

МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ СТРУКТУР ГОЛОВКИ БЕДРЕННОЙ КОСТИ, СПЕЦИФИЧЕСКИЕ ПРИ БОЛЕЗНИ COVID-19

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МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ СТРУКТУР ГОЛОВКИ БЕДРЕННОЙ КОСТИ, СПЕЦИФИЧЕСКИЕ ПРИ БОЛЕЗНИ COVID-19. ЖКМП.-2023.-Т.4.-№4.-С

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Аннотация: В статье представлены морфологические аспекты структур головки бедренной кости 85 пациентов с заболеванием Covid-19. Отмечено, что у пациентов с Covid-19 развиваются полный асептический некроз костной ткани в субхондральной области, фиброз и склероз, тромбоз в пространстве сосудов, кариопикноз и кариорексис в эндотелиальных клетках.

Ключевые слова: Covid-19, инфекция, головка бедренной кости, суставы, кость, дистрофия, некроз, фиброз, склероз.

SON SUYAGI BOSHCHASI TUZILMALARINING COVID-19 XASTALIGIGA XOS MORFOLOGIK JIHATLARI

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SON SUYAGI BOSHCHASI TUZILMALARINING COVID-19 XASTALIGIGA XOS MORFOLOGIK JIHATLARI.KPTJ.-2023-N.4.-№4-M

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Аннотация: Мақоллада 85 нафар bemorning son suyagi boshchasidagi tuzilmalarning Covid-19 xastaligiga xos morfologik jihatlari keltirilgan. Covid-19 bilan xastalangan bemorlar son suyagi boshchasi tuzilmalarida: gialinli tog'ay qavati, Subxondral sohada suyak to'qimasining to'liq aseptik nekroz rivojlanganligi, fibroz va skleroz jarayoni qon tomirlari bo'shlig'ida tromboz holati endoteliy hujayralarida kariopiknoz va karioreksis rivojlanganligi aniqlanganligi ta'kidlangan.

Калит so'zlar: Covid-19, infektsiya, son suyagi boshchasi, tog'ay, suyak, distrofiya, nekroz, fibroz, skleroz.

MORPHOLOGICAL ASPECTS OF FEMORAL HEAD STRUCTURES SPECIFIC TO COVID-19 DISEASE

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Annotation: The article presents the morphological aspects of structures in the head of the femur of 85 patients with COVID-19 disease. It was noted that patients with COVID-19 have developed complete aseptic necrosis of bone tissue in the subchondral area, fibrosis and sclerosis, thrombosis in the space of blood vessels, karyopyknosis and karyorrhexis in endothelial cells.

Keywords: Covid-19, infection, femoral head, joint, bone, dystrophy, necrosis, fibrosis, sclerosis.

Introduction: All over the world in 2020, 60,894,000 people were infected with this infection, of which 1,430,000 died and 42,90,000 recovered. By the World Health Organization (WHO) on February 11, 2020. the coronavirus infection was officially named COVID-19 ("Coronavirus disease 2019"). The place where the virus appeared for the first time - in China, 77 thousand people were infected with it, and more than 2 and a half thousand people died [3]. COVID-19 can cause serious complications in the heart, lungs, brain, kidneys,

