Blood Neurofilament Light Levels Predict Non-Relapsing Progression Following Anti-CD20 Therapy in Relapsing and Primary Progressive Multiple Sclerosis: Findings From the Ocrelizumab Randomized, Double-Blind Phase 3 Clinical Trials

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Methods

- We examined baseline and longitudinal blood NfL levels in 1,423 persons with relapsing MS (RMS) and 356 persons with primary progressive MS (PPMS) from OPERA II (NCT01474204, NCT01643335) and ORATORIO (NCT01194570)
- NfL treatment response and risk of disease worsening (including confirmed disability progression (CDP)) on the Expanded Disability Status Scale into the open-label extension period and slowly evolving lesions (SLEs) on brain MRI at baseline and following treatment with OCR were evaluated using time-to-event analysis and linear regression models.

Results

- Baseline NfL levels were higher in patients with PPMS compared to RMS.
- OCR significantly reduced NfL levels in both RMS and PPMS, and abrogated the prognostic value of baseline NfL on disability progression.

Conclusions

- Highly elevated NfL from acute MS disease activity may mask a more subtle NfL abnormality that reflects underlying non-relapsing progressive biology.
- Ocrelizumab significantly reduced NfL levels in both RMS and PPMS, and abrogated the prognostic value of baseline NfL on disability progression. Moreover, its ability to robustly suppress acute disease activity enabled definition of the relationship between NfL levels and future non-relapsing progression.
- Persistently elevated NfL levels while under high-efﬁcacy treatment demonstrate potential clinical utility as a prognostic biomarker of increased risk of non-relapsing disability progression.