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**DEFORMING OSTEOARTHRITIS: ETIOLOGY, CLINICAL FEATURES AND
TREATMENT**

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Abstract. This article analyzes the etiological factors, clinical manifestations, and modern treatment methods of deforming osteoarthritis (DOA) based on scientific sources. The results of the study indicate that osteoarthritis is a multifactorial degenerative disease, in the development of which age, mechanical load, and metabolic disorders play a significant role. Early diagnosis of the disease and complex treatment play an important role in reducing its complications.

Keywords: osteoarthritis, degeneration, cartilage, joint, etiology, treatment

Introduction. Currently, deforming osteoarthritis (DOA) is one of the most widespread chronic diseases worldwide and has a significant impact on public health. According to the World Health Organization, osteoarthritis is among the leading causes of disability. In particular, due to population aging and changes in lifestyle, the incidence of the disease is steadily increasing (Joern W-P Michael, 2010).

The relevance of deforming osteoarthritis lies in the fact that it not only impairs joint function but also significantly reduces patients' quality of life. The disease leads to pain syndrome, limitation of movement, and loss of working capacity. This, in turn, creates not only medical but also economic and social problems (Prof. S. Glyn-Jones, 2015).

Furthermore, the lack of a definitive cure for osteoarthritis makes it an important scientific problem. In modern medicine, mainly symptomatic and pathogenetic treatment methods are used; however, issues related to prevention and slowing the progression of the disease remain highly relevant (Liping Tong, 2022).

Some studies have shown that environmental and nutritional factors also play an important role in the development of osteoarthritis. In particular, in the case of Kashin-Beck disease, deficiency of microelements and environmental factors have been identified as the main causes (T.V. Frolova, 2012).

Modern scientific sources emphasize that the treatment of deforming osteoarthritis requires a comprehensive approach. In addition to pharmacological therapy, physiotherapy, rehabilitation, and lifestyle modification are of great importance. Moreover, the effectiveness of chondroprotectors and new biological therapy methods has also been scientifically substantiated (Volodymyr Filipenko, 2012).



Research Methods. In this study, a systematic scientific approach was applied to investigate the etiology, clinical features, and treatment principles of deforming osteoarthritis.

The main part of the research focused on the analysis of international scientific literature. Articles obtained from PubMed and other scientific databases were selected, and reliable and relevant sources were chosen. Using the analytical method, data on the causes, clinical manifestations, and treatment methods of the disease were summarized, and the results of various studies were compared.

A retrospective analysis was conducted to examine the results of previously performed clinical studies, particularly the effectiveness of treatments and the changes observed in patients. In addition, scientific data on diagnostic methods—radiography and MRI—were analyzed, and their importance in diagnosing the disease was evaluated.

Results of the Study. In deforming osteoarthritis, degeneration of the articular cartilage plays a leading role. As the content of proteoglycans in the cartilage decreases, it loses its elasticity, its ability to retain water declines, and its resistance to mechanical stress is reduced. At the same time, sclerotic processes develop in the subchondral bone, and osteophytes form on the joint surfaces. These changes disrupt the normal biomechanics of the joint.

Table 1
Morphological Changes in Osteoarthritis

No	Structure	Observed Changes	Outcome
1	Articular cartilage	Thinning, fissures, erosion	Loss of elasticity
2	Subchondral bone	Sclerosis, densification	Increased rigidity
3	Synovial membrane	Inflammation, changes in fluid composition	Impaired nutrition
4	Osteophytes	Bone outgrowth	Deformity develops

These changes in the joint lead to the development of pain syndrome. Initially, the pain appears only during movement, but later it persists even at rest. Inflammatory mediators in the synovial membrane stimulate pain receptors, which contributes to the intensification of pain.

Table 2.
Clinical Signs and Their Degree of Manifestation

Clinical signs	Early stage	Intermediate stage	Late stage
Pain	During movement	Constant	Severe, even at rest
Stiffness	Short-term	Prolonged	Persistent
Limitation of motion	Mild	Moderate	Marked
Deformity	None	Begins	Pronounced
Muscle atrophy	Not observed	Begins	Clearly expressed



Among the clinical manifestations, pain is the leading symptom and increases in intensity depending on the stage of the disease. Limitation of movement is associated with deformity of joint surfaces and reflex muscle spasm.

As a result of impaired joint function, patients' daily activities become restricted. In particular, when the knee and hip joints are affected, walking becomes difficult, which leads to a reduction in overall physical activity.

Table 3.
Effects of Treatment Methods

No	Treatment type	Mechanism of action	Clinical outcome
1	NSAIDs	Reduce inflammation	Decrease in pain
2	Chondroprotectors	Support cartilage metabolism	Slowing of degeneration
3	Physiotherapy	Improves blood circulation	Restoration of movement
4	Hyaluronic acid	Improves synovial fluid properties	Increased joint lubrication

A comprehensive approach is of great importance in treatment. The use of medications alone is not sufficient; clinical effectiveness is significantly higher when combined with physical exercises and rehabilitation. Intra-articular injections improve the synovial environment and reduce pain.

In advanced stages of the disease, conservative treatment does not provide sufficient effect. In such cases, endoprosthetic replacement is performed, which restores joint function and improves the patient's quality of life.

Conclusion. Deforming osteoarthritis is a multifactorial and progressive joint disease characterized by degeneration of articular cartilage, changes in subchondral bone, and the formation of osteophytes. The disease manifests with pain, stiffness, and limitation of movement.

The most effective treatment requires a multimodal approach, combining pharmacological therapy, physiotherapy, and rehabilitation. Early diagnosis and prevention help slow disease progression and improve the patient's quality of life.

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