Summary

Estimation of Integral of Input Function for Quantification of Cerebral Blood Flow with N-Isopropyl-p-[123I]Iodoamphetamine Using One-Point Venous Blood Sampling


*Department of Radiology, Matsuyama Shimin Hospital  
**Department of Neurosurgery, Matsuyama Shimin Hospital  
***Department of Radiology, Ehime University Hospital

The present study was designed to investigate a possibility of substitution of the venous blood radioactivity counts sampled 26 min post injection for the octanol-extracted arterial blood radioactivity counts obtained at 5 min after the injection of N-isopropyl-p-[123I]Iodoamphetamine (123I-IMP). Furthermore, we investigated whether the integral of input function can be estimated from the venous blood radioactivity counts sampled 26 min post injection and the whole-brain time-activity curves early after 123I-IMP injection. There was a good correlation between the arterial blood radioactivity counts sampled 26 min post injection and the whole-brain time-activity curves acquired during 7 min post injection (y) and those obtained by 5-min continuous arterial blood sampling (x) (r = 0.965; n = 41; y = 0.957x + 2665.208). These results indicate that this noninvasive and simple method can estimate the integral of input function for quantification of cerebral blood flow using 123I-IMP.

Key words: 123I-IMP, Input function, Cerebral blood flow, Venous blood sampling, Continuous arterial blood sampling.