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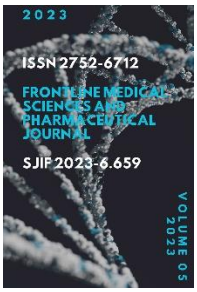

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Research Article

PATHOMORPHOLOGICAL CHANGES IN THE FEMORAL HEAD TISSUE OF PATIENTS WHO UNDERWENT ENDOPROSTHETIC SURGERY AFTER COVID-19

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ABSTRACT

The article presents the pathomorphological changes in the femoral head tissue of 43 patients infected with Covid-19 who underwent hip replacement surgery. It was found that the more time passes after the illness in patients with Covid-19, the more the pathomorphological changes in the femoral head tissue increase. Hydropic dystrophy of chondrocytes and an increase in the number of necrotic cells are clearly visible. It is noted that fibrous tissue has grown between them.

KEYWORDS

Covid-19, infection, femoral head, sprain, dystrophy, necrosis, fibroblast.

INTRODUCTION

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by the World Health Organization (WHO). On February 11, 2020, the corona virus infection was officially named COVID-19 ("Coronavirus disease 2019"). The place where the virus first appeared is in China, where 77,000 people have been infected, and more than 2,500 people have died. All over the world, in 2020, there were 60 million 894 thousand people infected with this infection, of which 1 million 430 thousand died and 42 million 90 thousand recovered (Bolekhan V.N., Ulyukin I.M., Peleshok S.A., 2020).

COVID-19 can cause serious complications in the heart, lungs, brain, kidneys, blood vessels and other vital human systems and organs. Although COVID-19 is a respiratory infection, doctors recognize that it is a multisystem disease, in other words, it can affect any organ (Abdurakhimov A. Kh. Khegay L. N. Yusupova Sh. K., 2021).

The coronovirus SARS-CoV-2 enters the cells of our body through its receptors, angiotensin I-converting enzyme 2 (ACE-2). ACE-2 is expressed in type 2 alveocytes (AT2). Penetrates into lung, liver cholangocytes, colon cells, keratinocytes of esophagus, epithelial cells of ileum and rectum (Qi F. et.el., 2020; Ortega J.T. et.el., 2020). SARS-CoV-2 entry cells are endothelial cells. , fibroblasts, erythrocytes, platelets, hippocampus, tonsils, heart, skin, monocytes, and T-lymphocytes (Wang K.et.el., 2020). COVID-19 is more common in older people than in young people, and more in men than in women (Yu F. et.el., 2020).

The absolute (absolute) number of cases of COVID-19 in the Republic of Uzbekistan has exceeded 54 thousand, which is 0.15% of the total population. This indicator is 158.8 in relative (intensive) number per 100,000 population.

The aim of the research: Determination of pathomorphological changes in the femoral head tissue of patients with COVID-19 who underwent endoprosthesis surgery.

MATERIAL AND METHODS

The research was conducted at the Samarkand branch of the Republican Specialized Traumatology and Orthopedics Scientific and Practical Medical Center, on the surgical material of hip-femoral joint endoprosthesis of 43 patients infected with Covid-19 (on the head of the femur 6 months after the disease). 21 of the surgical patients were male and 2 were female. Pieces of 0.5x1.0x1.2 cm size were taken from the material obtained for the study, from the surface of the

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joint in the vertical direction and from the subchondral bone tissue. A solution of nitric acid was used for fixation and decalcification of particles. An alcohol battery was passed, paraffin blocks were prepared, 7-10 μm thick sections were taken and stained with hematoxylin eosin, Van Gieson methods. Histological preparations were examined and photographed using a Leica GME microscope connected to a Leica EC3 digital camera and a Pentium IV computer.

