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Stable Ischemic Heart Disease

VITAMIN D STATUS IS ASSOCIATED WITH MENTAL STRESS INDUCED MYOCARDIAL ISCHEMIA IN PATIENTS WITH STABLE CORONARY ARTERY DISEASE

Poster Contributions
Hall C
Sunday, March 30, 2014, 9:45 a.m.-10:30 a.m.

Session Title: Biomarkers, Predictors and Imaging in Stable Ischemic Heart Disease
Abstract Category: 25. Stable Ischemic Heart Disease: Clinical
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Background: Myocardial ischemia induced by mental stress (MSI) portends a worse prognosis in patients with coronary artery disease (CAD). Vitamin D plays a key role in the physiological pathways involved in the stress response, and its insufficiency has also been linked to adverse cardiovascular outcomes. We hypothesized that vitamin D insufficiency will be associated with a higher prevalence of MSI in CAD patients.

Methods: In 255 patients with clinically stable CAD, myocardial perfusion imaging was used to assess ischemia in response to mental stress, induced by a standardized public speaking task, and physical stress. Vitamin D insufficiency was defined as serum 25-hydroxyvitamin D [25(OH) D] level below 30 ng/ml, collected on the day of stress testing. Multivariate analysis, with ischemia as a binary dependent variable, was performed adjusting for cardiovascular risk factors, ethnicity, season of blood collection, CAD severity, body mass index, and left ventricular ejection fraction.

Results: Mean serum 25(OH)D level was 30.8±12.8 ng/ml, and 139 (55%) patients had vitamin D insufficiency. MSI occurred in 30 (12%) patients and physical stress ischemia (PSI) in 67 (27%). Individuals with MSI had significantly lower levels of 25(OH)D as compared to those without MSI (24.0±8.6 vs. 31.7±12.9, p=0.002). The prevalence of MSI was higher in those with as compared to those without vitamin D insufficiency (17% vs. 6%, p=0.009). Vitamin D insufficiency was an independent predictor of MSI in both univariate (OR= 3.1, p=0.013) and multivariate analysis (OR= 3.5, p=0.026). In contrast, 25(OH)D levels were similar in those with or without PSI (29.8+13.0 vs. 31.4+12.7; p=0.37), and the prevalence of PSI was similar in those with or without vitamin D insufficiency (29% vs. 24%, p=0.42). Notably, patients with vitamin D insufficiency had similar hemodynamic reactivity during mental and physical stress as compared to those who were sufficient.

Conclusions: Vitamin D insufficiency is associated with a higher prevalence of MSI, but not PSI in patients with stable CAD. Whether this association serves as a potential mechanism linking low vitamin D status to adverse cardiovascular outcomes warrants further study.