

## VITAMIN D STATUS AND EFFECT OF INTERFERON- $\beta$ 1A TREATMENT ON MRI ACTIVITY AND SERUM INFLAMMATION MARKERS IN MULTIPLE SCLEROSIS

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**Background:** Vitamin D and interferon- $\beta$ 1a (IFN- $\beta$ ) treatment may have synergistic effects in relapsing-remitting multiple sclerosis (RRMS).

**Aim:** To explore if vitamin D status modulates IFN- $\beta$  treatment effects in RRMS.

**Methods:** We examined associations between serum vitamin D, magnetic resonance imaging (MRI) activity and systemic inflammation markers in 88 patients enrolled in the Omega-3 Fatty Acid Treatment in MS (OFAMS) study (NCT00360906) by estimating logistic and linear regression models for longitudinal data. Twelve MRI scans and nine serum measurements of 25-hydroxyvitamin D (25(OH)D) and ten inflammation markers were obtained during a 24-month follow-up period. As patients were without immunomodulatory treatment until IFN- $\beta$  initiation at month six, we characterized the relationship between vitamin D status, MRI disease activity and inflammation marker levels of our patients in detail both before and during IFN- $\beta$  therapy.

**Results:** IFN- $\beta$  treatment was associated with a 3.0 nmol/L (95% CI 0.7, 5.2,  $p = 0.01$ ) increase of the seasonally adjusted mean 25(OH)D level. Odds ratios for all MRI parameters were negatively associated with 25(OH)D levels before initiation of therapy, but converged to equally low values irrespective of vitamin D status during treatment. During therapy, similar alterations of MRI activity and inflammation markers were found across patients categorized by individual mean 25(OH)D values. Lastly, 25(OH)D status prior to initiation of IFN- $\beta$  did not predict subsequent MRI activity during IFN- $\beta$  treatment.

**Conclusion:** We could not find radiological or biochemical evidence for an impact of vitamin D status on the IFN- $\beta$  treatment response in RRMS patients included in the OFAMS trial.