

# Beta-Adrenergic Receptor Imaging

<sup>1</sup>Masayuki Inubushi, <sup>2</sup>Takahiro Tsukamoto, <sup>2</sup>Masanao Naya, <sup>3</sup>Koichi Morita and <sup>3</sup>Nagara Tamaki.

<sup>1</sup>Departments of Molecular Imaging, <sup>2</sup>Department of Cardiovascular Medicine, and <sup>3</sup>Department of Nuclear Medicine, Hokkaido University Graduate School of Medicine, Sapporo, Japan

## Abstract

**Objectives:** Cardiac sympathetic function plays an important role in regulation of left ventricular (LV) function and pathophysiology of LV dysfunction. C-11-labeled CGP-12177 (CGP) has been used to assess myocardial beta-adrenergic receptor density (Bmax) in vivo using PET. The aims of this study were to measure myocardial beta-adrenergic receptor density (Bmax) in vivo using C-11-labeled CGP-12177 (CGP) and PET in patients with LV dysfunction and to elucidate relationship between Bmax and severity of heart failure. **Methods:** CGP PET was performed in 20 patients with LV dysfunction (LVEF=34±11%) and Bmax of LV was calculated based on a graphical analysis method. Bmax was compared with ANP, BNP, NE, LVEF and parameters from I-123 MIBG imaging. **Results:** Bmax in patients with LV dysfunction was significantly lower than that in normal volunteers (5.3 ±1.5 vs 10.7±2.2 pmol/ml, p<0.001). Bmax in patients did not significantly correlate with ANP, BNP, NE or LVEF, but with myocardial washout rate of I-123 MIBG inversely. **Conclusion:** Our results suggested that Bmax measured using CGP PET was a new parameter for severity of heart failure and reflected down-regulation of beta-adrenergic receptors caused by increased myocardial sympathetic nerve activity.

*MEMO*