The Incidence and Predictors of Newly Detected Atrial Fibrillation in Patients with Hypertrophic Cardiomyopathy following Cardiac Electrophysiological Device Implantation

Hiroshi Hayashi  
Toshiki Arai  
Masato Hachisuka  
Rei Mimuro  
Noriyuki Kobayashi  
Yujin Maru  
Yuhi Fujimoto  
Eiichiro Oka  
Kanako Hagiwara  
Teppei Yamamoto  
Akinori Sairaku  
Kenji Yodogawa  
Hiroshige Murata  
Yuki Iwasaki  
Wataru Shimizu

**Introduction** : Atrial fibrillation (AF) is an important prognostic parameter in patients with hypertrophic cardiomyopathy (HCM). However, the incidence and predictors of newly-detected AF in patients with HCM and cardiac implantable electrophysiological devices (CIEDs) has not been fully elucidated.

**Methods** : Seventy-three patients (44 men, age 60±16 years) with HCM who underwent CIED implantation (ICD n=61, Pacemaker n=11, CRTD n=1) were enrolled in the study. The clinical parameters, incidence of newly-detected AF and impact on inappropriate shock were evaluated. During follow-up, patients were screened for adverse events including stroke, heart failure, or death.

**Result** : Among the all patients, 56 (77%) patients had no previous history of AF at the time of implantation. During 6±4 years of follow-up, AF was newly detected in 20 (36%) of 56 patients. Compared the patients who had newly-detected AF (Newly-detected AF group n=20) and who did not (Non-AF group n=36), patients in Newly-detected AF group had larger left atrial diameter (LAD) (45±6mm vs. 38±6mm p<0.01), higher prevalence of New York Heart Association (NYHA) (III/IV) (50% vs. 17% p=0.01) and more patients received percutaneous septal ablation (55% vs. 28% p=0.04) compared to Non-AF group. After Cox regression analysis, LAD (HR:1.11 per unit increase; 95% CI: 1.01-1.23) and concomitant NYHA (III/IV) (HR:3.90; 95% CI: 1.34-12.3) were the independent predictors of newly-detected AF. Compared the patients with AF (n=37) and without AF (n=36), the rate of appropriate therapy (25% vs. 17%, log-rank P=0.95) and inappropriate therapy (15% vs. 8% log-rank P=0.78) was similar between the two groups. However, all the cause of inappropriate therapy in patients with AF was false interpretation of tachycardic AF. During the follow-up, ischemic stroke was documented in only 1 patient without AF. Hospitalization due to heart failure was seen in 8 patients, amiodarone induced intestinal pneumonia was documented in 2 patients and death occurred in 3 patients.

**Conclusion** : The incidence of newly-detected AF was high in patients with HCM who underwent
CIED implantation. HCM patients with dilated left atrium and concomitant NYHA III/IV are at a high risk of newly-detected AF and careful follow up is recommended.