

Vitamin D Inhibits the Rise in Inflammatory Cytokine and Adhesion Molecule Levels Post MI Patients

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Introduction: Atherosclerosis is a chronic inflammatory condition of the arterial wall.

Accumulating evidence suggests the involvement of the innate and adaptive immune systems in atherosclerosis. Vitamin D has immune modulating properties. Low vitamin D levels are associated with higher prevalence of cardiovascular risk factors and a higher risk of myocardial infarction. In this paper we explore the effects of short vitamin D supplementation, after an acute coronary syndrome, on inflammatory cytokine levels.

Methods: Patients were recruited after presenting with an ACS. All patients received optimal medical therapy and underwent a coronary angiography. Half of the patients were treated with a daily supplement of vitamin D, 4000IU for 5 days. Circulating levels of vitamin D, VCAM-1, ICAM-1, E-selectin, VEGF, CRP, IL-6, IL-8 and TNF were tested upon arrival and after 5 days.

Results: Fifty patients were recruited. Average patient age was 60; thirty-nine patients were male. Average vitamin D levels were 18.5ng/mL. In the control group there was an increase in inflammatory cytokine levels after five days. Treatment group cytokine levels showed a decreased elevation or a reduction compared to the control. There were significant differences in VCAM-1 levels (decrease of 15.36 ng/mL vs. 103.03 increase, P=0.001) and iL-6 (-0.11 vs. 3.33 pg/mL, P=0.0005). There were trends towards significance in levels of ICAM-1 (-1.26 vs. 19.97 ng/mL, P=0.17), CRP (1.28 vs. 3.25, P=0.09), Selectin (-4.14 vs. -0.15 ng/mL, P=0.16), VEGF (137.4 vs. 263.1 pg/mL, P=0.16), IL-8 (-6.36 Vs. 7.95 pg/nL, P=0.1). There was no significant difference in TNF levels.

Conclusion: A short treatment with vitamin D effectively diminishes the increase in circulating inflammatory cytokines and interleukins after an. These findings shed a light on the anti-inflammatory effects of vitamin D on the vascular system, and may explain some of the cardio-protective properties attributed to vitamin D.