Clinical outcome of His Resynchronization versus Biventricular Pacing in heart failure: real world, single center experience

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**Introduction**: In cardiac resynchronization therapy (CRT) using biventricular pacing (BiV), one-third of them is non-responder. His-bundle pacing (HBP) correcting bundle branch block lead to restoration of mechanical and electrical resynchronization. Therefore His bundle pacing in lieu of a left ventricular lead (His-CRT) is proposed as an alternative method for cardiac resynchronization. There are case report and studies supporting the use of His-bundle pacing as cardiac resynchronization therapy. While the HIS-SYNC trial showed significant reduction in QRS duration and improvement in EF in His-CRT group, it failed to show difference in cardiovascular hospitalization and mortality between His-CRT and BiV-CRT. Thus the role of His-bundle pacing in cardiac resynchronization remains unclear. The objective of this study is to evaluate the clinical outcome in His-CRT versus BiV-CRT.

**Methods**: This is a retrospective review of patient with heart failure receiving device therapy in the period of 8/2018 to 1/2019. The end-point follow-up is up to 6 months. The primary outcome was major adverse cardiac event (MACE), comprising all-cause mortality, ventricular arrhythmia and hospitalization for heart failure. Patient with heart failure, defined as clinical heart failure or LVEF <35%, receiving His-CRT or BiV-CRT were included, pacing rate less than 90% were excluded to ensure adequate effect of His-CRT and BiV-CRT. The outcome variable was analyzed by time-to-first event survival analysis, Cox proportional hazard models was used to estimate hazard ratio and Kaplan-Meier analysis compared by log-rank test. Data was analyzed by Microsoft Excel 2010.

**Result**: A total number of 10 patients were included with 3 out of 10 receiving His-CRT and 7 out of 10 receiving BiV-CRT. In His-CRT group, 2 out of 3 patient developed heart failure (66%) while in BiV-CRT group, 3 out of 7 developed event (42%, 2 heart failure and 1 VT) (Hazard ratio: 0.702; p = 0.689).

**Conclusion**: There is no significant difference between His-CRT and BiV-CRT in term of clinical outcome. The limit of this study is the number of patient and heterogeneity of background of patient. On the other hand it reflects a real world experience in using His-CRT. Therefore further studies is needed to evaluate the possibility and feasibility of His-CRT and its role, for example: as alternative of Bi-V CRT, bail-out of Bi-V CRT or complementary of BiV-CRT.