American Journal of Medicine and Medical Sciences 2025, 15(12): 4602-4604
DOI: 10.5923/j.ajmms.20251512.89

Pathogenetic Approaches to the Treatment of Dysplastic Coxoarthrosis

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Abstract Pathology of the musculoskeletal system reduces motor activity, which significantly limits human adaptive capabilities. A marked decrease in the patient's functional state and quality of life occurs with destructive dystrophic diseases of the hip joint, which suppress many of the individual's abilities. Impaired biomechanical relationships, even with damage to one hip joint, lead not only to motor, but also neurological and psychoemotional disorders. At the same time, the patient as a person is lost to society at least for the period of treatment and rehabilitation. And they sometimes last for several years.

Keywords Pathology of the musculoskeletal system, Neurological and psychoemotional disorders

1. Introduction

Coxoarthrosis (dysplastic Coxoarthrosis), which occurs against the background of congenital dysplasia, is one of the most common in the field of orthopedics and rheumatology and is considered one of the most serious diseases that reduce working capacity among the population. This pathology is especially common among women and often gives a clinical picture as early as the early ages, which can lead to disability at an early age. Anatomical and functional changes in the groin joint lead to the progression of osteoarthrosis, which develops on the floor of dysplasia. One major aspect of the process is morphological changes in the blood supply (angioarchitectonics) of synovial tissue, subchondral bone, and chondral zone. These changes accelerate degradation processes through trophic disturbances in the connective tissue, hypoxia and disproportionate development of angiogenesis. Currently, symptomatic methods are used in many cases in the treatment of dysplastic coxoarthrosis, while the formation of pathogenetic therapy is an urgent issue, taking into account the pathogenesis of the disease in full. The possibilities of studying changes in angioarchitectonics and their correction through pharmacological or biotechnological methods are of great interest in modern medicine. Therefore, an in-depth study of the mechanisms of morphological change in angioarchitectonics of the elements of the groin-thigh joint in dysplastic coxoarthrosis and, accordingly, the development of pathogenetically oriented methods of treatment is one of the relevant and scientifically -practical areas of today. pathology oporno-motornoy system, neurologicheskim I psychoemosionalnim rasstroystvam [1,3,5,7,9,11,13,15].

The purpose of the study. In dysplastic coxoarthrosis, it consists in the morphological analysis of angioarchitectonic changes in the structures of the shoulder-thigh joint and the justification of pathogenetically oriented treatments taking into account these changes.

2. Material and Methods

Dysplastic Coxoarthrosis is a disease accompanied by degenerative-dystrophic changes that develop in the ground of congenital or childhood-formed pelvic joint dysplasia, which has been studied by many specialists for quite some time. This pathology is of significant clinical and social importance, especially in the fields of orthopedics, Traumatology and rheumatology.

3. Results and Analyzes

There are many studies in the medical literature on the Clinico-radiological manifestations of dysplasia-associated osteoarthrosis (Crowe, Hartofilakidis, Tönnis classifications) as well as the pathomorphological stages. Nevertheless, these studies are mainly focused on issues related to sustain geometry, chondral tissue structure, and mechanical loads. In recent years, research has been emerging on the role of trophic changes, blood supply, and angiogenesis in dysplastic coxoarthrosis. In particular, hypoxia, subchondral osteosclerosis, endothelial dysfunction and microvascular changes in synovial tissue are seen as significant factors for the pathogenesis of osteoarthrosis. But these studies are mainly based on general osteoarthrosis models, and the characteristics characteristic of the dysplastic form are not sufficiently illuminated. An in-depth analysis of

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Received: Nov. 27, 2025; Accepted: Dec. 21, 2025; Published: Dec. 25, 2025
Published online at http://journal.sapub.org/ajmms

angioarchitectonic changes morphologically, immunogystochemically and functionally has not been adequately studied, especially in the context of dysplastic Coxoarthrosis. Methods for assessing angiogenesis and hypoxia based on molecular markers such as VEGF, HIF-1α, CD34 are currently developing rapidly, but their importance in coxoarthrosis against the background of dysplasia has not been clearly and systematically studied. Therefore, an in-depth analysis of angioarchitectonic changes in dysplastic coxoarthrosis from a pathomorphological and pathogenetic point of view is one of the most scientifically insufficiently worked, relevant areas of this problem. To fill the existing gap as well as to develop new lines of treatment, it is necessary to study this problem on the basis of a special study [2,4,6,8,10,12,14,16].

For the first time, the central position of angioarchitectonic changes in the pathogenesis of dysplastic coxoarthrosis is morphologically proven. The remodeling of the microcirculation system in the synovial curtain, subchondral bone and chondral tissue, impaired vascularization in the architectonics of the capillaries, microspasms and capillary narrowing are evaluated. Specific morphological characters regarding the dysregularized state of angiogenesis were first described in detail. Immunogystochemical analysis results in correlations of VEGF (the factor responsible for vasculization), CD34 (endootelial indicator), and HIF-1α (hypoxia-associated transcriptional factor) expression with respect to dysplastic Coxoarthrosis levels. It has been shown that consistently high expression of markers is one of the factors in which hypoxia and pathological angiogenesis are consistently observed and affect disease progression. The nature of the gradual development of morphological changes is determined. It has been shown that angioarchitectonic changes in Grade I, II and III dysplastic Coxoarthrosis samples are quantitatively and qualitatively different, which can be applied as a new diagnostic criterion in differentiating progression stages of pathology.

