Abstract: **P871**

Left atrium strain and left ventricle twist in patients with complete left bundle branch block

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Hypothesis. the mechanical function of left atrium (LA) is dependent on the left ventricle (LV) apical rotation (Rotapex) and LV twist in patients with LV systolic dysfunction and complete left bundle branch block (LBBB).

The aim of the study was to assess the LA Strain depending on the of Rotapex and LV twist in patients with complete LBBB.

Material and methods. The analysis was performed in 54 patients with complete LBBB (age 62.5 ± 11.4 years, QRSECG duration 153.1 ± 24.5 ms and LV ejection fraction (EF) 27.2 ± 10.2%). Twenty five patients of 54 patients with complete LBBB had non- ischemic heart failure. All patients had sinus rhythm. All patient were divided into two groups: 1) patients with positive LV apical rotation (Rotapex: 3.61±2.990; LV Twist: 6.14±4.210; LV EF: 29.8±8.4%) and 2) patients with a negative LV apical rotation (Rotapex:-3.1±2,210; LV Twist 2.8±2.10; LV EF 27.2±5.2%).

LA function can be evaluated through 2D speckle tracking imaging by analysing its three curve strain components using Vivid E9 (GE, Healthcare). The wave PECG was used as the zero point for the assessment of LA function. The maximum negative Strain during LA systole (eneg), peak positive strain (epos) during LV systole and their sum (etotal) were estimated. Minimal LA volume (Vmin), measured at the closure of the mitral valve in end-diastole; and Maximal LA volume (Vmax), measured just before the opening of the mitral valve in end-systole, were evaluated. The volumes of LA were estimated from the apical view at the levels of 2 and 4 chambers. The analysis of LV function included assessment of Rotation on basal, apical and the level of papillary muscles, Twist and Global Longitudinal Strain from apical 4-,2- chamber views and long axis apical view.

Results. LV Global Longitudinal Strain did not significantly differ between the patients of both groups (-4.8±2.8% vs -3.0±1.1%). The maximal and minimal volumes of LA were greater in patients with negative Rotapex compared with patients who had positive Rotapex (Vmax: 121.6±43.8 ml vs 81.5±29.5 ml; p=0.001; Vmin: 82.9±41,5 ml vs 51.8±24,9 ml; p=0,009)). LA epos and eneg did not differ between two groups. Patients with positive Rotapex had larger LA etotal (12.9±2.73%) compared with patients who had negative Rotapex (8.9±2.1%; p=0.01). LA etotal correlated with LV Twist (r=0.39; p=0.01).

Thus, we suggest that mechanical function of LA is dependent on the LV Rotapex and LV twist in patients with LV systolic dysfunction and complete left bundle branch block. LBBB makes an additional contribution to the disturbance of LV twisting. Clockwise movement of the LV apex due to unidirectional movement of the LV at the level of the basal and apical segments causes deterioration of the LA mechanical properties and, possibly, an increase in the volume of the cavity of the left atrium itself.