# Prognostic biomarkers in primary progressive multiple sclerosis: validating and scrutinizing multimodal evoked potentials

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OBJECTIVE: To validate the prognostic value of multimodal evoked potentials (mmEP) in primary progressive multiple sclerosis (PPMS) and to determine the most predictive EP-modalities. METHODS: Thirty-nine patients with PPMS (expanded disability status scale (EDSS): 2.0-6.5; mean clinical follow-up: 2.8 years) had visual (VEP), upper and lower limb somatosensory (SEP) and motor EP (MEP) at baseline. Quantitative EP-scores for single (qVEP, qSEP, qMEP) and combined modalities were correlated to EDSS and compared to previously published data of 21 PPMS patients. Predictors of EDSS-change were analyzed in pooled data by linear regression. RESULTS: Samples were comparable. Except qVEP, all EP-scores were correlated to EDSS at baseline (Rho: 0.45-0.69; $p < 0.01$) and follow-up (Rho: 0.59-0.80; $p < 0.001$). Combined EP-modalities significantly predicted EDSS-change (R(2)adj: 0.24), while EDSS and age did not. Tibial qSEP (R(2)adj: 0.22) and qMEP (R(2)adj: 0.26) were the best single modality predictors, outperformed by their combination (R(2)adj: 0.32). CONCLUSIONS: Quantitative EP-scores predict up to 32% of EDSS-change over three years. Modalities representing motor and long tract function carry the main prognostic information. SIGNIFICANCE: Replication of previous results corroborates the use of mmEP as a prognostic biomarker candidate in PPMS.
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