Reply from the Author

A case of rhabdomyolysis after status epilepticus without stroke-like episodes in mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episodes

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(Rinsho Shinkeigaku (Clin Neurol) 2017;57:400-401)

We appreciate the valuable review and comments from Josef Finsterer, M.D., Ph.D.[1] regarding our case report[2].

We hereby reply to your questions. First, phenytoin 300 mg/day was administered to treat the patient's status epilepticus for 36 days from the admission day but was then discontinued because of a suspected mitochondrial disease.

Second, we also think that rhabdomyolysis was a major complication of his status epilepticus, in which alcohol drinking was also likely to be involved. The patient was not taking any medication before the hospitalization; therefore, drug involvement was unlikely. The patient's quadriparesis improved rapidly in a short period while he was in our hospital; therefore, it seems unlikely that mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episodes (MELAS) caused quadriparesis. Instead, we consider that muscle weakness was a manifestation of rhabdomyolysis. No muscle biopsy was taken from the patient; therefore, the extent of mitochondrial pathology in the affected muscles was unknown.

Third, brain MRI was performed at the onset of seizure, and at 17 and 49 days after the onset. We found no new stroke-like episode lesions. However, three months later, the patient was readmitted to our hospital because of convulsions and right homonymous hemianopsia and brain MRI identified a new stroke-like episode lesion in the left occipital lobe.

Fourth, we could only perform genetic tests on peripheral blood samples. As you comment, 20% heteroplasmy of peripheral blood lymphocytes may not explain the phenotype. However, the calcification of the bilateral basal ganglia observed in this patient by computed tomography scans of the head is a common finding in MELAS[3], and brain MRI showed an old infarction in the left occipital lobe, which is also frequently seen in this condition[4]. Given the increased levels of lactic acid and pyruvic acid as well as the elevated lactate/pyruvate ratio in the cerebrospinal fluid, we regarded the A3243G mutation in the peripheral blood lymphocytes (20% heteroplasmy) as a significant finding, and diagnosed the patient as a case of MELAS. Although muscle biopsy can be diagnostic for mitochondrial diseases, it was not performed because the patient did not consent. Among family members, only his mother, who had diabetes mellitus, was subjected to genetic testing, and the A3243G mutation was detected at a low level in her peripheral blood by PCR-RFLP analysis.

Fifth, although the patient initially took levetiracetam without any adverse effects, the administration was stopped after the emergence of leukocytopenia. The patient was at no elevated risk for cerebrovascular diseases, such as hypertension, diabetes, dyslipidemia, collagen-vascular disease and blood coagulation abnormalities. In addition, there were no significant findings in a Holter electrocardiography or transthoracic echocardiography.

Sixth, neither ketogenic diet therapy nor L-arginine was introduced at the first admission, while the latter was initiated during the second hospitalization.

Finally, a short stature is defined below −2 SD on the average growth curve and 162 cm is not defined as a short stature for Japanese (161 cm is the lower normal limit for his age).

※The authors declare there is no conflict of interest relevant to this article.

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（Received April 5, 2017; Accepted April 10, 2017; Published online in J-STAGE on June 22, 2017）
doi: 10.5692/clinicalneurol.cn-001044

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