Serum Neurofilament Light Chain and Glial Fibrillary Acid Protein in Patients With Multiple Sclerosis

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Objective: To investigate serum Neurofilament light chain (S-NFL) and serum glial fibrillary acid protein (s-GFAP) in a MS patients cohort

Background: Serum neurofilament light chain (s-NFL), a marker of neuronal injury is considered as a promising prognostic biomarker in multiple sclerosis (MS). S-NFL is correlated with acute inflammation and neurodegenerative process. Additional biomarkers are needed to distinguish patients at risk from relapse and patients at risk from progression

Design/Methods:
We assessed serum NFL and GFAP (Neurology 4-plex A Simoa kit, Quanterix, USA) in 129 MS patients CSF and serum values were analysed in 39 patients to evaluate serum/CSF correlation.
A statistical analaysis was done to compare MS characteristics and serum NFL and GFAP values.

Results:
Mean age at blood sample was respectively 51, 41 and 35 years in PPMS, RRMS without relapse and RRMS with recent relapse and mean disease duration was 4, 8 and 1.3 years. Correlation between CSF and serum level were good for both NFL and GFAP (respectively r=0.63 and r=0.60, both p<0.001). Both s-NFL (9.3±5 vs 13.6±6.6 pg/ml) and s-GFAP (83±38 vs 130±73 pg/ml) were significantly lower in RRMS than in PPMS patients (respectively p=0.002 and 0.004). In RRMS patients, although it was not significant, s-GFAP (69 vs 87 pg/ml) was lower in patients with recent relapse. S-NFL were similar in the 2 groups (9.2 vs 9.4 pg/ml). There was no correlation between baseline s-NFL and s-GFAP and disability assessed by the EDSS.

Conclusions: Our data confirm that s-NFL are higher in PPMS patients. Moreover, s-GFAP, a marker of astrogliosis is also significantly elevated in PPMS patients as compared to RRMS. Additionally, s-GFAP seem to be lower in patients with recent relapse. Even if its additional value is unknown, our data suggest that s-GFAP is another available serum biomarker that could be of interest in the evaluation of MS patients cohort.