

Summary

Assessment of a New Non-Invasive Cerebral Blood Flow Determination Method Using the Brain Uptake Ratio of ^{99m}Tc -ECD

Yoshiharu MIYAZAKI*¹, Yoshihiko MIZUTA*², Katsutoshi HONDA*³,
Yasuo NIIO*⁴, Hiroyuki SHINOHARA*⁵, Seigo KINUYA*⁶,
Masaaki HASHIMOTO*⁷ and Hiroshi MATSUDA*⁸

*¹Section of Nuclear Medicine, Noto General Hospital

*²Daichi Radioisotope Laboratories, Ltd.

*³Section of Radiology, Takeda General Hospital

*⁴Section of Nuclear Medicine, Fijigaoka Hospital of Showa University

*⁵Department of Radiology, Fijigaoka Hospital of Showa University

*⁶Department of Nuclear Medicine, Kanazawa University School of Medicine

*⁷Section of Neurosurgery, Noto General Hospital

*⁸Division of Radiology, National Center Hospital for Mental, Nervous, and Muscular Disorders, NCNP

We modified the method of calculating brain uptake ratio (BUR) reported previously, and devised a new non-invasive cerebral blood flow measurements for ^{99m}Tc -ECD that does not require blood sampling. This method yields BUR that is not influenced by the gamma camera type and the choice of acquisition – reconstruction conditions, when corrected by the SPECT/Planar cross calibration coefficient. A good correlation was observed between the BUR obtained

by this method and the cerebral blood flow (CBF) obtained by the ^{123}I -IMP continuous arterial blood sampling method. And based on these results, it is now possible to convert BUR to CBF. This method is applicable to small field type of gamma cameras, and it is expected to be useful as a routine test.

Key words: ^{99m}Tc -ECD, Brain uptake ratio, Patlak plot, Brain perfusion index, Cross calibration.