Electrocardiographic Left Ventricular Hypertrophy and Echocardiographic Mass in Patients receiving Transcatheter Aortic Valve Replacement

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INTRODUCTION Calcific aortic stenosis (AS) is a common valve disease among the elderly. It typically causes left ventricular hypertrophy (LVH) and eventually symptomatic heart failure. Severe AS can currently be treated by transcatheter aortic valve replacement (TAVR). Previous studies have shown that electrocardiogram (ECG) criteria for LVH correlate poorly with left ventricular mass (LVM) by echocardiography. However, such correlations have not been studied in TAVR patients. Therefore, the aim of this study was to evaluate ECG LVH criteria as a method of diagnosing and quantifying LVH in patients with AS receiving TAVR.

METHODS Twenty-four patients, with neither pacemaker nor bundle branch block, who had undergone pre-TAVR ECG and echocardiography were included. The ECGs were evaluated using the Sokolow-Lyon, Romhilt-Estes and Cornell Voltage criteria for LVH as well as spatial maximal QRS-T angle and 3D QRS maximal spatial vector. The LVM was measured by echocardiography.

RESULTS Fifteen (63 %) patients met the echocardiographic threshold for LVH. Seven patients (29 %) were positive by the Sokolow-Lyon, 5 (21 %) by the Romhilt-Estes and 12 (50 %) by the Cornell Voltage criteria for LVH. There was no correlation between LVM and conventional ECG LVH criteria or spatial parameters. However, QRS duration correlated with LVM (r=0.56, R2=0.31, p=0.005). There was no correlation between QRS duration and either LVM index or relative wall thickness (RWT).

DISCUSSION In TAVR patients, none of the ECG LVH criteria should be used for evaluation of LVM. QRS duration is moderately correlated to LVM and is therefore a potentially useful ECG estimate of LVM.

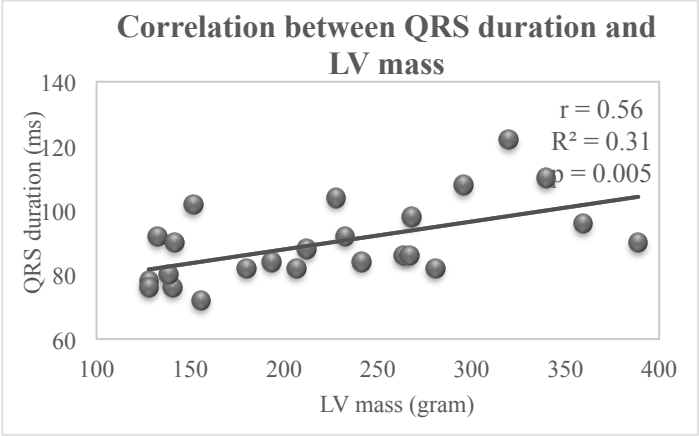

Figure 1. The QRS duration correlated with LV mass determined by echocardiography.