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MODERN APPROACHES TO THE DIAGNOSIS AND TREATMENT OF MOTOR NEURON DISEASE.

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Annotation: Motor neuron disease belongs to a group of clinically and etiopathogenetically heterogeneous neurodegenerative disorders characterized by the selective and progressive degeneration of central motor neurons located in the frontal lobe of the cerebral cortex, motor neurons of the brainstem, and peripheral neurons located in the anterior horns of the spinal cord that are responsible for voluntary movements. Research findings indicate that, although sensory changes are not typically observed in motor neuron disease, these signs suggest that characterizing the condition solely as a disorder of the motor system is insufficient for diagnosis [Masrori P., Van Damme P. Amyotrophic lateral sclerosis: a clinical review. European Journal of Neurology. 2020;27(10):1918–1929].

Keywords: Neurodegenerative diseases, amyotrophic lateral sclerosis (ALS), neuroimaging studies, lumbosacral form, cervical-thoracic and bulbar forms, MRI, edaravone, ALSFRS-R scale, Norris scale.

Objective: To examine modern approaches to the diagnosis and treatment of motor neuron disease.

Materials and Methods: Analysis of neurological deficits and neuroimaging findings revealed amyotrophic lateral sclerosis (ALS) presenting with various clinical courses. Twenty patients with ALS, aged 60–75 years, were examined. Among the patients studied, the lumbosacral form of ALS was observed in 60%, the cervical-thoracic form in 20%, and the bulbar form in 20%.

Results: Results from an extended study involving all forms of ALS—which included a 4-week open-label period with edaravone aimed at evaluating the drug's long-term efficacy and safety—demonstrated that patients benefited from the therapy during this period, with no new or cumulative safety concerns. Secondary endpoints, including scores on the ALS Functional Rating Scale-Revised (ALSFRS-R) and the modified Norris Scale, showed significant benefits associated with edaravone use**.** The primary efficacy endpoint was the change in the ALSFRS-R score from baseline to the end of week 4 (retrospective assessment).

Conclusion: There is an active search for additional treatment options that demonstrate long-term benefits and efficacy (Zarei et al., 2015). Edaravone functions as a free radical scavenger. This mechanism of action protects motor neurons from oxidative stress-induced damage (Brooks et al., 2019). Ongoing and planned future studies will contribute to a better understanding of the long-term safety and efficacy of edaravone in patients with ALS.

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