

Abstract

Stem cells have a huge therapeutic potential due to their ability to differentiate in multiple tissues. They could be used for neurodegenerative diseases treatment, which are typical for loss of specific groups of neurons, progressive course and lack of effective treatment due to their complicated pathophysiology, only therapies for elongation and simplification of patients' life are available. This thesis summarizes results of completed clinical studies and informs about ongoing studies, in which stem cell treatments are used for selected neurodegenerative diseases. Stem cell therapy for multiple sclerosis and amyotrophic lateral sclerosis have a long history, some of the studies has proven therapeutic efficiency of stem cells. We don't know much about effect of stem cell treatment for patients with Alzheimer's and Parkinson's diseases, because first clinical studies were finished recently. But all clinical trials have proven safety of stem cell treatment. Replacement of damaged neurons haven't been reached yet, just protection of remaining neurons by neurotrophic and immunomodulatory factors secreted by stem cells.

Keywords: neurodegenerative diseases, stem cells, clinical trials, multiple sclerosis, amyotrophic lateral sclerosis, Alzheimer's disease, Parkinson's disease