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Levetiracetam May be the First Choice for Managing Epilepsia Partialis Continua Related to Ischemic Stroke

CASE REPORT

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ABSTRACT

An 82-year-old, right-handed male patient was admitted to the emergency room because of continuous rhythmic clonic movements of the right forearm and hand. He was diagnosed with epilepsia partialis continua (EPC) and treated successfully with levetiracetam. In conclusion, we recommend levetiracetam as the first line treatment for EPC, which is mostly refractory to classical antiepileptic drugs.

Keywords: Epilepsia partialis continua, levetiracetam, ischaemic stroke

INTRODUCTION

Epilepsia partialis continua (EPC) is described as a condition of spontaneous regular or irregular clonic muscle twitching of cerebral origin limited to one part of the body and continuing for hours, days, or weeks and repeating at no more than 10-second intervals that can be stimulated by action or sensory stimuli (1, 2).

The main causes of EPC are vascular disorders like stroke, encephalitis, neoplasms, and metabolic disorders (3). Although there are no clear guidelines for the management of this condition, control of twitching can only be maintained by polytherapy with various combinations of intravenously administered antiepileptic drugs, including diazepam, phenytoin, pentothal sodium, and valproate. We preferred intravenous levetiracetam (LEV) for quickly managing the symptoms because intravenous diazepam and phenytoin administrations failed to control the focal motor status in our case.

CASE REPORT

An 82-year-old, right-handed male patient was admitted to the emergency room because of continuous rhythmic clonic movements of the right forearm and hand that persisted for more than 2 hours. He was tired of the continuous activity in his extremity. Consciousness was preserved throughout the event. His physical examination was unremarkable. He was completely alert and oriented. There was no aphasia, comprehension was intact, muscle strength of his right upper extremity could not be examined because of clonic movements but that of his lower extremity and left side were normal.

In the detailed neurological history, speech impairment, weakness, and numbness in his right arm were observed; the events repeated a few times within 2 hours, each incidence lasting approximately for 15 minutes in prior day. After 2 hours, his speech and right arm became normal. His medical history was unremarkable.

Blood electrolyte levels and cell blood counts were normal. Brain CT showed no acute lesion. EEG showed no abnormalities. Brain MRI was performed. On diffusion weighted images, diffusion restriction revealed multiple acute ischemic lesions at the left frontal lobe, including the cortical regions of the left precentral gyrus (Figures 1, 2). On ADC images, the lesions were hypointense; this was consistent with the symptoms of acute ischemia. Five milligrams of diazepam was intravenously administered in the emergency room, but there was no change in the clinical course. Phenytoin was intravenously administered by an infusion of 20 mg/kg for a period of 60 minutes. Similarly, the treatment did not affect the abnormal continuous activity. Levetiracetam was then intravenously administered at a dose of 500 mg/bid. On the next day, the dose of levetiracetam was increased to 1500 mg/day. On the third day, the clonic twitches remarkably decreased. On the fourth day, the dose of levetiracetam was increased to 2000 mg/day, and the clonic twitches completely stopped. No treatment-related side effects were noted. The treatment switched to the oral form of levetiracetam from the same dose and administered orally. On the sixth day, the patient was discharged on levetiracetam 2000 mg/day and acetylsalicylic acid 300 mg/day.

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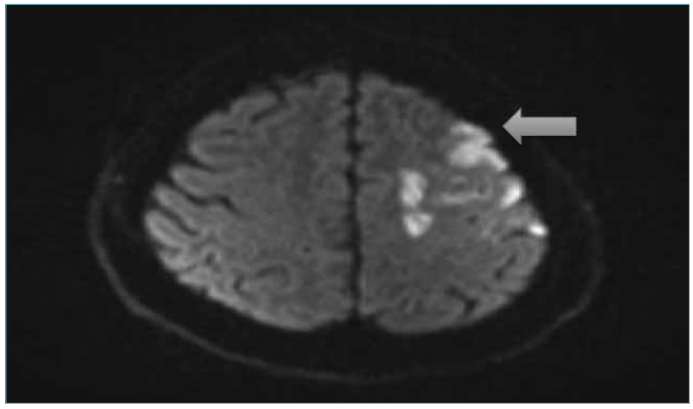

