

## Assessment of myocardial washout of Tc-99m-sestamibi in patients with chronic heart failure: Comparison with normal control

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**Background:** In contrast to  $^{201}\text{TlCl}$ ,  $^{99\text{m}}\text{Tc}$ -sestamibi shows very slow myocardial clearance after its initial myocardial uptake. In the present study, myocardial washout of  $^{99\text{m}}\text{Tc}$ -sestamibi was calculated in patients with non-ischemic chronic heart failure (CHF) and compared with biventricular parameters obtained from first-pass and ECG-gated myocardial perfusion SPECT data. **Methods and Results:** After administration of  $^{99\text{m}}\text{Tc}$ -sestamibi, 25 patients with CHF and 8 normal controls (NC) were examined by ECG-gated myocardial perfusion SPECT and planar data acquisition in the early and delayed (interval of 3 hours) phase. Left ventricular ejection fraction (LVEF, %), peak filling rate (PFR,  $\text{sec}^{-1}$ ), end-diastolic volume (LVEDV, ml) and end-systolic volume (LVESV, ml) were automatically calculated from the ECG-gated SPECT data. Myocardial washout rates over 3 hours were calculated from the early and delayed planar images. Myocardial washout rates in the CHF group ( $39.6 \pm 5.2\%$ ) were significantly higher than those in the NC group ( $31.2 \pm 5.5\%$ ,  $p < 0.01$ ). The myocardial washout rates for the 33 subjects showed significant correlations with LVEF ( $r = -0.61$ ,  $p < 0.001$ ), PFR ( $r = -0.47$ ,  $p < 0.01$ ), LVEDV ( $r = 0.45$ ,  $p < 0.01$ ) and LVESV ( $r = 0.48$ ,  $p < 0.01$ ). **Conclusion:** The myocardial washout rate of  $^{99\text{m}}\text{Tc}$ -sestamibi is considered to be a novel marker for the diagnosis of myocardial damage in patients with chronic heart failure.

**Key words:**  $^{99\text{m}}\text{Tc}$ -sestamibi, myocardial washout, chronic heart failure