Effects of vitamin D and body mass index on relapse hazard in multiple sclerosis
A Mendelian randomization study

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Background & Objectives

Decreased vitamin D levels and obesity are associated with an increased risk for multiple sclerosis (MS). However, whether they also impact the disease course after onset remains unclear. With larger datasets now available, we moved beyond susceptibility and employed Mendelian randomization (MR) to determine whether serum 25-hydroxyvitamin D (25OHD) and body mass index (BMI) are causally associated with relapse hazard.

Methods

We used genetic variants from four distinct genome-wide association studies (GWASs) for serum 25OHD in up to 417,580 individuals and from the largest GWAS to date for BMI in 681,275 individuals. Applying 2-sample MR, we examined associations of 25OHD and BMI with relapse hazard, with data from our GWAS in 506 MS cases.

Results

A 1-unit increase in genetically predicted natural-log transformed 25OHD levels decreased hazard for a relapse occurring up to 79% (95% CI: 36%-93%, $p = 0.007$). On the contrary, we did not find evidence for a causal role of higher BMI with an increased hazard for occurrence of a relapse.

Discussion

Genetically predicted naturally occurring 25OHD levels but not BMI are significantly associated with relapse hazard after onset. These findings might offer clinical implications for treatment.