

Evaluation CBF, OEF, CMRO₂ using PET : comparison with SS method and ARG method

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Abstract

The aim of the present study was to evaluate quantitative analyze of cerebral blood flow (CBF), and oxygen extraction fraction (OEF), and cerebral metabolic rate of oxygen (CMRO₂), using [15O] CO₂, O₂ and H₂O.

METHODS: The autoradiography (ARG) and the steady-state method (SS) using PET were used to measure CBF, OEF, and CMRO₂. This study was performed to compare between SS method and ARG method. To obtain the AD (Alzheimer disease), PD (Parkinson's Disease), Degenerative disease, resting CBF, OEF, CMRO₂, the ARG method and the SS method were performed on 107 normal subjects. **RESULTS:** It was confirmed that the correlation was extremely high in SS method and ARG method. But ARG method is short time PET study (About 90sec or 270cc) in general. White matter CBF and the cerebral cortex CBF had slight less SS method than ARG method. It is guessed that the reason for the ARG method is that the diffusivity of H₂-¹⁵O rebel water is high. The Quantitative values of CBF, OEF, and CMRO₂ were somewhat different depending on anatomical grounds.