Abstract: P1533

Left ventricular lead position and right to left ventricular activation delay predict long-term clinical outcome after CRT implantation

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Background: There is limited data on the association of left ventricular (LV) lead position and long-term clinical outcome in patients after cardiac resynchronization therapy (CRT).

Purpose: We evaluated the mid-term echocardiographic response and long-term all-cause mortality of patients who underwent CRT implantation by LV lead non-apical positions and further characterized them by right to left ventricular activation delay (RV-LV AD).

Methods: In our retrospective registry patients after CRT implantation between 2004 and 2018 were registered. Those with non-apical LV lead locations were classified into anterior (n=34), posterior (n=202), and lateral (n=519) positions. Primary endpoint was all-cause mortality assessed by Cox multivariate analyses. Secondary endpoint was echocardiographic response within 12 months.

Results: From 753 patients 408 (54%) reached the primary endpoint during the mean follow up time of 4.3 years. Univariate analysis showed patients with lateral position had significantly better outcome compared to others (HR 0.78; 95% CI: 0.62–0.98; p=0.03), which was also confirmed by Cox analysis (HR 0.79; 95% CI: 0.64–0.97; p=0.02) after adjusting for relevant clinical covariates such as RV-LV AD. The mean value of RV-LV AD was 104.4±31 ms and was significantly longer in the lateral group. When echocardiographic response was evaluated within the lateral group, those with longer than 100 ms (ROC AUC 0.60, 95% CI: 0.51-0.69; p=0.03) showed the greatest benefit after CRT implantation.

Conclusions: After CRT implantation the most beneficial outcome was associated with the lateral LV lead position, moreover the greatest echocardiographic response was found when RV-LV AD was longer than 100ms in this group.