RESEARCH RESULTS AND DISCUSSION

The average age of the patients is 45-65 years, and the average time after contracting COVID-19 is 6±1.0 months (5 cases), 1.0-1.5±0.1 years (38 cases) . 6 months after the disease, the normal structure of the hyaline part of the femoral head of those who underwent endoprosthetic surgery was broken, and necrobiotic changes were detected in chondrocytes. In particular, pyknotic changes in the nucleus of chondrocytes are noticeable in almost the entire field of view. If karyorrhexis is observed in the nucleus of a large number of chondrocytes, the state of karyolysis is determined in most fields of view. Hydropic dystrophy is noted in the cytoplasm (Fig. 1).

Figure-1. Hydropic dystrophy of chondrocytes in the stem cells of the femoral head. Hemotoxylin-eosin stained. Ob.40, ok.10.

Proliferation of fibroblasts is clearly visible in areas where cytorexis is developed. Chondrocytes in the state of cytolysis are rare in the field of view (Fig. 2).

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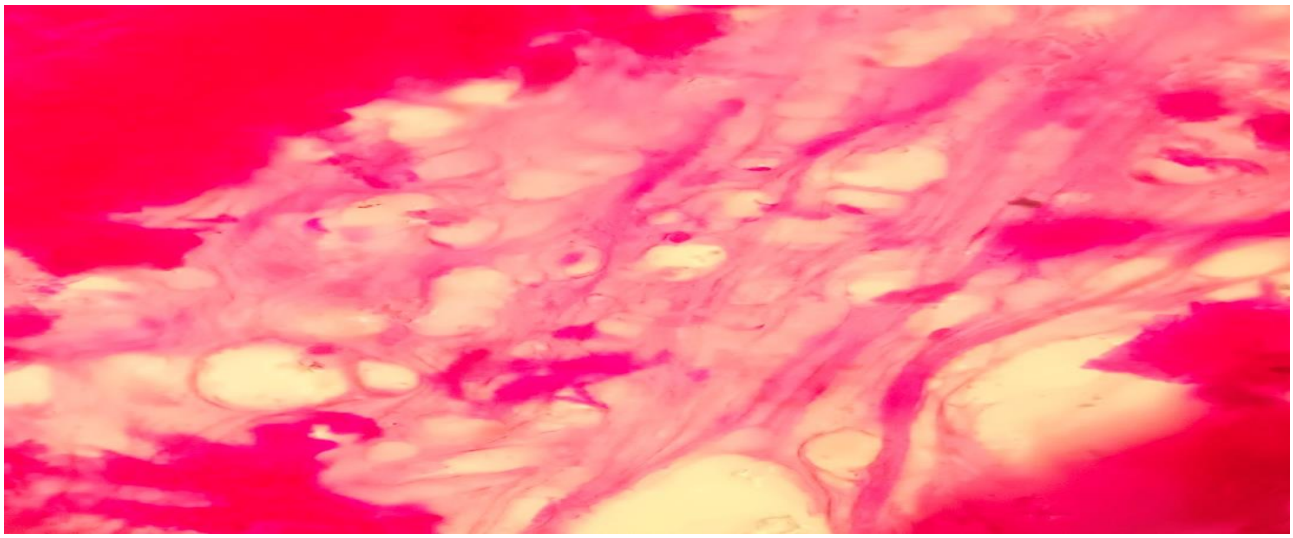
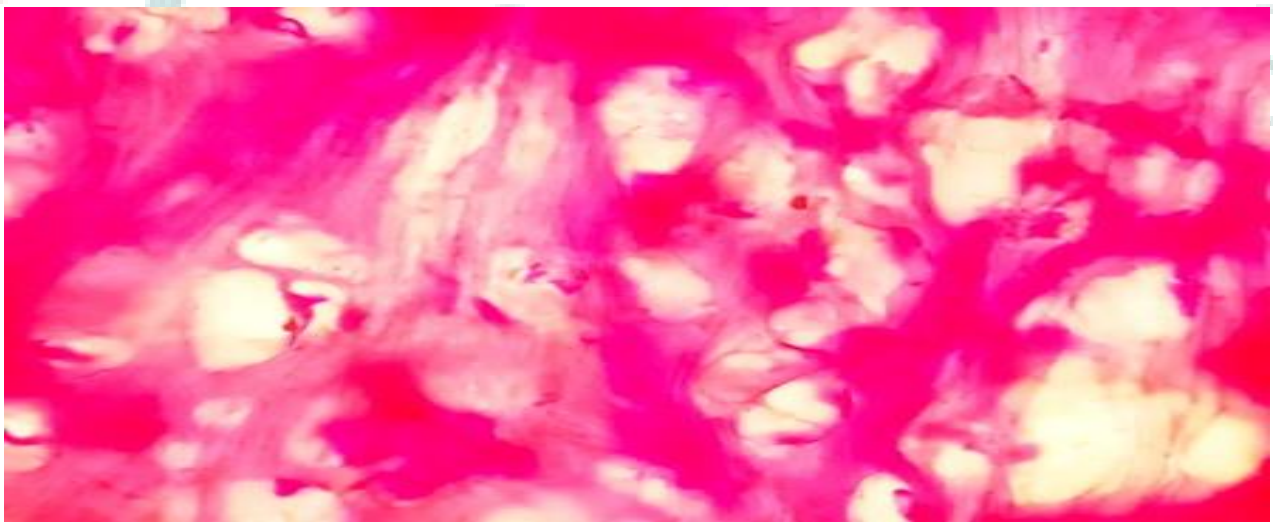


