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"COMPARISON OF LEFT VENTRICULAR STRAIN PATTERNS IN TYPICAL VERSUS ATYPICAL LEFT BUNDLE BRANCH BLOCK"

Ms. Hazel Lolitha Mathias

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ABSTRACT

Background: Though left bundle branch block (LBBB) has been classified into typical and atypical based on electrocardiographic criteria, the differences between these two on myocardial activation and mechanics has not been studied yet. Ventricular speckle-tracking strain echocardiography is a powerful predictor of subclinical myocardial dysfunction in patients with LBBB.

Objectives: The aim of the study was to compare left ventricular (LV) global longitudinal strain in typical versus atypical LBBB, also to correlate LV dyssynchrony with the status of LVEF and to assess myocardial deformation imaging in LBBB patients with and without preserved LVEF.

Methods: A total of 181 LBBB patients (Mean age, 63.64±11.07 years; 51% females) above 18 years of age were included in the present study. Patients with atrial fibrillation, with associated congenital heart disease and those with implanted permanent pacemaker were excluded. Out of 181 LBBB patients, 117(65%) had typical LBBB and 64(35%) had atypical LBBB. Conventional 2-dimensional echocardiographic parameters, speckle- tracking strain echocardiographic parameters and 3- dimensional echocardiographic parameters were used to compare between typical and atypical LBBB subjects.

Results: Patients with atypical LBBB had decreased mean values of LV ejection fraction ($p<0.001$) as well as reduced mean values of LV global and regional longitudinal strain ($p<0.001$) than typical LBBB patients. LBBB subjects with intra-ventricular showed significant decrease in the mean values of LVEF ($p<0.05$). Overall GLS was reduced in LBBB subjects irresepective of the LVEF but the extent of global and regional strain reduction in LBBB patients with LVEF <50% was more when compared to LBBB patients with preserved LVEF($p<0.005$).

Conclusions: LV global longitudinal strain and regional strain values were significantly reduced in atypical LBBB subjects when compared to typical LBBB. Concurrent with previous studies, this study also proved the association between LV intra-ventricular dyssynchrony with LV ejection fraction ,and also there was significant reduction in the LV global and regional longitudinal strain values among LBBB patients without preserved LVEF when compared to subjects with preserved LVEF.