OVERLAPPING OF THE E AND A WAVES OF THE TRANSMITRAL FLOW AS A SIMPLE PREDICTOR OF RESPONDERS TO CARDIAC RESYNCHRONIZATION THERAPY

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Background: Atrio-ventricular (AV) dyssynchrony as well as ventriculo-ventricular dyssynchrony plays an important role in the selection of cardiac resynchronization therapy (CRT) candidates, however, no method assessing AV dyssynchrony has been established yet. Correlation between E and A waves of transmitral flow can help estimating timely atrial contraction. We investigated whether the degree of the overlapping of the E and A waves can predict CRT responders.

Methods: The study subjects consisted of consecutive 48 patients maintaining sinus rhythm who underwent CRT implantations. The overlap ratio of the E and A waves was measured as shown in the Figure. CRT responders were defined as having a reduction in the LV end-systolic volume of greater than 15% at 6 months after CRT implantations.

Results: Twenty-three (48%) patients were CRT responders. Baseline parameters were shown in the Table. In the multivariate analysis, the overlap ratio of the E and A waves was the only independent predictor (OR: 1.03; 95%CI: 1.01-1.06; P=0.01). Using a cut-off value of 33% provided by ROC analysis, CRT responders were more frequently observed in patients with an overlap ratio of the E and A waves of ≥33% than in those with that <33% (73% vs. 27%; P=0.002).

Conclusions: The overlap ratio of the E and A waves may predict CRT responders. This simple method may be helpful for evaluating dyssynchrony in patients particularly with severe reduced LV wall motion because this method does not require any wall motion analysis.