Heart Rate Turbulence in Patients with Systolic Heart Failure

Yumiko Tsutsumi, Etsuko Hayama, Shinya Suzuki, Kouichi Sagara, Takayuki Ohtsuka, Yuji Oikawa, Junji Yajima, Akira Koike, Kazuyuki Nagashima, Hajime Kirigaya, Takeshi Yamashita

The Cardiovascular Institute Hospital, Japan

Objective: To assess the heart rate turbulence (HRT) in patients with systolic dysfunction. Methods: From Shinken Database 2004-8 including all the new patients (n=11123), 68 patients (aged 58.9 years; 12 women) with low EF (EF<40%) underwent ambulatory Holter recordings (Holter) for HRT assessment. Results were compared with those in 74 normal controls (aged 47.9 years; 25 women). Results: In low EF patients, the median turbulence onset (TO) was significantly higher (-0.21±1.24 vs -2.75±2.11, p<0.01) and the median turbulence slope (TS) was lower (2.58±2.71 vs 10.61±5.86, p<0.01) than in controls. Abnormal HRT (TO>0% and TS<2.5ms/RR) was found in 21% of low EF patients. During the follow-up period, ventricular tachycardia tended to occur frequently in these patients with abnormal HRT (38.7% vs. 52.5%). However, no significant differences were observed in the mortality and admission rate for heart failure in our particular small number of patients and during relatively short follow-up period. Conclusion: In low EF patients, TO was significantly higher and TS was significantly lower than in normal controls. However, in our study population, we could not observe any significant relations of these variables to cardiac mortality and morbidity. Future studies are needed to evaluate the validity and availability of HRT in clinical practice.

Keywords: HRT, Holter ECG, EF