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Valvular Heart Disease

THE PREDICTIVE VALUE OF BASELINE QRS DURATION ON IMPROVEMENT IN LEFT VENTRICULAR FUNCTION IN PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE REPLACEMENT

Poster Contributions

Hall C

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Background: QRS prolongation is associated with impaired left ventricular function. The predictive value of QRS duration (QRSd) on improvement in the left ventricular ejection fraction (LVEF) in patients with reduced LVEF and severe aortic stenosis (AS) after transcatheter aortic valve replacement (TAVR) has not been studied.

Methods: Baseline ECGs and serial echocardiograms of 96 consecutive patients with LVEF<45% who underwent TAVR using Edwards-SAPIEN (94%) and CoreValve (6%) and survived to hospital discharge between 2007 and 2013 at our hospital were reviewed. The baseline median QRSd was used to divide the patients into 2 groups: QRSd <145 ms and \geq 145ms.

Results: Patients with QRSd \geq 145ms(n=48) had higher incidence of left bundle branch block (26.2%), permanent right ventricular pacemaker implantation(50%) and lower incidence of intraventricular conduction delay(16.7%) as compared to those with QRS<145ms (7.1% , 4.7% and 50%) respectively. After a mean of 12 \pm 14months, the patients with QRSd<145ms had a significant increase of LVEF (15.5 \pm 3.5%) vs no significant change (4.0 \pm 4.0%) in those with QRSd \geq 145ms. By Receiver Operator Characteristic curve, the QRSd of 145ms was determined as the optimal threshold for predicting the improvement of LVEF. The probability of increasing LVEF by at least 10% was 71 \pm 13% and 19 \pm 11% for patients with QRSd < and \geq 145 ms respectively. The p-value from the paired t-tests of pre- and post-EF for patient with QRSd< and \geq 145ms were 9.26E-11 and 0.24 respectively. The sensitivity and specificity of using 145ms as predictor for significant increase in LVEF was 80% and 73% respectively.

Conclusion: Among patients with LVEF below 45% and severe AS undergoing TAVR, the baseline QRSd accurately predicts clinically significant improvement of left ventricular function. At least a 10% improvement of LVEF in the setting of a QRSd<145ms is common. Results were unchanged after excluding patients with permanent pacemakers.