

## **Abstract**

Multiple sclerosis is chronic, autoimmune and neurodegenerative disorder of central nervous system. Currently, we have only limited markers of disease activity. From clinical markers, speech markers were analysed. Data from 141 patients and 70 healthy controls were evaluated. The most important results were detection of speech abnormalities in patients with minimal neurological disability (EDSS<2) and their correlations with global and regional brain atrophy. This work is predominantly concentrated on neurofilament light chain (NfL) as one of the most promising paraclinical biomarkers. NfL, especially level of serum NfL (sNfL), is considered to be a biomarker of future disease course, disease activity and effect of DMD (disease modifying drugs) therapy. The main aim was to clarify the position of NfL among others biomarkes and their potential benefit for routine clinical praxis. MRI data, clinical data and results of NfL measurements from 172 newly diagnosed patients with relaps-remiting MS (revised McDonald criteria 2017) from original SET cohort were analysed. Additionally, we compared levels of serum and CSF NfL with other biochemical parameters, such as lipidogram and markers of blood-brain permeability. We found sNfL as a marker of ongoing neuroinflammation and predictor of future brain atrophy in patients with early MS. Furthermore, relation of sNfL with blood-brain barrier dysfunction and parameters of lipidogram were established.

**Key words:** multiple sclerosis, biomarkers, neurofilament light chain, speech