I-123 iomazenil SPECT in patients with mental disorders

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The purpose of this study is visual evaluation of the distribution of I-123 iomazenil in the brains of patients with various types of mental disorder and to examine whether chronic administration of a clinical dose of benzodiazepine (BZ) affects the binding of I-123 iomazenil to BZ receptors (BZR). The subjects were 10 patients with mental disorders (3 males and 7 females) with a mean age of 26.8 yrs (range 19–39 yrs). Four of 10 patients were administered BZ for over 3 months and the other six were free of BZ for over one month. The SPECT images were obtained at 5–25 min (early) and 170–190 min (delayed), after the bolus i.v. injection of 167 MBq of I-123 iomazenil, with a triple-head gamma camera. The images were visually evaluated and the washout ratios of each region were calculated. In visual analysis, abnormalities were recognized in 5 patients on the delayed SPECT. The abnormalities were recognized more frequently in the superior frontal lobe. The washout ratio was higher in the BZ (++) patient group than in the BZ (–) patient group. I-123 iomazenil is useful, because the SPECT image with I-123 iomazenil reflects the distribution of BZR on the brain and provides the different information from that obtained with perfusion SPECT, X-ray CT or MRI. The rapid washout of I-123 iomazenil from the brains of BZ (++) patients suggests that chronic administration of a clinical dose of BZ affects the binding of I-123 iomazenil to BZR.

Key words: I-123 iomazenil, mental disorder, washout ratio, SPECT