Patient demographics and disease characteristics predict likelihood of clinical benefit on patient-reported outcome measures in multiple sclerosis

Jacob B. Leary, BS, Stefan Sillau, PhD, Brandi Vollmer, MS, Kavita Nair, PhD, and Timothy L. Vollmer, MD

Background: Factors contributing to clinical benefit (CB) in MS patients on high-efficacy disease-modifying therapies (DMTs) are poorly understood.

Objective: Assessing the impact of demographics, disease characteristics, and brain volumes on likelihood of CB in MS patients treated with high-efficacy DMTs.

Methods: Retrospective cohort study included 314 adults with MS who completed two Patient-Determined Disease Steps (PDDS) measures and $\geq$ 2/10 Neurology Quality of Life (NeuroQOL) Short Form scales across two time points ≥10 months apart, while on high-efficacy DMTs. Patients were grouped as CB vs. Clinical Worsening (CW) by change in PDDS score over time. Contributions of patient and disease characteristics, brain volumes, and NeuroQOL baseline and change scores to likelihood of CB were investigated using Chi Square and Satterthwaite t-tests, logistic regression and Spearman correlations.

Results: Factors s predicting likelihood of CB included smoking history (Current v. Former: Odds Ratio (OR)=0.799, 95% CI=0.332, 1.922; Current v. Never: OR=0.429, 95% CI=0.187, 0.983; Former v. Never: OR=0.536, 95% CI=0.308, 0.935), body mass index (OR=0.954; 95% CI=0.918, 0.991), and number of clinical relapses within study period (OR=0.611; 95% CI=0.399, 0.934). Several NeuroQOL subscale scores at baseline and over time were also significantly associated with likelihood of CB.

Conclusions: Several factors appear to predict CB on high-efficacy DMTs.