



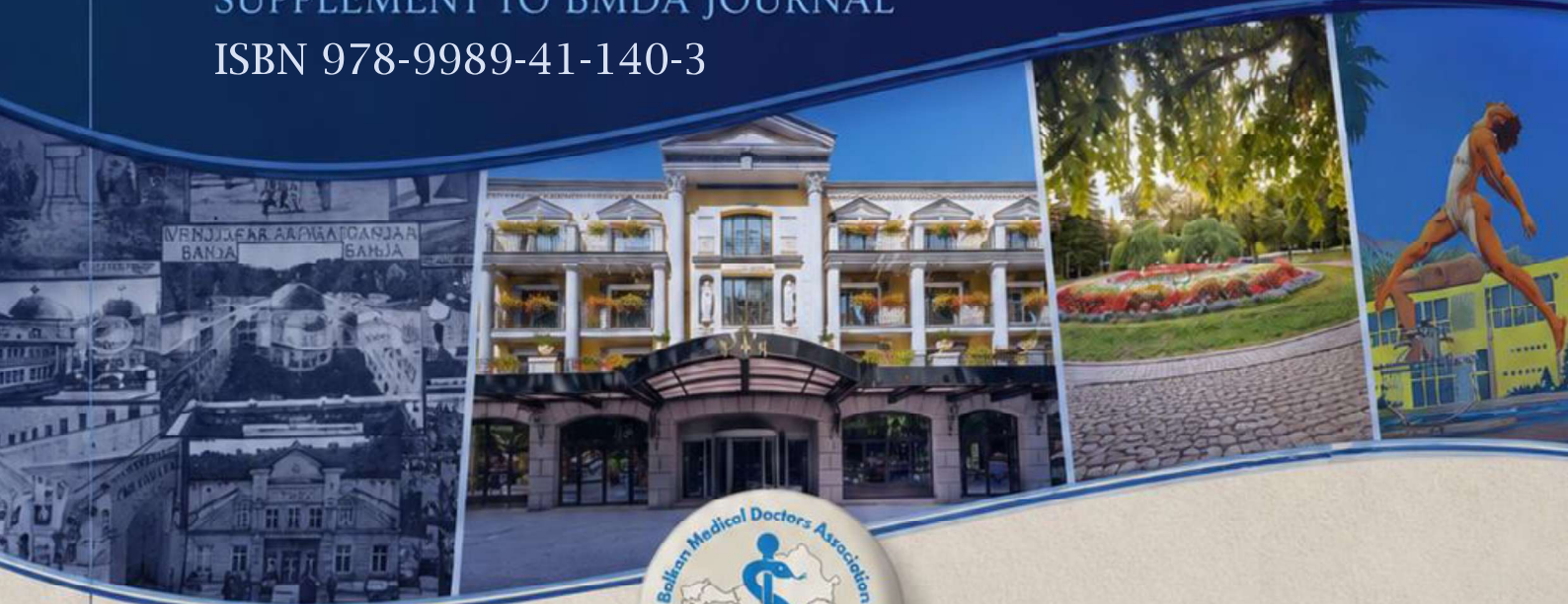
# 1<sup>ST</sup> CONGRESS OF BALKAN MEDICAL DOCTORS ASSOCIATION - BMDA

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# ABSTRACT BOOK

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## DEEP INSIGHT: HARNESSING CONVOLUTIONAL NEURAL NETWORKS FOR PRECISE CLASSIFICATION OF NEUROSONOGRAPHIC FINDINGS IN PREMATURE INFANTS

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Perinatal asphyxia, particularly when combined with the underdevelopment of organ systems, is a major contributor to permanent neurological harm or death in premature infant. In neonatology, our attention is directed towards tailoring prognosis, preventing issues, and customizing treatment for neonates with H-I brain lesions. This approach entails employing non-intrusive diagnostic techniques, monitoring clinical indicators, and analyzing transfontanelle neurosonographic images with specialized software. To objectively gauge the extent of brain damage, we devised an algorithm using a convolutional neural network (CNN) built with MATLAB. The model was trained on images obtained from pre-term infants, and its performance was evaluated on unseen samples not included in the training set. The CNN achieved an accuracy exceeding 80% on these unseen samples from the database. This study aims to significantly enhance our comprehension of perinatal asphyxia's pathophysiology and enhance the precision of its evaluation. Additionally, the MATLAB-generated model holds promise for guiding informed decision-making in future medical diagnostic and treatment processes.