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ANTIOXIDANT STATUS IN ARTHROTIC ARTHRITIS

Khamdamov B.Z.[1], Khamroev F.Sh.[2], Rasulov G.M. [3]
[1]Bukhar State Medical Institute
[2]Republican Children's Neuropsychiatric Hospital named after U.K. Kurbanov
[3]National Rehabilitation Center for the Disabled and Prosthetics

Abstract: *The work included a comprehensive laboratory examination of patients with different stages of knee osteoarthritis. The patterns of metabolic disorders in patients with osteoarthritis in the form of activation of the prooxidant system and inhibition of the enzymatic link of antioxidant protection were revealed. It was shown that the degree of oxidative stress clearly correlates with the severity of clinical manifestations of osteoarthritis. The most clinically significant blood parameters for laboratory diagnostics of this pathology were identified, such as aliphatic aldehyde groups of oxidized proteins and paraoxanase activity.*
Key words: *osteoarthritis, prooxidant system, antioxidant system, oxidative modification of proteins, free radical oxidation of lipids, superoxide dismutase, catalase, myeloperoxidase, paraoxanase.*

Relevance. The human antioxidant system (AOC) is a system that blocks the formation of highly active free radicals, i.e. reactive oxygen species. Under normal physiological conditions, small amounts of oxygen are constantly converted to superoxide anions, hydrogen peroxide and hydroxyl radicals. Excessive production of these radicals is a damage factor, the compensatory mechanism of which is the antioxidant system. Determination of the total antioxidant status helps the clinician to further assess the state of the body observed and its potential protective reserves for certain physiological and pathological conditions.

The human antioxidant system (AOS) is a system that blocks the formation of highly active free radicals, i.e. reactive oxygen species. Under normal physiological conditions, small amounts of oxygen are constantly converted into superoxide anions, hydrogen peroxide and hydroxyl radicals. Excessive production of these radicals is a factor in damage, the compensatory mechanism of which is the antioxidant system. Determining the general antioxidant status helps the clinician to more deeply assess the condition of the body, observed and its potential protective reserves in certain physiological and pathological conditions (1,2,3,4,5,6,7). The importance of studying the pathogenesis of osteoarthritis (OA) is due to the prevalence of the disease -

epidemiological studies show that 10-12% of the population of all ages suffers from it, including 50% of people over 60 years old (1,8,9,10,11,12,13,14,15). According to WHO forecasts, OA will become the fourth leading cause of disability in women and the eighth in men in the next 10-15 years [1,16,17,18,19]. It is believed that the universal mechanism of OA pathogenesis is the imbalance between the processes of synthesis and degradation of cartilage components. The key role in this is given, firstly, to the disruption of the functioning of chondrocytes, which begin to produce "inferior" low-molecular matrix proteins, and, secondly, to biochemical disorders, changes in the activity of enzymes in the articular tissue.

The mechanism of formation and development of these leading links in the pathogenesis of OA is still not fully understood. At the same time, specific OA processes have been studied much better than non-specific reactions, and it is the latter that are primarily protective, formed by evolution. The development of OA is based on such typical pathological processes as tissue degeneration, inflammation and stress, the body's systemic response to which includes the activation of free radical destabilization of cells, both in the area of local damage and far beyond it. At the same time, the balance of the prooxidant (POS) and antioxidant (AOS) systems is a prerequisite for health, an indicator of the adaptive and protective capabilities of the body.

The aim was to study metabolic parameters at the systemic and local levels in arthrotic arthritis depending on the age of patients.

Materials and methods 96 patients with arthrotic arthritis who underwent inpatient treatment at the clinic of the National Center for Rehabilitation and Prosthetics of Persons with Disabilities under the National Agency for Social Protection under the President of the Republic of Uzbekistan were examined.

Results and conclusion. The results of studies showed that in patients with AA of both age groups in synovial fluid, the pattern of changes in the level of SOD was different. In young patients, we also see a 1.4-fold decrease in SOD (up to 638.3 ± 126.2 pg/ml) compared to the control group (897.5 ± 61.8 pg/ml). And in middle-aged patients, we see the opposite picture - an increase in the level of TRD by 1.2 times compared to the control group.

In AA patients in both age groups, we see an increase in MDA. In synovial fluid, this process was less intense and was higher than the control group (1.64 ± 0.46 μmol/ml) in young patients by 3.9 times (6.38 ± 1.13 μmol/ml), in middle-aged patients by 4.5 times (7.43 ± 1.27 μmol/ml).

Conclusions: The revealed reduced levels of SOD and increased levels of MDA lead to the accumulation of ROS, which enhances the processes of POL and increases the level of MDA, which creates a vicious circle of oxidative damage that accelerates the

progression of arthrotic arthritis. Although at the systemic level, the mechanism of oxidative stress disturbance is general, at the local level, each age period is characterized by a specific mechanism of action of SOD. Metabolic and oxidative changes play a key role in the pathogenesis of arthrotic arthritis, increasing inflammation and degradation of articular tissue. An in-depth study of these processes can contribute to the development of new therapeutic approaches aimed at reducing oxidative stress and correcting metabolic disorders to improve the quality of life of patients with arthrotic arthritis.

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