rehabilitation.

The effectiveness of the methods used directly depends on the early start of rehabilitation activities directly in the hospital and continuation at home, with mandatory consideration of the stability of the patient's condition.

One of the non-obvious complications of the new coronavirus infection was necrosis or death of bone tissue of various localization - the joints (for example, hip or shoulder), as well as the bones of the facial skeleton are affected.

Necrosis of the bones of the maxillofacial region is one of the most dangerous conditions in dentistry, which is manifested by purulent processes and destruction of hard tissues of the face.

The causes of this pathology are considered to be microcirculation disorders (i.e. blood supply to the bone area), taking various medications (for example, corticosteroid hormones), the addition of a fungal infection (the so-called mucoromycosis). At the same time, the constant process of formation of new and destruction of old osteocytes – bone cells - is disrupted.

Osteonecrosis can be difficult to diagnose, especially at an early stage, since its symptoms are similar to the manifestations of other diseases in this area.

Necrosis of the bones of the maxillofacial region, developing after a new coronavirus infection, is characterized by rapid development, while changes also

spread to the cerebral parts of the skull, threatening the development of complications from the brain.

The disease should be diagnosed quickly, and treatment should be started as soon as possible, and then the chances of a favorable outcome are high.

In addition to collecting anamnesis data and patient complaints, clinical examination data, instrumental and laboratory research methods, patients should undergo a comprehensive X-ray examination of the maxillofacial region.

Computed tomography with subsequent multiplanar and 3D reconstructions is carried out to clarify the localization of pathological changes in bone structures, determine their prevalence, assess the condition of surrounding soft tissues, the presence of concomitant complications, as well as after the treatment to assess its effectiveness.

We have observed several patients with necrotic lesions of the facial bones who have a history of COVID-19 disease.

According to statistics, with the development of COVID-19, pain in the musculoskeletal system accounts for 10 to 30 percent of cases. But it is in the post-ovoid period that the likelihood of exacerbation and development of persistent musculoskeletal pain syndrome, as well as rheumatic diseases, increases.

Postcovid syndrome is a set of existing or developing symptoms in patients who manifest themselves a few weeks or months after infection with SARS-CoV-2, regardless of the viral status.

According to the NIKE classification, there are subacute (symptoms last more than three weeks, but less than three months), chronic (lasts more than three months) and prolonged coronavirus, when symptoms persist for four or more weeks. Often, long-term coronavirus is confused with postcovid syndrome (from 12 weeks or more).

According to research by American scientists, patients with a mild form of COVID-19 had a fairly high risk of sudden death within twelve months after the disease.

Musculoskeletal pain is a general concept that includes manifestations that are different in origin and mechanism of development – arthralgic (joint pain), arthritic (inflammation), myalgic (muscle pain) and bone pain after a coronavirus infection, which have a persistent or undulating character.

After the coronavirus, someone's joints may ache and swell - this is how the development of arthritis begins, someone has soreness in muscles, ligaments or bones. A person begins to panic and think that he has contracted COVID-19 repeatedly or he develops an autoimmune disease.

"In 80 percent of cases, patients come to us with kidney-shaped pains in the musculoskeletal system. In 99 percent of cases, people do not know that they have previously suffered a coronavirus infection. It is important to note that in the diagnosis of postcovid syndrome, it is important to establish the fact of the transferred disease – this will allow us to find the keys to further adequate treatment."

Everything that twists, cuts, shoots, bakes and burns is a manifestation of not inflammatory, but neuropathic pain that cannot be treated with nonsteroidal anti-inflammatory drugs and glucocorticoids.

Most often, after the secretive course of the coronavirus, musculoskeletal pain is of a neuropathic nature. Also, quite often there is a lesion of the ligamentous apparatus: a person turns out to be shackled in a shell – the shoulder and hip joints hurt, the elasticity of the ligaments decreases. The mechanism of these processes is not completely clear, because there are no vessels in the ligaments, but there are receptors of the angiotensin-converting enzyme, which the coronavirus infection clings to.

Musculoskeletal pain during a pandemic is a very complex differential diagnostic pattern that the patient will not be able to figure out on their own. When pain appears, patients should be careful with taking nonsteroidal anti-inflammatory drugs - their expediency, effectiveness and possible risks can only be assessed by a doctor.

It is necessary, if possible, to continue to lead a healthy lifestyle – stretching exercises of the ligamentous apparatus, for example pilates, are especially good. Swimming is recommended (both the pool and the sea are suitable), but always in warm water with a temperature of 26 degrees and above, as well as Scandinavian walking, which will fix the work of the shoulder joints in the correct position.

However, physical activity should be comfortable, in no case through force. Do not forget about the observance of the thermal regime – legs, ankles, hips and lower back should be in dry heat.

Regardless of the damage to organs and systems, it is advisable to take magnesium preparations – it is this trace element that is a very important component for the normal functioning of the ligamentous apparatus and the inclusion of the entire detoxification system of the body. Magnesium is part of the structure of about three hundred enzymes that are involved in cleansing the body.

Selenium supports the musculoskeletal system well - for this you can eat two Brazil nuts every day, but without simultaneous consumption with carbohydrates.

The specialist also recommends including foods rich in vitamin C in the diet.

"You can fill your daily need for vitamin C with one large red pepper – it's better if it comes from your garden, two kiwis, as well as currants, cranberries or lingonberries. However, those who have a liver damaged during a coronavirus infection should refrain from eating berries. Long-term use of vitamin C preparations in large doses is not recommended due to the high risks of hypercoagulation, increased glucose levels and the formation of kidney stones."

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