

Correct localization of epileptogenic focus with I-123 iomazenil cerebral benzodiazepine receptor imaging: a case report of temporal lobe epilepsy with discordant ictal cerebral blood flow SPECT

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A 26-year-old female with intractable epileptic seizures was studied with I-123 iomazenil cerebral benzodiazepine receptor, I-123 IMP inter-ictal and Tc-99m ECD ictal cerebral blood flow SPECT. The ictal cerebral blood flow SPECT indicated the location of the seizures to be in the left temporal lobe, where increased regional cerebral blood flow was noted in marked contrast to the inter-ictal SPECT. Ictal electroencephalograms (EEGs) recorded with scalp and sphenoidal electrodes also suggested the left temporal lobe as the location of the seizures. On I-123 iomazenil SPECT, however, decreased benzodiazepine receptor density was demonstrated in the right temporal lobe. MRI showed mild atrophy and abnormal signal intensity in the right temporal lobe. Ictal EEGs recorded with intracranial electrodes revealed that abnormal electrical activity of the brain always emerged from the right temporal lobe and then propagated to the contralateral side. Based on the findings of intracranial EEGs, partial resection of the right anterior temporal lobe including hippocampus was performed. After the surgery, no seizure occurred. Pathological examination of the surgical specimens revealed hippocampal sclerosis. This case suggested that cerebral benzodiazepine receptor imaging with I-123 iomazenil can be helpful for correct localization of epileptogenic foci.

Key words: I-123 iomazenil, benzodiazepine receptor, epilepsy, cerebral blood flow, SPECT