

 MULTIPLE SCLEROSIS

Latitude and vitamin D influence disease course in multiple sclerosis

Two recently published studies have provided new insights into the effects of latitude and vitamin D status on the disease course in multiple sclerosis (MS). A team led by Bruce Taylor at the University of Tasmania, Australia, found that living at higher latitude is associated with a younger age of MS onset, and Julie Hejgaard Laursen and colleagues at Copenhagen University Hospital, Denmark, showed that vitamin D supplementation reduces relapse rates in patients with relapsing–remitting MS (RRMS).

“We have had a long-term interest in how environmental factors that act at the population level — for example, sunlight and vitamin D — influence the risk of MS,” explains Taylor. “This interest was sparked by observations on the latitudinal

gradient of MS prevalence and incidence; we hypothesized that if the risk of MS increases with latitude, other markers of MS severity may also be influenced.”

For the purposes of their study, Taylor and colleagues used age of disease onset as a marker of MS severity. They obtained data on 22,162 patients with MS from MSBase, an international population-based registry that collects longitudinal data in near real time.

The researchers found that age of MS onset was, on average, 2 years earlier among individuals living in higher latitudinal regions (50.0–56.0°) than in those living at lower latitudes (19.0–39.9°). “This is the first time that a clear association with a marker of MS severity has been shown to vary by latitude,” comments Taylor.

One of the factors that could account for the effects of latitude on MS is exposure to sunlight, which stimulates the production of vitamin D in the body. The link between vitamin D insufficiency and MS is well established and, in the second study, Laursen *et al.* set out to examine whether vitamin D supplementation could be beneficial in patients with this condition.

The investigators measured serum 25-hydroxyvitamin D (25(OH)D) levels in 210 patients with RRMS. Vitamin D3 supplements were recommended to all participants who were identified as having vitamin D insufficiency, which was defined as serum 25(OH)D levels of 25–49 nmol/l, or deficiency, which was defined as serum 25(OH)D levels \leq 24 nmol/l, at baseline.

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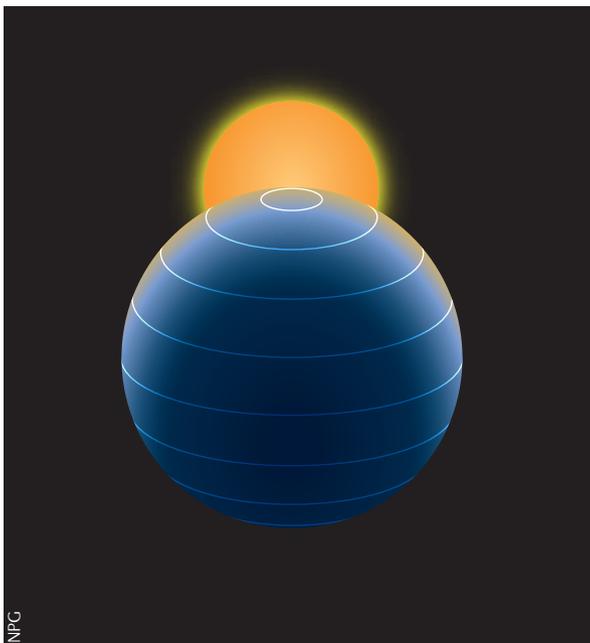
Of 134 patients who were able to complete the study, 43 had vitamin D insufficiency or deficiency at baseline. In these individuals, each nmol/l increase in serum 25(OH)D that was achieved as a result of vitamin D3 supplementation was associated with a 0.014 reduction in annualized relapse rate (ARR). By contrast, no significant correlation between serum 25(OH)D levels and ARR was observed in individuals who were deemed to be vitamin D sufficient at baseline.

These findings support the recommendation of vitamin D3 supplements to patients with MS who are discovered to have low serum 25(OH)D levels. Taylor and his colleagues also plan to further explore the relationship between sunlight, vitamin D and MS, and they have commenced trials of vitamin D supplementation and narrowband UVB phototherapy for the prevention and treatment of MS.

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ORIGINAL ARTICLES Tao, C. *et al.* Higher latitude is significantly associated with an earlier age of disease onset in multiple sclerosis. *J. Neurol. Neurosurg. Psychiatry* <http://dx.doi.org/10.1136/jnnp-2016-314013> (2016) | Laursen, J. H. *et al.* Vitamin D supplementation reduces relapse rate in relapsing–remitting multiple sclerosis patients treated with natalizumab. *Mult. Scler. Relat. Disord.* **10**, 169–173 (2016)

FURTHER READING von Geldern, G. & Mowry, E. M. The influence of nutritional factors on the prognosis of multiple sclerosis. *Nat. Rev. Neurol.* **8**, 678–689 (2012)



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