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ASSOCIATIONS OF VITAMIN D WITH CLINICAL AND EVOKED PAIN IN A MONO- AND DI-ZYGOTIC FEMALE TWIN SAMPLE

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Introduction: The etiology of acute and persistent pain is complex, multifactorial and poorly understood. In addition to known factors such as obesity, stress, and inflammation, vitamin D is a potentially important variable.

Objectives: To examine how vitamin D is linked with pain in a genetically informative sample.

Aims: Generalized Estimating Equations were used to estimate the contribution of vitamin D levels to clinical and evoked pain. Within-pair zygosity-stratified correlations were examined to explore the heritability of vitamin D level.

Methods: 96 female twin pairs (76% monozygotic), some pain-free and some selected for persistent pain, were recruited from a large community-based twin registry. Twins individually provided clinical pain ratings using a validated visual analog scale of the degree of pain experienced over the past 30 days, and evoked pressure pain ratings at threshold using dolorimetry. Serum 25-hydroxyvitamin-D levels (25(OH)D) were assayed in all.

Results: Higher 25(OH)D (>50 ng/mL) was associated with higher clinical pain ratings (B=-.481, p=.02) and higher evoked pressure pain ratings at threshold (B=-.458, p=.05) controlling for age and body mass index. Within-pair correlations suggested low heritability of 25(OH)D.

Conclusions: Vitamin D insufficiency or deficiency was unassociated with pain in this sample, whereas vitamin D sufficiency was associated with greater clinical pain and higher evoked pain ratings, indicating greater pain sensitivity. Given the low heritability of 25(OH)D, these associations are unlikely to be confounded by shared genetics. Differences in vitamin supplementation or outdoor activity and sun exposure between twins with and without pain conditions might partially explain these findings.

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