Figure-2. Hydropic dystrophy of chondrocytes in the stem cells of the femoral head. Stained by the Van-Gieson method. Ob.40, ok.10.

In the preparations stained by the Van-Gieson method, it is determined that a small amount of fibrous tissue was formed between necrotic chondrocytes (Fig. 3).



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To date, laboratory diagnostic testing of coronovirus infection is of great interest from a clinical point of view. Thus, it has been shown that coronavirus infections resulting from cross-species transmission often lead to fatal immune-mediated systemic reactions and damage to several organs due to autoimmunity, in particular, demyelination, hepatitis, systemic vasculitis, and a widespread inflammatory process (Bolekhan V.N., Ulyukin I.M., Peleshok S.A., 2020).

A group of researchers noted that while COVID-19 is a respiratory infection, it can affect any organ (Abdurakhimov A. Kh. Khegay L. N. Yusupova Sh. K., 2021). In particular, joint pain in the joints is also a very common complaint after a coronavirus infection, but rheumatologists, unlike most doctors, believe that the virus does not directly affect their area. Olga Teplyakova, a doctor of medical sciences, said that until now, cases of arthritis, including rheumatoid arthritis or systemic lupus erythematosus, have not been reported to increase after coronavirus infection. Given that the virus has forced people to stay at home, leading to physical inactivity, many patients gain weight and their degenerative musculoskeletal pathology worsens.

That is, pain in the joints, back pain, simply caused by a sedentary lifestyle. But in addition, the virus has such a property that it can penetrate and affect the structures of the brain. Loss of smell and taste or their change disrupts the general perception of the patient, leads to depressive, anxious states, so we see a lot of psychosomatic manifestations that can be accompanied by pain in the joints. That is, these are not real changes in the joints, but psychosomatic pains, when the patient feels pain in the whole body.

When the use of antibiotics was recommended even for a mild course of coronavirus infection, doctors saw complications in the musculoskeletal system after antibiotic therapy: reactive arthritis, allergic reactions after the development of antibiotic-related diarrhea, etc. But this is not the effect of the coronavirus, but a complication arising from the complexity of the therapy (Aliev A.G. et al. 2021).

Our research shows that patients with Covid-19 have increased dystrophic and necrotic changes in the femoral head. Hydropic dystrophy of chondrocytes and an increase in the number of necrotic cells are clearly visible in micropreparations. Fibrous tissue is defined between them.

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CONCLUSION

Thus, the more time passes after the illness in patients with Covid-19, the more the pathomorphological changes in the femoral head tissue increase. In particular, fibrous tissue begins to take the place of necrotic chondrocytes.

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