

Echocardiographic Assessment of Cardiac Functions in Children with Surgically Induced Right Bundle Branch Block after Ventricular Septal Defect Closure

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Objective: The aim of this study was to assess left (LV) and right ventricular (RV) functions in patients with surgically induced right bundle branch block (RBBB) after ventricular septal defect closure.

Materials and Methods: 53 patients that follow up at least one year without any treatment after ventricular septal defect closure and 52 healthy controls were enrolled into study. The conventional and tissue Doppler echocardiographic measurements of patients with and without right bundle branch block were compared with each other and healthy controls.

Results: RBBB was detected 37.7% of operated patients (20/53). Age at surgery mean: 25.2 ± 24.7 months, follow up duration mean: 5.3 ± 3.8 years were in RBBB(+) group. There were not significant statistical differences between RBBB(+) and (-) groups for surgical age and follow up duration, however in branch block group mean surgical age were lower than RBBB(-) group. In RBBB (+) group LV end-diastolic area (EDA) and LV end-systolic area (ESA) were found higher than control, no significant differences were detected for other parameters. RV-TAPSE (Tricuspid annular plane systolic excursion) values were detected lower than control group. RV-FAC (Fractional area change) value was detected lower in RBBB (+) group. Pulsed wave Doppler measurements of the both ventricles in operated group; MPI (myocardial performance index) ratios were higher than controls. Tissue Doppler measurements of the LV and RV in operated patients; MPI and E/E' values acquired from MLA (Mitral lateral annulus), TLA (Tricuspid lateral annulus) and S(septum) were detected higher than control group. No differences were found between E'/A' ratios.

Conclusion: Our results showed that systolic and diastolic ventricular functions are decrease over time regardless of presence of RBBB. Therefore, ventricular functions should be periodically assessed with conventional and tissue Doppler echocardiography in order to determine early detection of ventricular dysfunction in children after ventricular septal defect closure.