LETTER TO THE EDITOR

Levetiracetam-associated Hypokalemia and Hypomagnesaemia among Two Patients Treated for Seizures

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To the Editor,

Levetiracetam is an anti-epileptic drug that is being more widely used because of its utility in partial as well in generalized seizures and because of the low rate of adverse side effects. Herein, we present two cases of levetiracetam-associated severe hypokalemia. In the first case, valproic acid was substituted for levetiracetam and 3 days later the hypokalemia subsided. In the second case, a female patient who was 79 years old with cerebral infarction, levetiracetam was continued in a dose of 1 g $\times$ 2 intravenously due to the continuation of seizures, despite the addition of valproic acid, and the hypokalemia (serum potassium level of 2.43 mmol/L, with serum magnesium level of 1.35 mg/dL and serum creatinine level of 0.6 mg/dL) was treated by the supplementation with potassium per os and intravenously.

A 90-year-old female patient was admitted to the hospital due to syncope that was accompanied by urinary incontinence and lethargy and paralysis of the left side of the body. Her EEG was compatible with epilepsy and the patient was administered levetiracetam intravenously at a dose of 500 mg twice daily. Two days later, she developed profound hypokalemia with serum potassium: 2.44 mmol/L as well as hypomagnesaemia with serum magnesium level of 0.58 mmol/L. As the patient had serum potassium levels between 4.5 and 4.87 mmol/L before starting taking levetiracetam with serum creatinine level of 0.52 mg/dL and as the hypokalemia developed 2 days after the administration of levetiracetam, this profound hypokalemia was attributed to levetiracetam. As the hypokalemia and the hypomagnesaemia persisted despite the intravenous administration of potassium and

magnesium, valproic acid was substituted for levetiracetam and the patient was discharged from the hospital 3 days later with serum potassium: 3.54 mmol/L.

Levetiracetam is a pyrrolidone derivative, which is chemically unrelated to previously used anti-epileptic drugs. Its main route of excretion is via the urine [1]. To our knowledge, levetiracetam-associated hypokalemia and hypomagnesaemia have been reported only once and very recently in the medical literature [2]. Aksoy et al. have attributed it to a possible renal tubular disorder and have suggested it to be an indicator of this newly developed renal tubular disorder [2]. Neither hypokalemia nor hypomagnesaemia have been included in the drug's SPC. We suggest that after Aksoy's and our observation of a total of three patients with severe hypokalemia and hypomagnesaemia, these electrolyte disturbances should be pointed out, as levetiracetam is already a widely used anticonvulsive drug and this side effect may prove to be more common than we have actually thought. In addition, both patients were female and elderly, and there were not taking any diuretics nor had they any known endocrine dysfunction. It is likely that old age could be the predisposing factor, which contributed to levetiracetam's induced hypokalemia. Also, we propose that whether hypokalemia and hypomagnesaemia associated with the use of levetiracetam require the discontinuation or not of the drug depends on the severity of the hypokalemia, the reversibility of these electrolyte disorders despite the continuation of levetiracetam, the severity of hypokalemia, and the potential to switch to another anti-epileptic regimen without any harmful effects.

References

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