Annals of Nuclear Medicine Vol. 12, No. 4, 217–220, 1998

Visualization of pressure-dependent luxury perfusion in a patient with subacute cerebral infarction

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Luxury perfusion characterized by depressed metabolism compared with CBF might be changed by decreasing cerebral perfusion pressure during the sitting position. A 77-yr-old man with subacute cerebral infarction was studied with brain X-ray computed tomography (CT), raise-up test with ^{99m}Tc-d,l-hexamethylpropyleneamine oxime (HMPAO) brain single photon emission tomography (SPECT) and positron emission tomography (PET). Brain X-ray CT revealed a low-density area in the left middle cerebral artery (MCA) anterior area. Raise-up ^{99m}Tc-HMPAO brain SPECT revealed decreased uptake in the left MCA anterior area in the sitting position and subsequent supine ^{99m}Tc-HMPAO brain SPECT revealed hot accumulation there. PET study in the supine position demonstrated some differences between CBF and the cerebral metabolic rate for oxygen in the left MCA anterior area, indicating luxury perfusion. CBF in the area of luxury perfusion might be decreased during the sitting or standing position and increased during the supine position by dysautoregulation of the cerebral vessels in the luxury perfusion during the subacute infarct.

Key words: luxury perfusion, cerebral autoregulation, raise-up ^{99m}Tc-HMPAO brain SPECT