ORT_19 - Neurofilament light chain as biomarkers for therapeutic monitoring in patients with Relapsing remitting Multiple Sclerosis

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Introduction: Relapsing remitting Multiple Sclerosis (RRMS) which affects mainly young people, with severity evolution to motor disability in most patients, has been remarkable impacted in the last twenty-five years by the advancement of knowledge about the pathophysiology, new therapeutic targets, early diagnosis criteria and monitoring of treatment response. The constant search for biomarkers that can be used to monitor and treat diseases has been demonstrated by new tools and the concept of precision medicine. RRMS treatment has been impacted by a new era of disease-modifying drugs (DMD), early diagnosis and treatment, and the goal of NEDA, or no evidence of disease activity, which includes disability scores, burden of inflammatory and degenerative lesions in MRI, therapeutic failure and serum biomarker level. The arsenal of DMD, with a scale to less efficacy treatment onset in the majority of the protocols need to be review in face of these new concepts and new technologies tools.

Objectives: Correlate neurofilament light chain (NfL) level in patients without treatment and treated with first line therapy switched to moderate-high efficacy DMD.

Methodology: We used single molecule array for measurements the NfL plasma levels in RRMS naïve patients and patients which switched from "first line" therapy to moderate-high efficacy DMD comparing this biomarker between two samples of the same patient.

Results: We include 17 of 250 RRMS patients. The mean age of RRMS patients was 40.64 years and healthy control mean age was 40.66 years. Plasma NfL level RRMS patients without DMD and during first line therapy was 13.98 pg/mL and 12.94 pg/mL, respectively. After the switch or during treatment with moderate-high DMD it decreases to 7 pg/mL, similar to healthy control which was 6.7 pg/mL.

Conclusion: Significant difference between NfL levels before and after high efficacy treatment ($p<0.05$) seems to be according to the phase III clinical trials results which showed the impact of new drugs in both efficacy and control of NFL levels. The role of NFL can contribute on treatment management, especially in the monitoring of the therapeutic failure aiming to impact early on the course of MS disability.

Keywords: Neurofilament light chain; Biomarkers; Single Molecule Array