

**INTRATHECAL INFUSION OF AUTOLOGOUS ADIPOSE-DERIVED-
REGENERATIVE-CELLS (ADRCs) IN AUTOIMMUNE DETERMINED
REFRACTORY EPILEPSY – CLINICAL STUDY**

Szczepanik Elżbieta¹, Mierzewska Hanna¹, Antczak-Marach Dorota¹, Figiel-Dąbrowska Anna², Terczyńska Iwona¹, Tryfon Jolanta¹, Krześniak Natalia³, Bartłomiej Noszczyk³, Sawicka Ewa⁴, Krystyna Domańska-Janik², **Sarnowska Anna^{2*}**

¹Clinic of Child and Adolescent Neurology, Institute of Mother and Child

²Mossakowski Medical Research Centre, Polish Academy of Sciences,

³Departement of Plastic Surgery Centre of Postraduate Medical Education,

⁴Clinic of Child and Adolescent Surgery, Institute of Mother and Child

ABSTRACT

In recent years, we have seen the rapid development of regenerative medicine based on stem cells application. Over the last years, procedures have been intensively developed to enable effective derivation and cultivation of mesenchymal stem cells (MSCs) for future clinical applications. At the same time, numerous studies have confirmed the therapeutic efficacy of MSCs based on their secretion and immunomodulatory effects. Unfortunately, the rapid commercialization of such treatment is not always supported by basic knowledge and conducted in accordance with the principles of "evidence-based medicine."

The aim of our project was to develop procedures and protocols for safe and effective MSC treatment (both in the pre-clinical and clinical stages) in autoimmune, drug-resistant epilepsy, while ensuring a well-qualified patient and a reliable, critical evaluation of the effectiveness of therapy. In co-operation with the Department of Neurology, IMC, it was decided to administer MSC to cerebrospinal fluid in children diagnosed with drug-resistant epilepsy, in which, due to the complications of immunosuppressive therapy, it was no longer feasible. Prior to therapy, patients were clinically diagnosed, neuroimaging, EEG and neuropsychological and immunological studies were performed.

During and after the treatment, a significant reduction in seizures was observed in some patients, in all patients we observed improved of cognitive function and ability.