

QRS Width in CRT Implantation - Its Association with Re-Admissions and Mortality

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Background: Cardiac resynchronization therapy (CRT) is commonly used in patients with heart failure and wide QRS. Whether QRS width before and after CRT implantation have prognostic implications is not clear.

Objectives: To examine the QRS width characteristics of patients before and after CRT implantation and compare their clinical outcomes.

Methods and Results: A retrospective cohort analysis of 157 patients (124 men; age 55-80 years) who underwent CRT implantation during 2004-2008 in our institute. A QRS before implantation of 140ms or less was documented in 82 patients (52%). Clinical characteristics of patients with baseline $QRS \leq 140$ ms were similar to those with baseline $QRS > 140$ ms. Patients with baseline $QRS \leq 140$ ms were less likely to have LBBB (59.8% vs. 78.7%, $p=0.02$) and more likely to have an intra-ventricular conduction delay (26.8% vs. 13.3%, $p=0.04$) as compared to patients with baseline $QRS > 140$ ms, respectively. The QRS difference before and after CRT implantation was 10 ms narrower in patients with $QRS \leq 140$ ms as compared to 20ms in patients with $QRS > 140$ ms, $p=0.001$). There was no difference in the rate of re-admissions during 1-year of follow-up (47.6% vs. 46.7% in $QRS \leq 140$ ms vs. $QRS > 140$ ms, respectively, $p=1.0$). The 1-year mortality of patients with $QRS \leq 140$ ms was higher as compared to patients with $QRS > 140$ ms (20.7% vs. 6.7%, respectively, $p=0.02$) but this difference in mortality was no longer statistically significant in a 2-year follow-up (26.8% vs. 17.3%, $p=0.1$). On multi-variate analysis, factors associated with 2-year mortality in both groups were chronic renal failure (HR 3.35, 95% CI 1.42-7.88) and pre-procedural RBBB pattern on the baseline ECG (HR 2.9, 95% CI 1.24-6.86).
Conclusions: One year mortality of patients with $QRS \leq 140$ ms is higher as compared to 1-year mortality of patients with $QRS > 140$ ms and this trend remains after a 2-year follow-up. Baseline RBBB is associated with a poor prognosis regardless of the baseline QRS width.