

Epidemiology

PP-075

Short-term Effects of Vitamin-D treatment on Cardiac Systolic and Diastolic Functions

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Objective: Novel studies which investigated extraskelatal effects of vitamin D showed that vitamin D plays important role in whole body health, beyond bone health. Vitamin D receptors are present in various cell types including osteoblasts, cardiomyocytes, myocytes, endothelium, immune cells and neurons. Vitamin D deficiency is defined as 25-hydroxy D3 values ≤ 20 ng/ml and its prevalence varies from 27% to 55% in different series. Decline in systolic and diastolic functions of the heart has been reported in patients with vitamin D deficiency. In this study, we aimed to investigate short-term effects of vitamin D treatment on systolic and diastolic functions of the heart in patients with vitamin D deficiency.

Methods: Fifty patients (3 male/ 47 female, mean age 46 ± 12 years) diagnosed as having vitamin D deficiency and osteoporosis were included in this study. All patients underwent detailed transthoracic echocardiography for evaluation of left ventricular systolic and diastolic functions of the heart. Oral Vitamin D was administered to all study patients for 8 days (a total of 300.000 IU). Transthoracic echocardiography was repeated for all patients at 30th days.

Results: After one month treatment with oral Vitamin D, serum 25-hydroxy D3 value increased from 11 ± 4 ng/ml to 21 ± 5 ng/ml, $p < 0.001$. After initiation of supplementary vitamin D treatment LVEF ($62.6 \pm 5\%$ to 63.8 ± 4 , $p = 0.025$) indicating LV systolic function improved significantly. Also mitral E/A ratio, a measure of diastolic function, improved significantly after treatment with vitamin D treatment (1.16 ± 0.3 to 1.2 ± 0.3 , $p = 0.028$). However, IVCT (95.2 ± 15 to 96 ± 13 , $p = 0.54$) and EDEC (197 ± 28 to 197 ± 22 , $p = 0.95$) were similar to baseline values. Change in serum level of vitamin D (Δ Vit D) was correlated with change in LVEF (Δ EF, $r = 0.39$ and $p = 0.005$) and change in mitral E/A ratio (Δ E/A, $r = 0.340$ and $p = 0.016$). Linear regression analysis revealed that change in serum 25-hydroxy D3 level (Δ Vit D) was significantly associated with change in LVEF (Δ EF) (coefficient $\beta = 0.36$, $p = 0.013$).

Conclusion: Results of this study show that supplementary vitamin D treatment leads to improvement in LV systolic and diastolic function in patients with vitamin D deficiency, even at short term follow-up. Our results also show that change in Vitamin D level is significantly associated with improvement in LVEF.

Table 1. Change in several echocardiographic indicators of systolic and diastolic function before and after treatment with Vitamin D

	Pretreatment	Posttreatment	P value
LVDd (mm)	44.16 \pm 3.89	44.22 \pm 3.28	0.866
LVSd (mm)	29.26 \pm 3.06	29.14 \pm 2.96	0.674
LVEF (%)	62.62 \pm 4.94	63.88 \pm 4.43	0.025
FS (%)	33.56 \pm 3.62	34.02 \pm 3.19	0.018
E/A	1.16 \pm 0.29	1.20 \pm 0.28	0.028

Table 2. Linear regression analysis showing the relation between change in left ventricular ejection fraction and several variables

	Coefficient $-\beta$	P value
Change in Vitamin D level	0.364	0.013
Diabetes	-0.091	0.528
Hypertension	0.047	0.786
Age	0.074	0.666
Sex	0.158	0.262

PP-076

Major Adverse Events Rate and Characteristics in Duzce, The Results of Melen Study with 36 Months Prospective Follow-up

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Objective: This study includes the results of three years of follow-up data of Melen study which was designed prospectively in 2010. The present study was designed to determine major adverse events rates and characteristics after thirty-six months follow up of Turkish adults. Also we aimed to evaluate the risk associates of adverse events and predisposing factors.

Methods: 2298 participants, who joined the study in 2010, were followed. A total of 1495 people were reached via telephone call and included in the study (570 male, 925 female). The individuals were questioned for primary end points of death, ischemic or hemorrhagic cerebrovascular events, decompensated heart failure, acute coronary syndrome, hypertensive crisis, arrhythmia, syncope, peripheral vascular disease, angina attack and hospitalization for non-cardiac reasons.

Results: During thirty-six months follow up, sixteen participants died, fourteen participants had cerebrovascular events, thirteen were hospitalized with heart failure, twelve had acute coronary syndrome, thirty-one had hypertensive crisis, eleven had arrhythmia, thirteen had syncope, two had peripheral vascular disease. A number of 23 participants hospitalized for non-cardiac reasons. The most common cause of non-cardiac hospitalization was musculoskeletal diseases. Six patients admitted for this reason. A total of four patients developed cancer.

Conclusion: Major adverse event rate and correlates were determined in this epidemiologic study with 4485 participant-year follow-up. Hypertension was the most common risk factor associated with major adverse events. The results are concordant with the general concept that hypertension is one of the biggest mortality and morbidity causes in Turkey.

PP-077

Vitamin D and PTH Levels in Acute Coronary Syndromes

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Introduction: Vitamin D and PTH (Parathyroid hormone) are considered important primarily for calcium and phosphorus homeostasis. However, in the recent years, vitamin D and PTH levels have been linked to cardiovascular disease and mortality.

Material and Methods: One hundred patients were included in the study. Patient group included 50 patients presented to cardiology clinic with ACS (acute coronary syndrome) and underwent coronary angiography between February 2012 and January 2013. Control group included 50 patients whom coronary angiography revealed normal coronary arteries in the same time period. In order to minimize the confounding effect of seasonal fluctuation of vitamin D levels, we aimed to involve equal number of patients in each month. Depending of the eligible patients presented, table 1 shows the number of subjects included each month. All blood samples were fasting morning samples.

Results: 50 patients with ACS (31 male, mean age 57, 2+8, 45) and 50 subjects with normal coronary arteries (31 male, mean age 54, 56+7, 51) included in the study. The characteristics of the participants are summarized in table 2. There was no statistically significant difference between the patients with ACS and controls with respect to age, gender, height, weight, body mass index (BMI) ($p > 0.05$). Diabetes mellitus, hyperlipidemia and history of smoking were more common in the patient group. In the ACS group, 15 (30%) of the patients were diagnosed with anterior myocardial infarction (MI), 20 (40%) were with inferior MI, 8 (16%) with unstable angina, and 7 (14%) with non-ST elevation MI. 25 (OH) D and corrected calcium levels were significantly lower in patients group ($P < 0.001$) (table 3). Despite there were higher levels of PTH in the patient group this result did not reach statistical difference. If 25(OH) levels of ≥ 20 considered sufficient, 60% of the control group and 12% of the patient group had adequate levels of vitamin D.

Discussion: In the recent years, pleiotropic effects of vitamin D has been increasingly recognized and low 25(OH) vitamin D levels have been tied to hypertension, heart failure, diabetes mellitus, coronary artery disease, stroke and mortality in numerous epidemiologic, observational and experimental studies. Similar to vitamin D, PTH which is a regulator hormone in mineral homeostasis, affects vascular smooth muscle and endothelium and heart besides bone and kidney, and has been associated with hypertension, heart failure and coronary heart disease.

Conclusion: Vitamin D and corrected calcium levels were significantly lower in patients with ACS compared with patients with normal coronary arteries independent of seasonal fluctuation. PTH levels were higher in ACS group; however, this result was not statistically significant. Further studies with a larger number of patients are warranted to confirm our results.