

Prognostic value of myocardial MIBG scintigraphy findings in patients with cardiomyopathy—importance of background correction for quantification of MIBG activity

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Objective: To assess the prognostic value of I-123 metaiodobenzylguanidine (MIBG) scintigraphy findings, and establish the most appropriate method for calculating myocardial MIBG activity in patients with left ventricular dysfunction due to cardiomyopathy (CM). **Methods:** Predictors of cardiac death related to progressive heart failure (HF) were examined in 150 patients with CM (80 patients with idiopathic CM and 70 patients with ischemic CM). All patients underwent MIBG scintigraphy at rest and other hemodynamic studies when their clinical status was stable. MIBG scintigrams were obtained 15 minutes and 4 hours after the injection of the isotope. The parameters for quantification of myocardial MIBG activity were heart/mediastinal activity ratio (H/M) and myocardial washout rate (WR). The WR was calculated with and without background (BG) correction. **Results:** The WR showed better correlation with plasma norepinephrine and left ventricular ejection fraction after BG correction. During a mean follow-up period of 33 ± 9 (7 to 54) months, 12 patients died due to HF; 7 patients due to progressive HF and 5 patients due to sudden cardiac death. Cox regression analysis indicated, the H/M and the WR with and without BG correction, were significant predictors of cardiac death (Wald chi-squared value: H/M [15 min] = 9.7, H/M [4 hr] = 19.5, WR with BG correction = 29.9, WR without BG correction = 12.6). WR prognostic value was better after BG correction, and a high WR with BG correction was the only independent predictor of cardiac death (relative risk [RR] = 1.174, $p < 0.0001$). **Conclusions:** Accelerated WR is a powerful predictor of the patient's prognosis and BG correction is essential for calculating WR.

Key words: prognosis, cardiomyopathy, MIBG imaging, background correction