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LEFT VENTRICULAR DYSSYNCHRONY IN PATIENTS WITH LEFT BUNDLE BRANCH BLOCK AND PRESERVED SYSTOLIC FUNCTION CORRELATES WITH POOR EXERCISE CAPACITY

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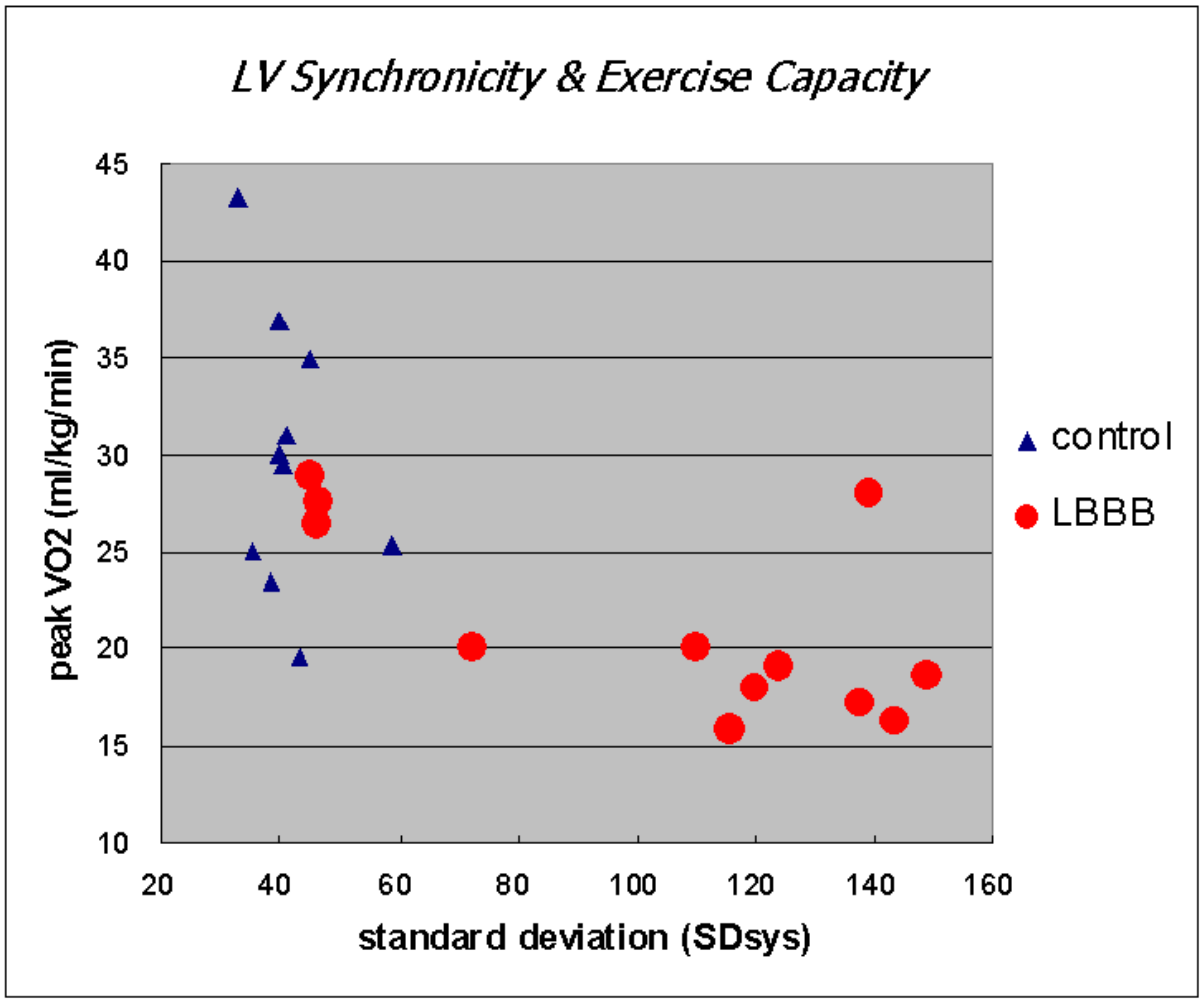
INTRODUCTION: In patients with reduced systolic function, LV dyssynchrony associated with LBBB has been identified as an independent predictor of cardiac morbidity or mortality. However, in patients with LBBB and preserved systolic function (LBBB-PSF), there is a paucity of data related to the effect of LV dyssynchrony on exercise capacity. We hypothesized that LV dyssynchrony is related to the poor exercise capacity in these patients.

METHOD: Echocardiographic examination including tissue Doppler imaging and cardiopulmonary exercise test were performed in 12 patients with LBBB-PSF and 10 healthy volunteers. Severity of LV dyssynchrony was assessed by the standard deviation of time intervals from the QRS complex to the peak systolic velocity measured in 12 segments of LV (SD_{dys}). In the exercise test, the peak oxygen consumption rate (peak VO2) was obtained. Two patients were unable to complete the exercise due to back pain and tachycardia.

RESULT: The LBBB-PSF group showed significantly lower exercise capacity (peak VO2; 21.8±5.3 vs. 29.7±8.9 ml/kg/min, *p=0.04*) and higher SD_{dys} (101.8±44.2 vs. 42.1±8.8, *p=0.02*) than the control group. On subgroup analysis focusing on the LBBB-PSF group, SD_{dys} correlated with poor exercise capacity (correlation coefficient = -0.660, *p=0.038*), but did not correlate with ejection fraction.

CONCLUSION: Patients with LBBB-PSF have a significant LV dyssynchrony compared with healthy volunteers. Moreover, patients with LBBB-PSF showed a variable degree of LV dyssynchrony (see a graph), which correlated with poor exercise capacity. It is suggested that LV dyssynchrony measured by tissue Doppler imaging is useful to assess the clinical significance of LBBB-PSF.

Keyword: LBBB, dyssynchrony, exercise capacity


LV Synchronicity & Exercise Capacity
peak VO2 (ml/kg/min)
45
40
35
30
25
20
15
10
20
40
60
80
100
120
140
160
standard deviation (SDsys)
control
LBBB