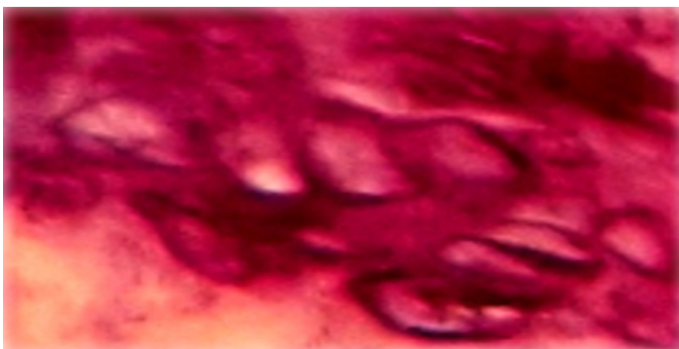
blood vessels, and other vital human systems and organs. Although COVID-19 is a respiratory infection, doctors admit that it is a multisystem disease, in other words, it can affect any organ [1]. The coronavirus SARS-CoV-2 enters the cells of our body through its receptors, angiotensin I-converting enzyme 2 (ACE-2). ACE-2 is expressed in type 2 alveocytes (AT2). Penetrates into lung, liver cholangocytes, colon cells, keratinocytes of the esophagus, and epithelial cells of the ileum and rectum [5]. SARS-CoV-2 entry cells are endothelial

cells., fibroblasts, erythrocytes, platelets, hippocampus, tonsils, heart, skin, monocytes, and T-lymphocytes [7]. COVID-19 is more common in older people than young people, and more in men than women [6].

The purpose of the study: It consists of determining the morphological aspects of femur structures specific to the disease of COVID-19.

Material and methods: The study 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 85 patients infected with COVID-19 (in the head of the femur 6 months after the disease). 73 of the surgical patients were male and 12 were female. Pieces of 0.5x1.0x1.2 cm size were taken from the material obtained for the study, from the joint's surface in the vertical direction, and from the subchondral bone tissue. A solution of nitric acid was used to fix and decalcify the particles. An alcohol battery was passed, paraffin blocks were prepared, and 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.

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

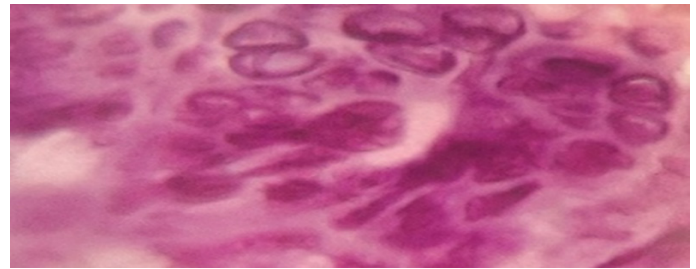


Study results and discussion: The mean age of the patients was 45-65 years, and the mean elapsed time after contracting COVID-19 was 15 ± 8.0 months. In the histological samples prepared from the head of the femur of those who underwent endoprosthetic surgery after the disease, the normal structure of the hyaline part is disturbed, and necrobiotic changes are detected in the 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 condition of karyolysis is determined in most fields of view. Hydropic dystrophy is noted in the cytoplasm (Fig.1).

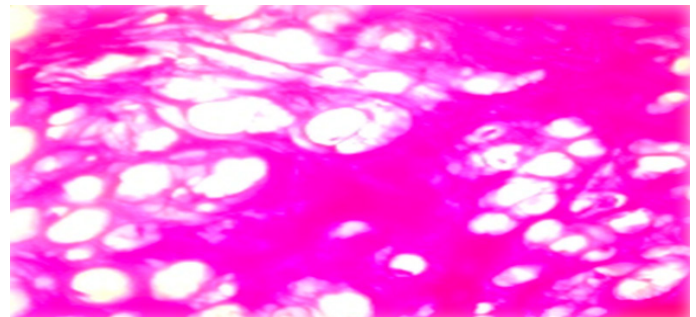
The proliferation of fibroblasts is clearly visible in areas where cytotoxic is developed. In the field of vision, chondrocytes in the state of cytolysis are a deficiency (Fig. 2).

Picture 2. Karyolysis of chondrocytes in the stem cells of the femoral head. Stained in hematoxylin-eosin. Ob.40, ok.10.



