



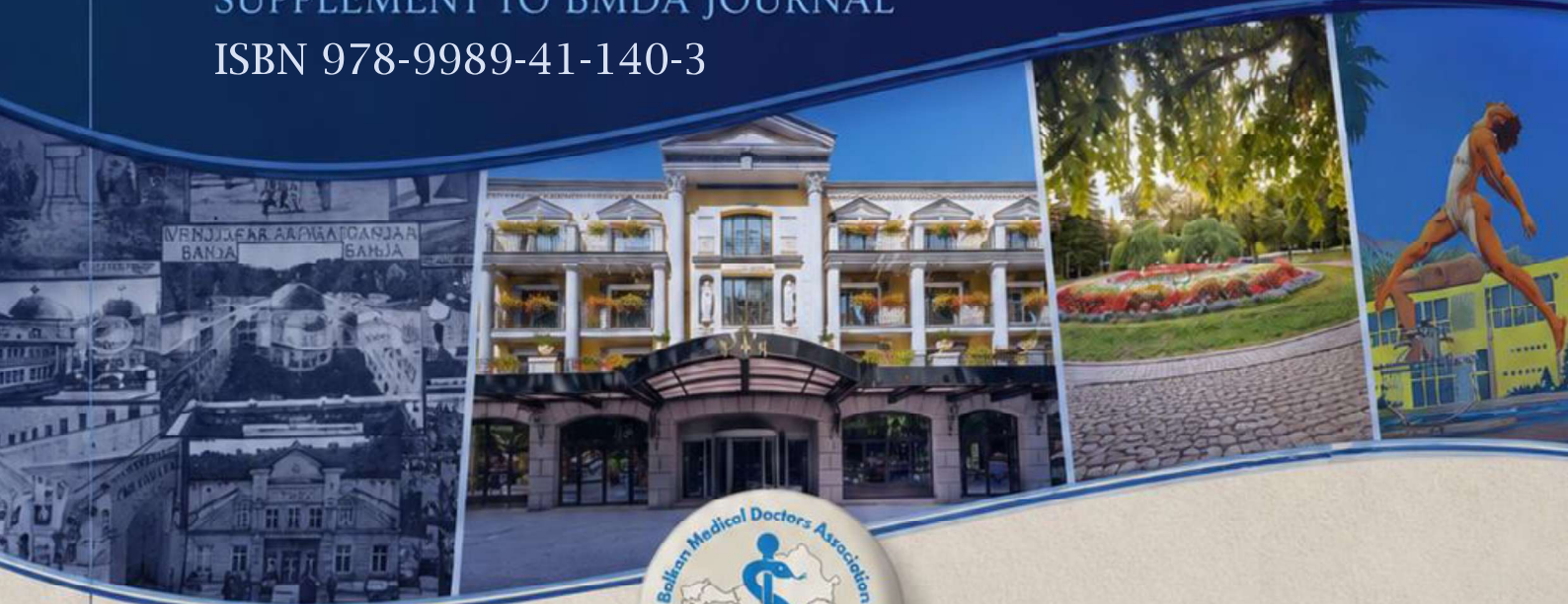
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INNOVATIVE METHODS OF SEGMENTATION OF RADIOGRAPHIC IMAGES IN THE DIAGNOSIS OF HIP OSTEOARTHROSIS USING MATLAB

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Osteoarthritis of the hip, also known as coxarthrosis, is a degenerative joint disease characterized by gradual deterioration of the hip joint cartilage. This often results in pain, reduced mobility, and stiffness. Diagnosis is usually based on clinical findings, while radiography is considered the gold standard for confirming the diagnosis. The focus of this research is on developing an algorithm for segmenting radiographic images of hips at different stages of coxarthrosis, implemented in the MATLAB programming environment. Key algorithm steps include preprocessing, segmentation, and visualization for a detailed understanding of the dynamics of hip osteoarthritis development. The developed algorithm is used for precise segmentation of hip osteoarthritis radiographic images, providing visual insight into characteristic changes during X-ray image analysis. It is emphasized that the segmentation of radiographic images is performed according to the progression stage of hip osteoarthritis, enabling the identification of different stages on X-ray images. The results of this research highlight the potential application of algorithms in the analysis and monitoring of hip osteoarthritis development, emphasizing the need for further development of software solutions in medicine, particularly in orthopedics, to improve diagnostics and apply appropriate therapy.