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Modern Approaches to Early Detection and Optimization of Treatment for Post-Stroke Depressive States

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ABSTRACT

Ischemic stroke is not only one of the leading causes of neurological disability in recent years but also a major risk factor for the development of depressive states. Post-stroke depression (PSD) is observed in 30–40% of stroke patients, significantly decreasing their quality of life, slowing down the effectiveness of rehabilitation, and increasing the risk of recurrent cardiovascular events.

KEYWORDS: Post-stroke depression, prognostic markers, rehabilitation, transcranial neurosonography.

Introduction: In the early stages of stroke, identifying depressive symptoms and selecting individuals at risk for PSD remains challenging. Currently available clinical tools for assessing PSD, particularly in acute post-stroke patients, lack specificity for recognizing depressive symptoms. In this context, identifying specific biomarkers could increase the sensitivity of PSD diagnostics. Furthermore, such biomarkers could help explain the pathophysiological mechanisms of PSD and facilitate the selection of targeted treatment strategies.

Research material and method Although the pathophysiological mechanisms of PSD are not yet fully understood, recent studies indicate a connection with functional or structural alterations in the brain's subcortical structures, particularly the brainstem. In particular, hypoechogenicity (low echostructural density) of the basal brain has been linked to neurodegenerative changes in the central nervous system, deficiencies in neurotrophic factors, and dysfunctions in serotonergic pathways. These processes play a key role in the pathogenesis of depressive states.

Conclusion: Transcranial neurosonography has several advantages over other biomarkers in identifying post-stroke depressive conditions. It is a non-invasive, cost-effective, and repeatable diagnostic method that can be used as a preventive and diagnostic tool to evaluate PSD.

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