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tytuł pracy: ***„Insulinopodobne czynniki wzrostowe w płynie stawowym i surowicy w przebiegu uszkodzenia stawu kolanowego o różnej etiologii”***

Summary

Cartilage covering the articular surfaces is critical to the proper functioning of joints. Damage and wear of articular cartilage is characteristic of modern times. Its defects occur in the course of many systemic or infectious diseases. The premature wear of the cartilage is also caused by summing up overload and microtrauma.

The progressive damage to articular cartilage is associated with loss of integrity of its extracellular matrix components. To a large extent it depends on an imbalance between the anabolic and catabolic processes, regardless of pathogens.

Metabolism of cartilage matrix components is under the control of cytokines produced locally. It is known that peptide growth factors stimulate chondrocytes to synthesize matrix components, and other cytokines such as interleukins, promote catabolism, stimulating chondrocytes to the production of enzymes degrading various components of cartilage.

The effect of peptide growth factors' action is hypertrophy or hyperplasia and stimulation of various anabolic transformations. Insulin-like growth factors (IGFs) most strongly stimulate the synthesis of extracellular matrix components. These factors are present in the form of complexes with specific binding proteins, that regulate its bioavailability. It can be assumed that IGF-I plays an important role in the metabolism of cartilage.

In my research, I used synovial fluids and blood collected from young people, with confirmed diagnosis of juvenile idiopathic arthritis and post-traumatic osteoarthritis of the knee. Taking into account the progressive wear of cartilage, the second studied group consisted of biological material collected from adults with confirmed diagnosis of rheumatoid arthritis, Lyme disease, and osteoarthritis.

I used the following methods: *electrophoresis, zymography, Western immunoblot, ELISA,* to evaluate:

presence (expression) of IGF-I, binding protein IGFBP-1 and IGFBP-3, content of IGF-I, collagenolytic/gelatinolytic activity. Various methods were used for determination of protein content in synovial fluids and blood serum.

It demonstrated the presence of insulin-like growth factor type I in synovial fluids and blood serum, which was mainly found in the form of macromolecular complexes. The results of my tests demonstrated the presence of two binding proteins: IGFBP-1 and IGFBP-3 - in the complexes. The reducing agent released small amounts of free form of IGF-I from the complexes. I proved that synovial fluids contain smaller amounts of IGF-I compared to the content of this growth factor in blood. I demonstrated the largest amount of this factor in the synovial fluids of patients in the course of juvenile idiopathic arthritis, and the lowest - in rheumatoid arthritis. Also I proved that the tested synovial fluids contain IGF-I in a free form. The largest amount of free form is present in young people in the course of post-traumatic osteoarthritis and juvenile idiopathic arthritis. In adults, the amount of free IGF is smaller - it is the smallest in the course of osteoarthritis. Confrontation of my observations with the observations of other authors suggests that the content of IGF-I in synovial fluids depends mainly on the age of patients, and less on the etiological factors that cause the diseases in question.

Analysis of protein degradation products showed that the degree of knee joints destruction in young people is smaller compared to adults.