Objective: To test the feasibility of conducting a full-scale project evaluating the potential value of the phosphorylated neurofilament H (pNF-H) and several cytokines as disability markers in relapsing-remitting multiple sclerosis (RRMS). Methods: Twenty-four patients with 5-year RRMS evolution and eleven healthy control subjects entered the study. None of the participants had an inflammatory systemic or metabolic disease. Disability progression was evaluated using the Expanded Disability Status Scale. Serum level of pNF-H, the anti-inflammatory cytokine transforming growth factor-? 1 (TGF-?1), and the pro-inflammatory cytokines tumor necrosis factor-? (TNF-?), interleukin-1? (IL-1?), interleukin-6 (IL-6), interleukin-8 (IL-8), interleukin-17A (IL-17A), monocyte chemotactic protein-1 (MCP-1), and soluble intercellular cell-adhesion molecule 1 (sICAM-1) were quantified using enzyme-linked immunosorbent assay (ELISA). Results: The patients had higher serum level of TGF-?1, IL-6, sICAM-1, and pNF-H. Based on these findings, a sample of at least 49 controls and 89 recent-onset RRMS patients is required to find an at least 1-point between-group difference in pNF-H with a power of 80% and an ? error = 0.05. The progression of the disease was correlated with the level of pNF-H (Spearman rho = 0.624, p = 0.006), but not with the cytokines'. Conclusions: The serum level of pNF-H, EDSS score-correlated,
might stand for a potential biomarker of disability in RRMS reflecting progressive axonal damage and cumulative neurological deterioration. The novelty of these results warrants conducting a larger confirmatory trial. © Copyright © 2019 Herrera, Kölliker-Frers, Otero-Losada, Perez Lloret, Filippo, Tau, Capani and Villa.

biomarker potential
cytokines
disability progression
expanded disability status scale
neurofilament heavy chain phosphoform
relapsing-remitting multiple sclerosis
cytokine
intercellular adhesion molecule 1
interleukin 17
interleukin 1beta
interleukin 6
interleukin 8
monocyte chemotactic protein 1
neurofilament H protein
neurofilament protein
transforming growth factor beta1
tumor necrosis factor
unclassified drug
adult
Article
axon injury
case study