ECG Quantification of Myocardial Scar Cannot Predict Future Cardiac Events in Patients with Non-Ischemic Cardiomyopathy

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Introduction: The modified Selvester QRS scoring system has been extensively validated for quantifying scar during ischemic and non-ischemic cardiomyopathy. This study was designed to evaluate the usefulness of QRS scores for predicting arrhythmic events in patients with an implantable cardioverter-defibrillator (ICD).

Methods: Forty-seven patients with structural heart disease that underwent ICD implantation were evaluated. Twelve-lead ECG recordings taken before ICD placement were analyzed using the modified Selvester QRS scoring criteria. The study endpoint was the occurrence of a cardiac event: appropriate ICD-delivered therapy, cardiac death, and hospitalization due to heart failure at one year after ICD placement. Clinical parameters were compared between low- (LS, score ≤5) and high- (HS, score >5) QRS score groups.

Results: The mean QRS score before ICD placement was 5.8±5.4 (range: 0-21). QRS scores were found to be inversely correlated with left ventricular ejection fractions (R=-0.35, p=0.017). Endpoint incidence was lower in the LS group (22.2 vs. 45.0%, LS vs. HS; p=0.021). However, in patients with non-ischemic cardiomyopathy (n=29), endpoint incidence was similar in the LS and HS groups (26.1 vs. 16.7%, LS vs. HS; p=0.631).

Conclusions: QRS-estimated scar scores were found to be positively correlated with cardiac events after ICD implantation. However, this method has limited ability to predict risk in with patients with non-ischemic cardiomyopathy.

Keywords: myocardial scar, ventricular tachycarrhythmia, implantable cardioverter-defibrillator