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

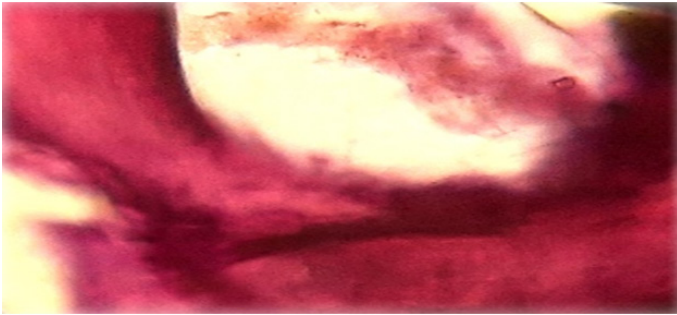
Picture 3. Hydropic dystrophy of chondrocytes and infiltration of fibrous tissue in the stem cells of the femoral head. Stained by the Van Gieson method. Ob.40, ok.10.



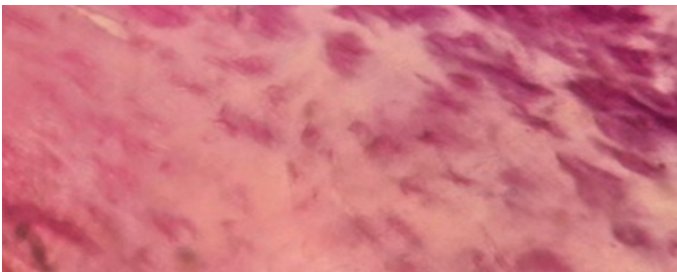
It is noted that complete aseptic necrosis has developed in the bone tissue in the subchondral area. In addition, the process of fibrosis and sclerosis is determined. Thrombosis is observed in the space of blood vessels. Many endothelial cells developed karyopyknosis and karyorrhexis. The process of karyolysis and cytolysis of several endotheliocytes is noted. A state of desquamation is noted in the intima layer of blood vessels (Fig. 3). Patients with COVID-19, who underwent endoprosthetic surgery on the femoral head within 1-1.5 years, found that the articular surface of the femoral head was microscopically in the state of karyolysis and increased area of cytolized chondrocytes is observed. In the preparations stained by the

Van-Gieson method, obvious fibrous tissue has grown in its place. In the subchondral area, complete aseptic necrosis of the bone tissue has developed (Fig.4,5).

Picture 4. Blood vessels of the femoral head. Stained with hematoxylin and eosin. Ob.40, ok.10.



Picture-5. Bone tissue necrosis of the subchondral area of the femoral head. Stained with hematoxylin and eosin. Ob.40, ok.10.



Including fibrosis and sclerosis. New bone tissue elements and osteoclasts are observed in some places of the subchondral area. However, the state of thrombosis in the space of blood vessels, the development of karyopyknosis, and karyorrhesis in a small number of endothelial cells are determined. Karyolysis is noted in most endotheliocytes. Swelling and cytolysis of many endotheliocytes are detected. Swelling of the intima layer of blood vessels and an increase in desquamation foci are noted.

A group of researchers noted that while COVID-19 is a respiratory infection, it can affect any organ [1]. 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 musculoskeletal degenerative pathology worsens. That is, pain in the joints, and back pain, simply caused by a sedentary

lifestyle. In addition, the virus has such a property that it can penetrate and affect the brain's structures.

The loss of smell and taste or their change disrupts the general perception of the patient, and 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 in mild cases 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 [2]. 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 visible in micropreparations.

Fibrous tissue is defined between them. It was found that the necrosis and sclerotic processes of the subchondral area of the bone tissue are progressing. Thrombosis is observed in the cavity of the femoral head. Many endothelial cells developed karyopyknosis and karyorrhesis. The process of karyolysis and cytolysis of several endotheliocytes was noted. Desquamation was detected in the intima layer of blood vessels.

Conclusion: Thus, the more time passes after the illness in patients with COVID-19, the more the pathomorphological changes in the femoral head and bone tissue increase. In particular, the place of necrotic chondrocytes and osteoblasts is replaced by fibrous tissue and sclerotic processes.

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