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Vitamin D and central hypersensitivity in patients with chronic pain.

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Abstract

BACKGROUND: Low vitamin D is implicated in various chronic pain conditions with, however, inconclusive findings. Vitamin D might play an important role in mechanisms being involved in central processing of evoked pain stimuli but less so for spontaneous clinical pain.

OBJECTIVE: This study aims to examine the relation between low serum levels of 25-hydroxyvitamin D₃ (25-OH D) and mechanical pain sensitivity.

DESIGN: We studied 174 patients (mean age 48 years, 53% women) with chronic pain. A standardized pain provocation test was applied, and pain intensity was rated on a numerical analogue scale (0-10). The widespread pain index and symptom severity score (including fatigue, waking unrefreshed, and cognitive symptoms) following the 2010 American College of Rheumatology preliminary diagnostic criteria for fibromyalgia were also assessed. Serum 25-OH D levels were measured with a chemiluminescent immunoassay.

RESULTS: Vitamin deficiency (25-OH D < 50 nmol/L) was present in 71% of chronic pain patients; another 21% had insufficient vitamin D (25-OH D < 75 nmol/L). After adjustment for demographic and clinical variables, there was a mean \pm standard error of the mean increase in pain intensity of 0.61 ± 0.25 for each 25 nmol/L decrease in 25-OH D ($P = 0.011$). Lower 25-OH D levels were also related to greater symptom severity ($r = -0.21$, $P = 0.008$) but not to the widespread pain index ($P = 0.83$) and fibromyalgia ($P = 0.51$).

CONCLUSIONS: The findings suggest a role of low vitamin D levels for heightened central sensitivity, particularly augmented pain processing upon mechanical stimulation in chronic pain patients. Vitamin D seems comparably less important for self-reports of spontaneous chronic pain.

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KEYWORDS: Central Nervous System; Central Sensitivity; Chronic Pain; Fibromyalgia; Vitamin D

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