

Changes in the Indicators of Lipid Peroxidation, Glutathione Level of Antioxidant Defense, IL-18, IL-10, and Matrilin 3 in Patients With Osteoarthritis in Combination With Type 2 Diabetes, Obesity, Arterial Hypertension

Dr .Ayush Abhinav ¹

Abstract: In patients with type 2 diabetes, obesity, and arterial hypertension, the balance between lipid peroxidation processes and the glutathione level of antioxidant defense is significantly altered, which is associated with activation of IL-18 and significant IL-10 deficiency. Matrilin 3 indicators reduce in isolated osteoarthritis and its combination with arterial hypertension, increasing in the III and IV groups compared to practically healthy individuals (PHI).

Key Words: osteoarthritis; type 2 diabetes; obesity; arterial hypertension; oxidative stress; antioxidant defense system; cytokines; matrilin 3.

Introduction. Several studies indicate that oxidative stress (OS) is involved in the pathogenesis and progression of osteoarthritis (OA). It is known that OS is a disturbance of the balance between the pro-oxidant and antioxidant systems in cells and tissues. The intensification of lipid peroxidation (LP) leads to the release of pro-inflammatory cytokines, disrupts the microcirculation, collagen structure and contributes to the progression of the degenerative process in articular tissues. The objective of the study was to determine changes in lipid peroxidation and glutathione levels of antioxidant defense, IL-18, IL-10 and matrilin 3 in patients with osteoarthritis in combination with type 2 diabetes, obesity and arterial hypertension.

Hypertension (high blood pressure) is when the pressure in your blood vessels is too high (140/90 mmHg or higher). It is common but can be serious if not treated. People with high blood pressure may not feel symptoms. The only way to know is to have your blood pressure checked.

Things that increase the risk of having high blood pressure include:

- older age.
- Genetics
- being overweight or obese
- not being physically active.
- high-salt diet
- drinking too much alcohol

Lifestyle changes such as eating a healthier diet, quitting tobacco, and being more active can help lower blood pressure. Some people may still need to take medications.

Materials and Methods. 116 patients with type 2 diabetes, obesity, and arterial hypertension aged 16 to 65 years (mean age 40.5 years) were examined. In the distribution of patients in groups by age, qualitative age periods were adopted, recommended by the World Health Organization (WHO) expert

¹ Department of Medical Rehabilitation, Sports Medicine, and Traditional Medicine of the Samarkand State Medical Institute, Uzbekistan



committee: young age (16–29 years) – 0.79 %, mature age (30–44 years) – 10.24 %, middle age (45–59 years) – 53.54 %, old age (60–65 years) – 35.43 %.

Most of the patients were middle-aged (economically active). Four dynamic observation clinical groups (with isolated osteoarthritis and concomitant diseases) were identified. Lipid peroxidation was studied according to the method of Vladimirov Yu. A. (1999), State of indicators of glutathione level of antioxidant defense according to the titration method of O. V. Travina in the modification of I. F. Meshchishen, I. V. Petrova (1983). Cytokine analysis in blood serum: interleukin 10 and 18, was performed using the appropriate sets of the BenderMedSystems GmbH BenderMedSystems GmbH (Austria) solid-phase enzyme immunoassay method Platinum ELISA, according to the manufacturer's instructions.

Results and Discussion. In all groups of patients, the indicators of malonic aldehyde increased, but to a greater degree in patients with osteoarthritis with type 2 diabetes, obesity, and hypertension. The reduction of antioxidant defense according to recovered glutathione data was also the most expressed in patients in this group. The indicators of IL-18 were the highest in osteoarthritis with obesity and arterial hypertension, and IL-10 in the presence of diabetes. The matrix metalloproteinase 3 indicators vary ambiguously.

