

# **Assessment of Misery Perfusion using Perfusion Weighted MR Imaging : Comparison with Positron Emission Tomography Study**

Hidehiko Endo, Takashi Inoue, Kuniaki Ogasawara, Hirotsugu Yukawa,  
Satoshi Ota, Akira Ogawa

Department of Neurosurgery, Iwate Medical University  
19-1 Uchimaru, Morioka 020-8505, Japan

## **Abstract**

We generated cerebral hemodynamic parameters such as regional cerebral blood flow (CBF) and regional cerebral blood volume (CBV) from perfusion magnetic resonance imaging (perfusion weighted imaging: PWI) after intravenous bolus injection of contrast agent. Our purpose was to compare the cerebral hemodynamic parameters obtained by PWI with positron emission tomography (PET). Twelve patients with chronic stenooclusive disease in a unilateral major cerebral artery underwent PWI and PET. One region of interest (ROI) was set on the cortex of affected side in the middle cerebral artery territory. Twelve ROIs were obtained in twelve patients. In PET, CBF was measured before and after intravenous administration of acetazolamide to calculate CVRC. CVRC was calculated as follow:  $CVRC (\%) = ([\text{acetazolamide challenge CBF} - \text{resting CBF}] / \text{resting CBF}) \times 100$ . Significant correlation was observed between CBF values obtained by PWI and PET ( $R=0.649$ ;  $p=0.0224$ ). There was no significant correlation between CVRC values obtained by PET and CBV values obtained by PET. On the contrary, CVRC values obtained by PET was significantly and negatively correlated with CBV values obtained by PWI ( $R=-0.794$ ;  $p=0.002$ ). These findings demonstrate that CBV values obtained by PWI provide important clinical information for evaluating the degree of CVRC in patients with chronic ischemia.