Stem cells for ALS: an overview of possible therapeutic approaches

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Over the past 25 years, stem cell technologies have become an increasingly attractive option to investigate and treat neurodegenerative diseases, such as amyotrophic lateral sclerosis (ALS). The pathogenesis of ALS remains unclear, multiple factors are thought to contribute to the progression of ALS, such as network interactions between genes, environmental exposure and impaired molecular pathways.

The neuroprotective properties of neural stem cells (NSCs) and the paracrine signaling of mesenchymal stem cells (MSCs) have been examined in multiple pre-clinical trials of ALS with promising results. The data from these initial trials indicate a reduction in the rate of disease progression. The mechanism through which stems cells achieve this reduction is of major interest. Here, we review up-to-date pre-clinical and clinical therapeutic approaches employing stem cells, and discuss the most promising ones.

Biography

Professor Wojciech Maksymowicz (M.D., Ph.D.) is a renowned neurosurgeon and traumatologist and the Dean of Faculty of Medical Sciences, Professor of Neurology and Neurosurgery and the Chairman of the Department of Neurosurgery and Stem Cell Research Laboratory, University of Warmia and Mazury (UWM), Olsztyn, Poland. In the ALS-SM project, he is responsible for coordination and implantation of stem cells to ALS and SM patients. He has raised funds for the development of the Stem Cell Research Laboratory, that also serves as a training facility for medical students currently enrolled at the Faculty of Medical Sciences, UWM, Olsztyn, Poland. His innovative approach to neurosurgery allow to develop new and progressive protocols and surgical techniques. He was the Minister of Health in Poland.