MACROMORPHOLOGICAL CHANGES OF VERTEBRAL BONE TISSUE IN SPONDYLODISCITIS

Gafarov Jahongir Sobirovich
Independent Researcher of the Department of Surgical Diseases in Family Medicine, Abu Ali ibn Sino Bukhara State Medical Institute
Sadiyev Erali Samiyevich
PhD, Associate Professor of the Department of Surgical Diseases in Family Medicine, Abu Ali ibn Sino Bukhara State Medical Institute

Abstract

This thesis is devoted to the study of macromorphological changes in vertebral bone tissue in spondylodiscitis. During the study, the macroscopic features of biological materials obtained during surgery from patients with thoracic and lumbar spondylodiscitis were analyzed. The examinations revealed thinning of the cartilage layer, irregularity of the bone surface, fibrillation, fissures, subchondral sclerosis, and calcification foci. In some cases, deformational changes in bone tissue were also observed. The obtained results indicate the development of degenerative-destructive processes in spondylodiscitis and confirm the importance of macromorphological examinations in disease diagnostics.

Keywords: spondylodiscitis, vertebrae, bone tissue, macromorphology, destruction, fibrillation, calcification.

Introduction

Spondylodiscitis is an infectious-inflammatory disease of the spinal column characterized by damage to the intervertebral discs, adjacent vertebral bodies, and surrounding soft tissues. The disease is considered one of the severe pathological conditions of the musculoskeletal system due to its progressive course, neurological complications, chronic pain syndrome, and reduction in quality of life [1,2].

In recent years, the incidence of thoracic and lumbar spondylodiscitis has increased significantly, especially among middle-aged and elderly patients. According to modern studies, inflammatory and degenerative-destructive changes occurring in vertebral bone tissue play an important role in the progression of the disease [3]. The pathological process leads to thinning of the cartilage layer, destruction of bone trabeculae, subchondral sclerosis, and calcification foci formation.

Macromorphological examination of vertebral bone tissue is of particular importance in evaluating the severity and extent of destructive changes in spondylodiscitis. Previous studies have demonstrated that inflammatory destruction of vertebral structures causes deformation of bone tissue and impairment of spinal stability [4]. In advanced stages, the disease may result in vertebral collapse, osteophyte-like formations, and severe structural damage.

The thoracic and lumbar regions are the most commonly affected parts of the spine due to increased mechanical load and peculiarities of blood circulation. Almansour et al. emphasized that pathological changes in these regions are often associated with rapid progression of inflammatory destruction and severe clinical manifestations [5].

Despite numerous clinical studies, the macromorphological characteristics of vertebral bone tissue in spondylodiscitis remain insufficiently investigated. Therefore, studying macromorphological changes of vertebral bone tissue is important for understanding disease pathogenesis, improving diagnostics, and optimizing treatment strategies.

Materials and Methods

During the study, biological materials obtained during surgery from 80 patients with thoracic and lumbar spondylodiscitis were examined. The samples were evaluated macroscopically, including the condition of the bone surface, cartilage layer, destructive changes, and calcification foci.

Results and Discussion

Macroscopic examinations revealed thinning and, in some areas, complete loss of the cartilage layer on the vertebral surface. The bone surface was irregular and rough with evident fibrillation and deep fissures. In some cases, exposure of subchondral bone and osteophyte-like changes were observed. In severe forms of the disease, calcification foci and deformational changes were detected. These changes indicate the progression of inflammatory and degenerative processes.

Conclusion

Macromorphological changes developing in vertebral bone tissue in spondylodiscitis are characterized by destructive and degenerative processes. Thinning of the cartilage layer, fibrillation, fissures, and calcification foci are the main macromorphological signs of the disease. Macromorphological examinations are important for assessing the severity of the pathological process and improving disease diagnostics.

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