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CEREBRAL BLOOD FLOW MEASUREMENT BY SPECT (CEREBRAL VASCULAR RESPONSE TO DIAMOX).
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Cerebral blood flow (CBF) was measured in 90 stroke patients before and after intravenous administration of Diamox (acetazolamide) injection by using TOMOMATIC-64 which is a device of SPECT for CBF study. 133-Xe inhalation method was used. The difference between CBF before and after Diamox injection was calculated in each pixel. These values were divided into 16 color grades and reconstructed into a picture. In normal cases, CBF in each pixel increased 20-30% after Diamox administration. In acute stage of ischemic cerebral vascular disease, CBF was less increased in the ischemic region. In the case of bilateral internal carotid artery occlusion, intracranial steal phenomenon was observed before internal carotid to posterior cerebral artery bypass operation by using saphenous vein. After surgery the phenomenon disappeared. In the case of Moyamoya disease CBF was less increased in cerebral cortex. The response to Diamox is useful for the study of cerebral hemodynamics.

REGIONAL CEREBRAL BLOOD FLOW MEASUREMENT BY Xe-133 INHALATION AND ECT WITH GAMMA CAMERAS, QUANTITATIVE ANALYSIS. K. Matsumura, H. Maeda, S. Toyota, T. Nakagawa, T. Kitano, N. Shindo, M. Kakugawa, and S. Matsui. Department and Clinical Lab. of Radiology, Mie University Hospital, Tsu and Toshiba Co., Nasu.

A method for measurement of regional cerebral blood flow (rCBF) by Xe-133 inhalation and ECT with gamma cameras was investigated. The preliminary experiment on this convenient and noninvasive method reported at the previous meeting was further investigated in this study. Using an ECT system (Toshiba GCA-70AS) with dual opposed gamma cameras fitted with high sensitivity collimators, a sequence of ECT scan was performed with a rotation speed of 180/30sec. during and after a 1 min. administration of Xe-133 (30 mCi/1). Following the integration of 30sec. data into one-minute data, the tomographic images were reconstructed using convolution algorithm. According to the method proposed by Kanno and Lassen functional images were constructed. "Early picture method", yielding better quality of images and revealing more definitive evidence of decreased rCBF due to cerebral infarction, was considered to be better method as compared with "sequence of pictures method". The method for quantitation of rCBF following correction of Compton's scatters was also investigated.