

## Positron emission tomography using pyruvate-1-<sup>11</sup>C in two cases of mitochondrial encephalomyopathy

Momozou TOYODA,\* Norio SAKURAGAWA,\* Yukio ARAI,\* Hideto YOSHIKAWA,\* Kenji SUGAI,\*  
Masataka ARIMA,\* Toshihiko HARA,† Masaaki IIO† and Eijiro SATOYOSHI\*\*

\**Department of Child Neurology, National Center Hospital for Mental, Nervous and Muscular Disorders,*

*\*\*,\*\*National Center of Neurology and Psychiatry*

*†National Nakano Chest Hospital*

Positron emission tomography (PET) using pyruvate-1-<sup>11</sup>C was carried out to investigate the in vivo metabolism of pyruvate in the brains of patients with mitochondrial encephalomyopathy and Leigh's disease. Two epileptic patients were studied as control subjects. Radioactivity was eliminated from the brain tissue of the epileptic patients soon after injection of pyruvate-1-<sup>11</sup>C. PET images of mitochondrial encephalomyopathy patients showed an increase in radioactivity in the cerebral cortex, basal ganglia and thalamus, with elimination of radioactivity being slower than that of epileptic patients. One patient with Leigh's disease showed similar PET images. PET using pyruvate-1-<sup>11</sup>C is useful for the evaluation of mitochondrial energy metabolism in the brain.

**Key words:** positron emission tomography, mitochondrial encephalomyopathy, pyruvate-1-<sup>11</sup>C