Figure 1. Acute ischemic lesions on diffusion weighted image (arrow)

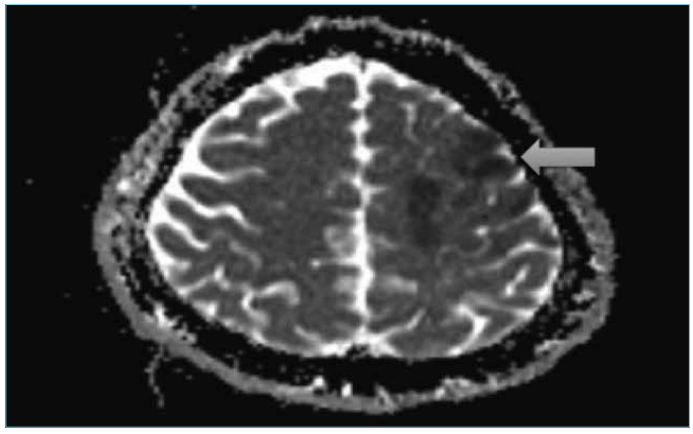

Figure 2. Hypointense lesions on ADC images are consistent with diffusion-restricted areas (arrow)

DISCUSSION

Epilepsia partialis continua is a seldom type of focal status epilepticus. It is easy to diagnose and distinguish EPC from other movement disorders or myoclonic symptoms because of its characteristic semiological features (3). It is also a rare complication of acute stroke, and its pathogenesis is unclear. The physiological origin of the myoclonic jerks seen in EPC is cortical, but other subcortical localizations have also been reported (4).

Our case of EPC was an acute manifestation of cortical ischemia. Although there are no clear guidelines for the management of this condition, it is generally accepted that the treatment of EPC depends on the underlying disorder. It is unclear how focal seizure activity induces the formation of the ischemic lesions; it is probably because of metabolic compromise, which may lead to further damage in the area of the penumbra. Furthermore, spreading of the seizure activity over parts of the brain may worsen the clinical situation (5). For this reason, we started intravenous levetiracetam for quick action and ease of titration. We did not continue the patient's treatment with phenytoin because of its side effects, especially in older patients.

Levetiracetam is one of the most frequently used new antiepileptic drugs for the treatment of partial seizures. It has several advantages over traditional therapy, including once or twice daily dosing, low side effect profile with no requirements for serum drug concentration monitoring, and no interactions with other antiepileptic drugs. In addition, Levetiracetam seems to be well tolerated by most patients and may have less adverse effects on cognition than traditional antiepileptic drugs. These advantages of levetiracetam make it a good first line or adjunctive therapy choice for epileptic seizures (6).

The intravenous infusion of levetiracetam is bioequivalent to that of oral tablets and is well tolerated after 15-minute (2000–4000 mg/bid) and 5-minute (1500–2500 mg/bid) infusions. The results of a small, multicenter, open-label study indicate that a 15 minutes of levetiracetam infusion (500–1500 mg/bid) is well tolerated in patients with partial-onset seizures after administration for a 4-day period (7). The adverse events were usually mild. Headache and fatigue were the most commonly reported symptoms. No serious adverse events were reported. None of the subjects had to quit because of adverse events. These results favor dosing flexibility and easy conversion from oral to intravenous levetiracetam and back in patients with partial-onset seizures temporarily unable to orally consume the drug (6).

CONCLUSION

To the best of our knowledge, response to the antiepileptic drugs in EPC is intimidating, making polytherapy necessary in most cases with consecutive addition of side effects and interactions (8). In this context, our observation suggests that intravenously administered levetiracetam is a promising therapeutic option for treatment of EPC because it has a rapid antiepileptic effect with low side effects and easy titration possibility even in older patients suffering from stroke.

Informed Consent: Written informed consent was obtained from patient.

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