Baroreflex sensitivity is associated with the incidence of ventricular fibrillation in patients with the augmentation of J-wave

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Introduction: J-waves are seen in both patients with idiopathic ventricular fibrillation (VF) and the general population. J-waves exhibited diurnal variability or bradycardia-dependent augmentation characteristics in patients with idiopathic VF, suggesting an association between autonomic nervous activity and the occurrence of VF. Baroreflex sensitivity (BRS) is believed to reflect reactive parasympathetic nerve activity. We investigated the relationship between VF occurrence and BRS in patients with the augmentation of J-wave.

Methods: We enrolled 12 consecutive patients with idiopathic VF (early repolarization syndrome group: ERS) and 29 control subjects who had manifested J-waves (control group: CNT). We investigated their BRS by phenylephrine method. Furthermore, all 12 ERS patients were examined cardiac 123I-metaiodobenzylguanidine (MIBG) scintigraphic findings. Implantable cardioverter-defibrillators (ICDs) were implanted in all 12 patients, and 3 patients experienced ICD shock delivery due to the recurrence of VF after ICD implantation (recurrent VF group).

Result: BRS value in ERS patients was significantly higher than that in CNT subjects (10.0±3.1 vs 6.0±5.1 mmHg/sec, P=0.014). Furthermore, in ERS patients, BRS value in recurrent VF group was significantly higher compared with that in non-recurrent VF group (13.5±2.3 vs 8.9±2.4 mmHg/sec, P=0.015). On the other hand, in the 123I-MIBG testing, the mean heart-to-mediastinum (H/M) ratio and washout rate (WR) was not significantly different between recurrent VF and non-recurrent VF groups (early H/M: P=0.67, delayed H/M: P=0.33, WR: P=0.45).

Conclusion: Our results suggest that the increased BRS value by phenylephrine method may be a useful tool to identify the high risk of VF in subjects with augmentation of J-waves.