Clinical significance of cardiac arrhythmias on readmission and cardiac death in hospitalized patients with heart failure

Shinya Yamada
Masashi Kamioka
Takashi Kaneshiro
Yasuchika Takeishi

**Introduction**: The parameters obtained from Holter monitoring provide useful information on the clinical management of various cardiac diseases. The present study aimed to clarify the impact of atrial fibrillation (AF) and non-sustained ventricular tachycardia (NSVT) on risk stratification of heart failure (HF) patients.

**Methods**: We studied 435 HF patients (males, 62%; mean age, 65 years). All patients were hospitalized for the treatment of acute decompensated HF. After optimal medications, 24-hour Holter monitoring was performed in stable condition before discharge. The clinical characteristics, Holter ECG results and outcomes after discharge were investigated.

**Result**: During the follow-up (3.4±2.1 years), there were 120 (27.5%) cardiac events (71 re-hospitalizations due to worsening HF and 49 cardiac deaths). The patients with cardiac events had higher prevalence of AF (>5 sec) and NSVT (>3 beats) during the Holter monitoring compared to those without (AF, 36.6% vs. 26.3%, P=0.034; NSVT, 46.6% vs. 26.3%, P<0.001). The multivariable Cox proportional hazard analysis showed that AF and NSVT were significant risk factors of cardiac events with hazard ratios (HR) of 1.564 (P=0.012) and 1.643 (P=0.008), respectively, after the adjustment of multiple confounders. The study subjects were then divided into three groups based on their combination of AF and NSVT. The patients were given 1 point each for the presence of AF and/or NSVT: score 0 (n=214), score 1 (n=176) and score 2 (n=45). Cardiac events were 18.6% in score 0, 34.0% in score 1 and 44.4% in score 2, respectively (P<0.001, Figure 1A). When compared with score 0, the multivariable Cox proportional hazard analysis showed that scores 1 and 2 had hazard ratios of 2.091 and 2.913, respectively, for cardiac events (Figure 1B).

**Conclusion**: The presence of AF and NSVT was significantly associated with cardiac events in hospitalized patients with HF.