

Benzodiazepine receptor imaging with iomazenil SPECT in aphasic patients with cerebral infarction

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To investigate the relationship between prognosis of aphasia and neuronal damage in the cerebral cortex, we evaluated the distribution of central-type benzodiazepine receptor (BZR) binding in post-stroke aphasics with [^{123}I]iomazenil and SPECT. We performed iomazenil SPECT in six aphasic patients (aged from 45 to 75 years; all right-handed) with unilateral left cerebral infarction. Three patients showed signs of Broca's aphasia and the other three Wernicke's aphasia. Cerebral blood flow (CBF) imaging was performed with [^{123}I]iodoamphetamine (IMP). The regions of interest (ROIs) on both images were set in the cerebral cortex, cerebellar cortex and language-relevant area in both hemispheres. Three patients were classified in the mild prognosis group and the other three in the moderate prognosis group. The left language-relevant area was more closely concerned with the difference in aphasic symptoms than the right one in both BZR and CBF distribution, but the ipsilateral to the contralateral ratio (I/C ratio) in the language-relevant areas in the BZR distribution was significantly lower in the moderate prognosis group than in the mild prognosis group, although no difference was seen for these values between the two groups in the CBF distribution. These results suggest that BZR imaging, which makes possible an increase in neuronal cell viability in the cerebral cortex, is useful not only for clarifying the aphasic symptoms but also for evaluating the prognosis of aphasia in patients with cerebral infarction.

Key words: benzodiazepine receptors, cerebral blood flow, single photon emission computed tomography, aphasia, cerebral infarction