Prognostic impact of heart mate risk score among elderly heart failure patients with non-responder for cardiac resynchronization therapy

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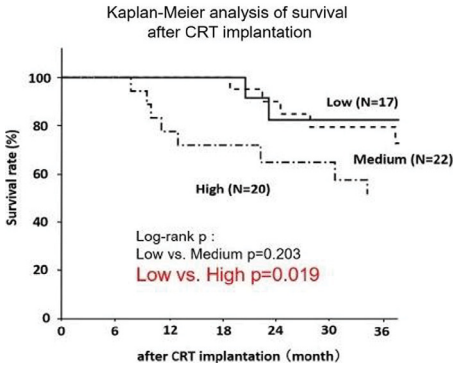
Background: For patients with severe heart failure (HF) who are not eligible for transplantation, there is destination therapy (DT) that uses a continuous flow left ventricular assist device (LVAD). Implantation of LVAD improves HF and can be expected to improve the prognosis of life. Elderly refractory HF patients with non-responders for cardiac resynchronization therapy (CRT) may benefit from LVAD as DT. In considering indications of LVAD as DT for the elderly in Japan, conditions such as a low risk of Heart Mate Risk Score (HMRS) have been raised. HMRS has been shown to correlate with mortality in the cohort of LVAD patients enrolled in the Heartmate II trials.

Purpose: Because elderly CRT non-responder refractory HF patients are not indicated for transplantation and may benefit from LVAD as DT in Japan, we aimed to investigate the HMRS and prognosis among elderly CRT non-responders.

Methods: Of 467 patients underwent CRT implantation between 2000 and 2015, 157 were aged 65–75 years old. Of which 59 patients who could be determined to be non-responders based on echocardiographic data were included in this study. The primary endpoint was all-cause mortality, the secondary was readmission for HF and appropriate implantable cardioverter defibrillator (ICD) therapy.

Results: The patients' mean age was 68 years, males were 71%. The mean serum creatinine value was 1.1 mg/dl, albumin was 3.8 mg/dl, and BNP was 383 pg/ml. The mean left ventricular ejection fraction (LVEF) was 26%. The subjects were divided into 3 groups according to HMRS. The average of HMRS was 2.2, the low-risk group included 17 (29%) patients, the medium was 22 (37%), and the high was 20 (34%). There was no significant difference in age, LVEF, BNP, and NYHA functional classification at the time of CRT implantation between three groups. In the low-risk group, creatinine and INR were significantly lower, and albumin was significantly higher compared to the high-risk group. BNP tended to be lower in the low-risk group, but there was no significant difference. The mortality rate by HMRS was 12% in the low-risk group, 36% in the medium-risk group, and 50% in the high-risk group. On the Kaplan-Meier analysis, the low-risk group had a significantly lower mortality rate than the high-risk group (Figure). Furthermore, focusing on HF readmission, the rate of readmission was 59% in the low-risk group, 86% in the medium -risk group, and 65% in the high-risk group, and there was no significant difference between three groups. There was also no significant difference in appropriate ICD therapy between three groups.

Conclusion: Approximately 30% of elderly non-responders of CRT are in the low-risk group by HMRS and their mortality was lower than that of the other two groups. These elderly CRT non-responder patients might be considered a candidate for DT in Japan.



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