According to most researchers, it is believed that osteoarthritis (OA) of the hip joint is a systemic polyethological joint disease characterized by a chronic progressive course, pain, functional disorders, deformity of segment structures and morphological tissue changes, temporary or permanent disability, significant decrease in quality of life, disability, which defines this problem not only as a medical one., but also socially significant. According to modern concepts, osteoarthritis is considered as a heterogeneous group of diseases of various etiologies, but with similar morphological, biological and clinical outcomes, when the pathological process involves not only articular cartilage, but also other structures, which include soft tissues (synovial membrane, capsule, ligaments, muscles), subchondral bone, and adjacent segments of the pelvic floor. belts, including the opposite limb. Despite medical advances, the incidence of osteoarthritis has not decreased, and the forecast is for 2020. It is expected that the number of people suffering from this disease will increase by about 2 times, especially over the age of 50. In this regard, the "International Decade of Bone and Joint Diseases" was announced at the level of the World Health Organization in the period from 2000 to 2010 in order to purposefully search for effective means of treatment and prevention of these diseases.

It is known that the prevalence of osteoarthritis in the entire population varies from 5.6 to 8.4% in women and from 3.1 to 3.7% in men. Destructive and dystrophic lesions of large joints are detected in 48-68% of people of working age. At the same time, the prevalence of osteoarthritis of large joints of the lower extremities in people over 50 years of age increases by 4.6 times in men and 5.0 times in women, and the prevalence of joint pathology at the age of 65-74 years is 33% among men and 49% among women. According to WHO, due to the aging of the population, an increase in destructive dystrophic joint lesions is predicted. Osteoarthritis TBS in the structure of joint pathology among the adult population consistently ranks first in terms of disability and second after gonarthrosis in terms of incidence, which ranges from 6.5 to 25%. The proportion of people with disabilities due to osteoarthritis of the TBS, among those who are unable to work due to joint damage, ranges from 20 to 30%. In Germany in 2002, the treatment of hip osteoarthritis accounted for about 8% of all orthopedic treatments and 2% of all cases of early retirement. According to international statistics, the number of people suffering from osteoarthritis of TBS varies in the population from 10 to 12% among all diseases of the musculoskeletal system. According to various publications, the structure of destructive and dystrophic hip joint lesions is dominated by primary coxarthrosis (frequency from 40.6 to 52.5%), aseptic necrosis of the femoral head (7.0 - 17.9%), dysplastic osteoarthritis (6.4 - 28.2%) and post-traumatic coxarthrosis (4,7 - 16,4%). Despite various etiological factors, the stage of clinical manifestation of these nosological forms was characterized by a similar pattern. At the same time, the treatment of patients in the decompensation phase of destructive dystrophic diseases in most cases is based on hip arthroplasty, which has proven to be highly effective.

The possibility of pharmacological correction of angioarchitectonics changes pathogenetically directed is scientifically substantiated. Angioprotectors (e.g., trental, Detralex), antitipoxants (mexidol, actovegin), and antiangiogenic substances were used to analyze the dynamics of changes in the expression of angiogenesis markers. This opens up possibilities for treating dysplastic coxoarthrosis from a pathogenetic point of view rather than simply symptomatic. Such an approach provides a scientific basis for the formation of individualized therapeutic strategies in orthopedics, providing the possibility of early-stage detection and targeted treatment of dysplastic coxoarthrosis. New information has been presented to better understand diagnosis and pathogenesis. The results of this study showed that dysplastic coxoarthrosis involves not only mechanical and morphological but also pathogenetic mechanisms associated with structural and functional changes in blood supply and microcirculation. This information further complements the modern theory of osteoarthrosis, laying the groundwork for new scientific

approaches. The relationship of angiogenesis and hypoxia markers (VEGF, CD34, HIF-1α) with the stages of dysplastic Coxoarthrosis is scientifically substantiated. The role of these biomarkers in pathomorphological processes was first analyzed at the microscopic and immunogystochemical levels, allowing them to be used in early diagnosis, prognosis and treatment. New approaches to the pathogenetic treatment of dysplastic coxoarthrosis are scientifically substantiated. During the study, the possibilities of pharmacologically correcting disorders in angioarchitectonics were studied.

4. Conclusions

This condition serves as a scientific basis for the development of effective treatments in the future treatment of dysplastic osteoarthrosis that affect pathogenesis, and not just symptomatic. Individualized therapy based on morphological stages is provided. Depending on the extent and nature of angioarchitectonic changes, patient-targeted treatment tactics can be developed. This corresponds to the concept of individualized and step-by-step therapy. Modern scientific approaches aimed at delaying disability and improving the quality of life in patients are based. This study reveals the possibilities of preventing disease progression from the beginning, without going as far as radical surgical techniques such as endoprotezing, which are needed in the late stages of dysplastic coxoarthrosis.

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