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METABOLIC SYNDROME - ASSOCIATED OSTEOARTHRITIS AMONG OVERWEIGHT PATIENTS

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Metabolic syndrome is a complex of metabolic disorders and the consequences of these processes. Many international medical organizations develop criteria by which to diagnose metabolic syndrome in patients. In 2009, the document «Harmonization of the definition of the metabolic syndrome» was published, which was signed by leading medical organizations and communities.

In 1981 the term «metabolic syndrome» has been designated as a combination of different instances of metabolic disorders. In 1988, Professor G.Reaven suggested that this pathological condition called «syndrome X». Later D. Kaplan introduced the term «deadly quartet» - diabetes, obesity, hypertension, coronary heart diseases.

In industrialized countries, the prevalence of metabolic syndrome among persons over 30 years of 10-20% in the USA - 34%. It was believed that the metabolic syndrome is a disease of middle-aged people and mainly women. However, conducted under the auspices of the American Diabetes Association survey shows that this syndrome indicates a steady increase among the younger generation.

Among these states, obesity has a major effect on the joints with a load or without. Mechanical overload and activity system inflammatory mediators isolated from adipose tissue (adipokines, reactive oxygen species, free fatty acid), give an impetus to increase the incidence and prevalence of osteoarthritis in obesity. Cartilage degradation results from broken joint homeostasis that favors catabolic processes activated by pro-inflammatory mediators, which are produced as well by chondrocytes, synoviocytes and osteoblasts.

During the past years, obesity and metabolic disorders have been found related to systemic chronic inflammation characterized by abnormal cytokine production, increased levels of acute-phase reactants and activation of a network of inflammatory signaling pathways. Fat mass is the main of this inflammation, but diabetes, dyslipidemia and hypertension have specific involvement in metabolic inflammation, which could be implicated in osteoarthritis pathogenesis. Now harmful biological effects of fatty tissue and abnormal metabolism topically in a joint in conjunction with inflammatory factors are considered. And the common hypothesis is that metabolic disturbances precede and induce systemic chronic inflammation, which causes joint deterioration. Another theory has said the concept of «inflammaging» (for inflammation and aging), with inflammation as the direct consequence of aging. Aging is associated with cellular senescence,

immunosenescence, debris accumulation and harmful products leading to exacerbated and sustained proinflammatory processes.

Osteoarthritis is a chronic joint disease leading to cartilage degradation, that includes synovial inflammation, subchondral bone remodeling and the formation of osteophytes. Cartilage degradation results from ruptured joint homeostasis that favors catabolic processes activated by pro-inflammatory mediators (lipid mediators, cytokines and reactive oxygen species), which are produced by osteoblasts, chondrocytes, synoviocytes. These products are responsible for altering anabolism and release of proteolytic enzymes degrading extracellular matrix. Osteoarthritis is classified according to risk factors, such as aging, genetics, trauma, obesity and metabolic disorders. Despite an identical outcome, pathological paths differ depending on the cause.

Osteoarthritis is the most common form of arthritis. This pathology is the leader in disability among adults with a primary lesion of the knee joint. Osteoarthritis is a degenerative joint disease that develops in the aging process and is characterized by focal destruction of cartilage. Despite the widespread, its etiology remains controversial. There is only one type of cell is a cartilage, the chondrocyte, which is responsible for its repair and synthesis of extracellular matrix components constant. Dysfunction of these cells leads to an imbalance between the recovery and the damage in the cartilage, leading to its destruction. Recently introduced the concept of metabolic syndrome - associated osteoarthritis, pointing to the inseparable link in the pathogenesis of osteoarthritis, and metabolic syndrome. Metabolic syndrome - associated osteoarthritis is characterized by a complex of factors (insulin resistance, hypertension, dyslipidemia, visceral obesity), although there is still no clear definition of it. During the 20th century, the prevalence of metabolic syndrome - associated osteoarthritis increased dramatically with changes in lifestyle of the population, gaining momentum scale health problem in industrialized countries. Metabolic syndrome - associated osteoarthritis concerns 10-30% of the world's population, but is prevalent in 58% of patients with osteoarthritis. Patients with osteoarthritis as metabolic syndrome - associated osteoarthritis have more severe symptoms and conditions that it is earlier than the other healthy individuals. Indeed, osteoarthritis, as a rule, the disease on the population over the age of 65 years, but with metabolic syndrome - associated osteoarthritis target population is about 50 years.

Obesity is characterized by not only an excessive load on the joints, but also changes in the lipid profile, - dyslipidemia. Characteristic of obesity is the formation of foci of chronic inflammation in the fat tissue. If normal adipose tissue contains anti-inflammatory macrophages, directly the adipose tissue of obese abundance of inflammatory macrophages. Cells of adipose tissue-adipocytes secrete cytokines. It is yet another piece to the development of inflammation. The study of foreign scientists reflects the fact, that the metabolic changes in the lipid profile are important in osteoarthritis development processes. High cholesterol

levels in blood serum determines the development of osteoarthritis. Thus we can say that cholesterol - the formation of osteoarthritis predictor as chondrocytes accumulate lipids. The amount of intracellular oxidation of lipids is positively correlated with osteoarthritis.

Next to age, obesity is one of the main predictors of the development of osteoarthritis. The link between obesity and osteoarthritis is a multi-unit. Definitely it was considered that excess weight leads to wear and tear seam. In fact, excessive load leads to cartilage degradation and subchondral bone shows that weight plays an important role in the initiation and development of osteoarthritis. However, the weight is correlated with obesity, osteoarthritis no weight-bearing joints.