

## Quantifying brain tumor blood flow by the microsphere model with N-isopropyl-p-[<sup>123</sup>I]iodoamphetamine super-early SPECT

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Regional cerebral blood flow was quantitatively measured in 6 patients with brain tumor by the microsphere model with N-isopropyl-p-[<sup>123</sup>I]iodoamphetamine (IMP) “super-early” single photon emission computed tomography (SPECT) images obtained 4–6 min after IMP injection with a three-head rotating gamma camera. The ratio of radioactivities (counts/pixel/min) in the “early” SPECT images (taken 25–55 min after IMP injection) to the “super-early” images of the brain tumors was  $1.47 \pm 0.13$  (mean  $\pm$  SD,  $n = 6$ ), which was significantly lower than the ratio in the normal cerebral cortices ( $1.93 \pm 0.25$ ) ( $p < 0.01$ ). This indicates faster clearance of IMP from the tumor tissue than that from the normal brain tissue. Blood flow values for the brain tumors obtained by the microsphere model based on the “super-early” SPECT images were  $39.3 \pm 12.4$  ml/100 g/min, which was similar to the blood flow values for normal gray matter and in agreement with previous studies with positron emission tomography.

**Key words:** cerebral blood flow, brain tumor, [<sup>123</sup>I]IMP, SPECT, microsphere model