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Role of vitamin D deficiency in coronary artery disease and cardiac dysfunction

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Introduction: Vitamin D (VD) deficiency may be an important neglected factor in the pathogenesis of cardiovascular disease and its risk factors.

Aim: Investigate the relation between VD level and both exercise parameters and left ventricular systolic and diastolic functions.

Methods: Fasting blood samples were collected from 70 patients with chest pain, and serum levels of vitamin D, glucose, and lipids were measured. They were divided into 2 groups according to VD level. All patients were scheduled for exercise treadmill test and echocardiography.

Results: 30 patients had normal serum VD. They had lower incidence of diabetes, lower levels of total cholesterol and SLDL. Also, they had longer exercise time (0.37 ± 0.05 vs. 0.31 ± 0.06, P 0.002) with higher metabolic equivalents (METs) (9.52 ± 1.33 vs. 8.49 ± 1.45, P 0.003) and minimal ST-segment depression (0.61 ± 0.11 mm vs. 2.41 ± 1.08 mm, P <0.001). No difference between both groups regarding ejection fraction (P>0.05) but there was a significant decrease in the E/A ratio of the mitral valve in patients with low VD (1.26 ± 0.27 vs.1.01 ± 0.31, P 0.001). Patients with normal exercise test were 35 patients (50%). They had higher VD level (57.60 ± 9.29 nmol/l vs 34.44 ± 8.11, P <0.001). There was a significant negative correlation between VD and total cholesterol, S.LDL, and the degree of ST-segment depression in exercise ECG. A significant positive correlation was found between VD and both METs and E/A ratio of the mitral valve. Using logistic regression analysis, VD, METs, and diabetes were predictors for both CAD and cardiac dysfunction. Serum VD less than ≤47 nmol/l can predict coronary artery disease (CAD) and cardiac dysfunction with high accuracy (94.4% and 71.4% respectively).

Conclusion: A strong correlation exists between vitamin D and some of CAD risk factors and reduced vitamin D could have a role in exercise parameters abnormalities developed during stress test and diastolic dysfunction seen in patients presented with chest pain.

Biography

Mohamed Arab is a consultant of clinical cardiology in Zagazig University since 2011. He grew up in Egypt where he finished the bachelor of medicine and surgery on 1999. He has been practicing cardiology in Egypt and gulf since 2002. He finished his PhD from Zagazig University on 2011. In 2012 he had been appointed as a senior cardiologist in ministry of health in state of Kuwait. He is a team leader of a 16-bed Coronary Care Unit and a supervisor of a 15 cardiology registrars. He has published many papers in international journals since 2005. He is a fellow of Egyptian and European societies of cardiology and the American college of cardiology.

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