Title: **Influence of Bone Marrow-Derived Mesenchymal Stem Cell Therapy on C-reactive protein level in Minimally Conscious State Patients**

Author / Authors:

Emilia Sinderewicz, Wioleta Czelejewska,
Wojciech Maksymowicz, Katarzyna Jezierska-Woźniak

Department of Neurosurgery, Laboratory of Regenerative Medicine, School of Medicine, Collegium Medicum, University of Warmia and Mazury in Olsztyn, Poland

Abstract:

Minimally conscious state (MCS) is a condition of severely altered consciousness in which minimal, but defined, behavioral evidences of self or environmental awareness are demonstrated. MCS is often preceded by traumatic brain injury or structural brain damage and may be followed by peripheral immune system dysfunction and inflammation of the nervous system.

Despite the lack of an effective method of MCS treatment, mesenchymal stem cell therapy seems to be promising therapeutic approach . The purpose of this study was to evaluate the level of C-reactive protein (CRP) in plasma and cerebrospinal fluid (CSF) of MCS patients after bone marrow-derived mesenchymal stem cells (BM-MSC) transplantation.

Nine patients aged 19–45 years, remaining in MCS for 3–14 months, were qualified for BM-MSC therapy. The transplantations of autologous MSCs were performed three times every two months. Plasma and CSF samples were collected immediately prior to MSC transplantation. Samples taken prior to the first MSC administration provided control values for the CRP level. The CRP levels were measured by semi-quantitative blott-dot method.

The obtained results documented the presence of CRP both in the plasma and CSF of MCS patients. The level of CRP in the CSF samples was significantly higher before the therapy compared to its content after the second administration of BM-MSC. In plasma, the CRP level did not differ statistically between the control samples and those after BM-MSC administrations. Since the onset of neuroinflammation in MCS conditions has been documented, these results may indicate the influence of MSC on the modulation of the inflammatory process in MCS.