

### Long-term serial changes of cardiac sympathetic nerve dysfunction in acute decompensated heart failure patients with reduced, mid-range and preserved left ventricular ejection fraction

M. Seo, T. Yamada, T. Watanabe, T. Morita, Y. Furukawa, S. Tamaki, M. Kawasaki, A. Kikuchi, T. Kawai, M. Fukunami

Osaka General Medical Center, Cardiology, Osaka, Japan

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**Background:** Cardiac sympathetic nerve dysfunction, which is assessed by I-123 metaiodobenzylguanidine (MIBG) imaging, is associated with the poor outcomes in patients with chronic heart failure (CHF). Serial evaluation of cardiac MIBG imaging was shown to be useful for predicting adverse outcome in CHF. However, there was no information available on long-term serial changes of cardiac sympathetic nerve dysfunction after discharge of acute decompensated heart failure (ADHF) hospitalization.

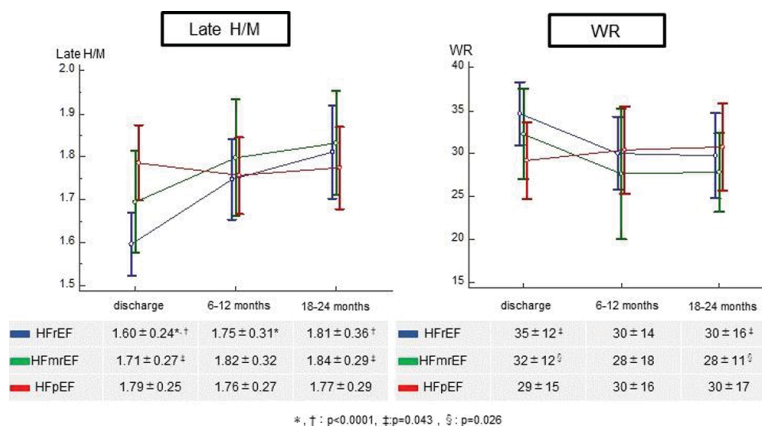
**Purpose:** We aimed to clarify the serial change of cardiac MIBG imaging parameter in long-term after discharge of heart failure hospitalization, especially relating to HF<sub>r</sub>EF (LVEF < 40%), HF<sub>mr</sub>EF (40% ≤ LVEF < 50%) and HF<sub>p</sub>EF (LVEF ≥ 50%).

**Methods:** We studied 112 patients (HF<sub>r</sub>EF; n=44, HF<sub>mr</sub>EF; n=23 and HF<sub>p</sub>EF; n=45) who were admitted for ADHF, discharged with survival and without heart failure hospitalization during follow-up period. All patients underwent cardiac MIBG imaging at the timing of discharge, in 6–12 months and in 18–24 months after discharge. The cardiac MIBG heart to medi-

astinum ratio (H/M) was calculated on the early image and the delayed image (late H/M). The cardiac MIBG washout rate (WR) was calculated from the early and delayed planar images after taking radioactive decay of I-123 into consideration.

**Results:** In HF<sub>r</sub>EF patients, late H/M was significantly improved from discharge to 6–12 months data (1.60±0.24 vs 1.75±0.31, p<0.0001). Late H/M of HF<sub>mr</sub>EF patients was also significantly improved from discharge to 18–24 months data (1.71±0.27 vs 1.84±0.29 p=0.043). On the other hand, late H/M of HF<sub>p</sub>EF patients was not significantly changed. As for WR, WR in HF<sub>r</sub>EF and HF<sub>mr</sub>EF patients was significantly improved from discharge to 18–24 months data, although WR of HF<sub>p</sub>EF was not significantly changed.

**Conclusion:** The improvement in cardiac sympathetic nerve dysfunction was observed in patients with HF<sub>r</sub>EF and HF<sub>mr</sub>EF, not in HF<sub>p</sub>EF, after the discharge of acute heart failure hospitalization.



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