Left-side heart structures and association with all-cause mortality in patients with hypertrophic cardiomyopathy following pacemaker implantation: Results from a single center

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Introduction: The association between left atrial diameter (LAD), left ventricular end-diastolic diameter (LVEDD), and long-term risk of all-cause mortality in adults with hypertrophic cardiomyopathy (HCM) following pacemaker implantation has not been well examined.

Methods: A total of 103 adult patients with HCM admitted to our Arrhythmia Center for symptomatic bradycardia and received pacemaker implantation from November 2002 to June 2013 were enrolled. During follow-up, 9 were excluded for generator upgrading of an implantable cardiac defibrillator (ICD). We retrospectively evaluated the clinical characteristics in 94 patients (57.0 ± 15.9 years, mean follow-up 7.3 ± 3.4 years).

Result: The mean LAD was 41.7 ± 7.8 mm and the mean LVEDD was 45.7 ± 6.6 mm. Overall, 25 died during follow-up, of which 68% were cardiovascular death. Based on the receiver operating characteristic curve, the cut-off value of LAD = 43.5 mm was identified to predict all-cause mortality, with sensitivity and specificity of 0.722 and 0.732, respectively. The cut-off value of LVEDD = 42.5 mm was identified to predict all-cause mortality, with sensitivity and specificity of 0.944 and 0.482, respectively. In the Kaplan-Meier survival, LAD ≥ 43.5 mm and LVEDD ≥ 42.5 mm were both associated with all-cause mortality (log-rank test P < 0.05). Cox regression analysis indicated that LAD ≥ 43.5 mm (HR 3.254; 95%CI=1.043-10.158, P=0.042) and LAD as a continuous variable (HR 1.072; 95%CI=1.009-1.139, P=0.025) were significantly independent predictors of all-cause mortality, while LVEDD ≥ 42.5 mm was not significantly associated with all-cause mortality in the multivariate model but in the univariate model.

Conclusion: In HCM patients with pacemaker implantation, LAD was an independent predictor for all-cause mortality, especially with a cut-off value of 43.5 mm.