

## Regional cardiac sympathetic reinnervation in transplanted human hearts detected by $^{123}\text{I}$ -MIBG SPECT imaging

Mitsuru MOMOSE,\* Hideki KOBAYASHI,\* Haruhiko Ikegami,\*\* Naoki MATSUDA,\*\*  
Mitsuhiro HACHIDA,\*\*\* Hiroshi KASANUKI\*\* and Kiyoko KUSAKABE\*

\**Department of Radiology, Tokyo Women's Medical University*

\*\**Department of Cardiology and \*\*\*Cardiac Surgery, The Heart Institute of Japan,  
Tokyo Women's Medical University*

The purpose of this study was to assess the regional cardiac sympathetic reinnervation late ( $\geq 1$  year) after heart transplantation (HTX) by means of  $^{123}\text{I}$ -MIBG (MIBG) scintigraphy. Eight patients with a pretransplantation diagnosis of idiopathic dilated cardiomyopathy underwent MIBG scintigraphy more than one year after HTX. The presence or absence of regional MIBG uptake was evaluated in each SPECT image, and global MIBG uptake was semi-quantitatively assessed by the heart to mediastinum ratio (H/M). Five of 8 patients had visible MIBG uptake in both planar and SPECT images (PU group), whereas 3 of 8 patients had no uptake, 2 of them after a period of 2 years, and one of them as long as 5 years after HTX, respectively (NU group). Positive regional MIBG uptake involved the basal anterior region in all 5 patients, the basal septal region in 4 patients, the basal lateral region in 3 patients and the basal posterior region in 1 patient. The H/M value was  $1.24 \pm 0.10$  in the PU group and  $1.09 \pm 0.03$  in the NU group. In conclusion, MIBG SPECT can detect regional sympathetic reinnervation, indicating that basal septal and lateral regions next to the basal anterior are more likely to be reinnervated, but reinnervation is much less likely to occur in the mid-ventricular and apical regions.

**Key words:** transplantation,  $^{123}\text{I}$ -metaiodobenzylguanidine (MIBG) SPECT, reinnervation, denervation