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Does vitamin D level affect cardiac ventricular functions in healthy children?

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Objective:We aimed to study the effects of vitamin D levels on right and left ventricular functions in healthy subjects. **Methods:** We enrolled fifty-four healthy children who were admitted to our outpatient clinic between January 2013 and June 2013. Subjects were 3 to 24 months old. We chose subjects for whom vitamin D testing and complete transthoracic echocardiography with tissue Doppler imaging (TDI) for the current analysis. We then excluded patient with following features: septal hypertrophy, valvular disease, hypertension, chronic disease such as diabetes mellitus, chronic renal failure and chronic liver disease, as these finding could influence both vitamin D status and echocardiographic data. We also did not enroll subjects with rickets. We divided our study population into three groups according to the levels of vitamin D: subjects with > 30 ng/ml 25 (OH) D were grouped as sufficient, subjects with 20-30 ng/ml 25(OH) D were grouped as insufficient, and subjects with < 20 ng/ml 25 (OH) D were grouped as deficient. **Results:** Vitamin D deficiency was observed in 16 patients, and vitamin insufficiency was observed in 16 cases. The vitamin D level was within normal limits in 22 cases. As for the levels of vitamin D there was a significant difference among median values of sufficient group, insufficient group, and deficient group. Medial mitral annular Sm and Am velocities measured by TDI echocardiography was significantly higher in subjects with insufficient and deficient vitamin D level than those who has sufficient vitamin D. Right ventricle TDI echocardiography revealed that tricuspid isovolumic contraction time (IVCT) was significantly lower in subjects with insufficient and deficient vitamin D than those who had sufficient vitamin D ($p < 0.024$). **Conclusion:** We have shown that left and right ventricular functions did not change at early stages of vitamin D deficiency. However, we have found that tricuspid IVCT, early marker of diastolic functions, was significantly decreased in subjects with insufficient and deficient vitamin D. To our knowledge, this is the first such study investigating the impact of vitamin D on left and right ventricular functions in healthy children.