International Journal of Pediatrics and Genetics
Vol. 3 No. 11 (2025)
ISSN: 2995-5483

Clinical and Functional Characteristics of Knee Joint Damage in Patients with Gonarthrosis in Combination with Metabolic Syndrome

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Relevance. Diseases of the musculoskeletal system and connective tissue are considered worldwide as one of the most common pathologies in modern society, leading to temporary and permanent disability. The most common diseases of the musculoskeletal system are degenerative lesions that affect both the structures of the joint itself (hyaline cartilage, subchondral bone) and periarticular structures (entheses, tendons, bursias). The most common form of joint damage is osteoarthritis, caused by an imbalance in the processes of repair and degradation in the articular cartilage. * Osteoarthritis causes a deterioration in the quality of life, leading to early disability of patients, and occupies a leading position (60%) among rheumatic diseases. In the structure of osteoarthritis, a special place belongs to the lesion of the joints of the lower extremities, in particular the knee joints, which carry the main weight load. According to literature data, 80-97% of the population over the age of 60 suffers from osteoarthritis. Osteoarthritis of the knee joints attracts special attention due to its significant prevalence, often its progressive course, disability of patients, as well as severe pain syndrome, which significantly reduces physical activity and quality of life of patients.

Currently, there is an increase in the incidence of MS in the world, increasing with age. The prevalence of MS, according to various authors, ranges from 0.8 to 35%. In European countries, MS occurs in 14-15% of adults aged 40-60 years (according to WHO criteria) and has a significant association with age and type of fat distribution, increasing to 43.5% in the group of 60-69 year olds. MS is of great clinical importance because, on the one hand, this condition is reversible, i.e. With appropriate treatment, it is possible to achieve the disappearance or at least a decrease in the severity of its symptoms. On the other hand, MS underlies the pathogenesis of type 2 diabetes, hypertension, and atherosclerosis, diseases that are currently the main causes of increased mortality, and therefore the diagnosis of MS is the prevention, prevention, and postponement of these diseases. Of the components of MS, the effect on the course and clinical manifestations of gonarthrosis of only its individual components has been studied, with data on the effect (whole, complete) There is no indication of the clinical features of OA in the available literature. Given the high prevalence of MS and OAX in the population, the study of the relationship between these polyethological diseases is especially relevant, since MS leaves a certain imprint on the clinical manifestations and further progression of the process in the knee joints.

This study will allow a new assessment of the possibility of adequate treatment of osteoarthritis. For the first time, a comprehensive assessment of the clinical and functional picture of knee joint damage in women with a combination of gonarthrosis and metabolic syndrome was carried out. The features of carbohydrate and lipid metabolism, electrolyte balance, and hormonal levels in the comparison groups were studied. The possibilities of non-pharmacological effects and the pharmacological method on the dynamics of clinical manifestations, the nature of hemodynamic and metabolic changes in patients with osteoarthritis and metabolic syndrome were studied. It has been shown that osteoarthritis of the knee joints in women with metabolic syndrome is characterized by the most extensive clinical symptoms, early onset of the disease, frequent and pronounced involvement of periarticular structures in the osteoarthritis process. The greatest positive effect on the clinical course and functional insufficiency of joints during long-term follow-up is provided by the complex effect of non-medicinal measures combined with long-term administration of ACE inhibitors. The results of the study confirm the great contribution to the development of the clinical symptoms of osteoarthritis

of the knee joints in women of a number of metabolic changes, in particular abdominal obesity, hypertension, dyslipidemia, combined within the framework of the metabolic syndrome.

In order to slow down the progression of the osteoarthritis process in the knee joints, a complex effect on the metabolic syndrome is recommended, in the form of non-pharmacological measures - a restrictive low-calorie hypolipidemic diet, changes in dietary patterns and increased physical activity due to dosed walking, and a pharmacological method - long-term administration of an angiotensin converting enzyme inhibitor. Osteoarthritis of the knee joints in patients with metabolic syndrome is characterized by the most pronounced clinical symptoms and functional disorders, characterized by a number of metabolic abnormalities affecting carbohydrate, fat and purine metabolism, compared with the group of patients without metabolic syndrome. The presence of metabolic syndrome in patients with gonarthrosis is characterized by a violation of the endothelial regulation of vascular tone, which causes regular violations of central intracardiac and peripheral hemodynamics. Factors influencing the development of the degenerative-dystrophic process in the knee joints in people with metabolic syndrome have been identified, including hypertension, abdominal obesity, and a number of disorders of lipid metabolism and carbohydrate metabolism. The main measures that can affect the clinical and functional manifestations of gonarthrosis in people with MS are non-drug effects, in the form of changes in dietary patterns and increased physical activity due to dosed walking, and the pharmacological method is the long-term use of an ACE inhibitor. Osteoarthritis of the knee joints in the group of patients with metabolic syndrome is characterized by an earlier onset of the disease ($p<0.05$), the presence in the vast majority of cases ($p<0.001$) of polio-osteoarthritis, more often in the form of a nodular form.

An analysis of the clinical picture of gonarthrosis revealed a high level of knee joint pain in patients with MS, an increase in pain during movement by 1.9 times ($p<0.001$), and a predominance of joint stiffness. There was a more frequent involvement in the process and a greater intensity of pain during palpation of the periarticular structures, mainly the upper and lower medial entheses. The presence of osteoarthritis of the knee joints without MS is accompanied by impaired lipid metabolism (increased LDL cholesterol - $p<0.05$, triglycerides - $p<0.01$, atherogenicity coefficient - $p<0.05$), purine metabolism (uric acid levels are higher than in the control group -$p<0.05$). Analysis of hormonal status revealed a predominance of cortisol levels in patients with osteoarthritis and MS ($p<0.01$), in the absence of changes in estradiol, testosterone, prolactin, follicle-stimulating and luteinizing hormones. The presence of metabolic syndrome in patients with gonarthrosis affected the features of intracardiac hemodynamics, in the form of dilation of the LP cavity, an increase in systolic and diastolic LV sizes and volumes, an increase in wall mass and thickness (LVEF, LVEF) and a decrease in myocardial contractility and was accompanied by impaired endothelial function. The presence of gonarthrosis was accompanied by unidirectional changes with the MS group that did not reach the MS degree, but significantly differed from the normal parameters of intracardiac hemodynamics.

Conclusion. The components of the metabolic syndrome, in particular the presence of abdominal obesity and arterial hypertension, have the greatest effect on the severity of gonarthrosis. Atherogenic changes in the lipid spectrum contribute to the aggravation of the pathological process: an increase in the level of total cholesterol, LDL cholesterol, and triglycerides. The most pronounced positive effect on the clinical course and functional insufficiency of the knee joints during long-term follow-up of patients with OA and MS is exerted by the complex effect of non-medicinal measures in the form of changes in the dietary pattern and physical activity regime, combined with long-term regular intake of an ACE inhibitor.

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ISSN: 2995-5483

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