

# Abstract

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## Low serum 25 (OH) vitamin D levels (<32 ng/mL) are associated with reversible myositis-myalgia in statin-treated patients.

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**OBJECTIVE:** Our specific aims were to determine whether low serum 25 (OH) vitamin D (D2 + D3) (<32 ng/mL) was associated with myalgia in statin-treated patients and whether the myalgia could be reversed by vitamin D supplementation while continuing statins.

**METHODS:** After excluding subjects who took corticosteroids or supplemental vitamin D, serum 25 (OH) D was measured in 621 statin-treated patients, which consisted of 128 patients with myalgia at entry and 493 asymptomatic patients.

**RESULTS:** The 128 myalgic patients had lower mean +/- standard deviation (SD) serum vitamin D than the 493 asymptomatic patients (28.6 +/- 13.2 vs 34.2 +/- 13.8 ng/mL,  $P < 0.0001$ ), but they did not differ ( $p > 0.05$ ) by age, body mass index (BMI), type 2 diabetes, or creatine kinase levels. By analysis of variance, which was adjusted for race, sex, and age, the least square mean (+/- standard error [SE]) serum vitamin D was lower in the 128 patients with myalgia than in the 493 asymptomatic patients (28.7 +/- 1.2 vs 34.3 +/- 0.6 ng/mL,  $P < 0.0001$ ). Serum 25 (OH) D was low in 82 of 128 (64%) patients with myalgia versus 214 of 493 (43%) asymptomatic patients ( $\chi^2 = 17.4$ ,  $P < 0.0001$ ). Of the 82 vitamin-D-deficient, myalgic patients, while continuing statins, 38 were given vitamin D (50,000 units/week for 12 weeks), with a resultant increase in serum vitamin D from 20.4 +/- 7.3 to 48.2 +/- 17.9 ng/mL ( $P < 0.0001$ ) and resolution of myalgia in 35 (92%).

**CONCLUSIONS:** We speculate that symptomatic myalgia in statin-treated patients with concurrent vitamin D deficiency may reflect a reversible interaction between vitamin D deficiency and statins on skeletal muscle.

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