Essential tremor responsive to levetiracetam

Levetirasetama cevap veren esansiyel tremor

Aysel Milanlıoğlu¹, Ömer Faruk Odabaş², Abdullah Yılgör³

¹Department of Neurology, Bitlis State Hospital, Bitlis, Turkey
²Department of Neurology, Konya Ereğli State Hospital, Konya, Turkey
³Department of Neurology, Yüzüncü Yıl University, Faculty of Medicine, Van, Turkey

ABSTRACT

Essential tremor is one of the most common movement disorders with a prevalence of 0.4% to 3.9% in the general population and increases with age. The medical treatment available for patients with essential tremor is often inadequate. Propranolol and primidone are the first-line treatment options, improving in up to two thirds of cases. This article reports a satisfying response to levetiracetam with disabling essential tremor in a 58-year-old man whom propranolol as well as primidone had to be discontinued due to unresponsiveness and severe side effects. One of the antiepileptic drugs, levetiracetam, may be more useful in the treatment of essential tremor. J Clin Exp Invest 2012; 3(1): 108-110

Key words: Essential tremor, anticonvulsant drug, levetiracetam

INTRODUCTION

Essential tremor (ET) is one of the most common late-life movement disorder characterized by progressive postural and kinetic tremor typically affecting the hands, arms, head, voice, trunk and leg.¹ Propranolol and primidone are the first-line treatment options. However, these drugs are ineffective in approximately 25–55% of ET patients and are often have severe and potentially threatening adverse effects especially in elderly.

It is important to know the reality that no drug is yet available to eliminate tremor nevermore additional safe and well-tolerated drugs for the treatment of ET patients are promptly needed.² This article displays a case of ET who is effectively treated with levetiracetam (LEV).

CASE

A 58-year-old right-handed man referred to the outpatient clinic with a history of bilateral postural and kinetic tremor, which was first noted more than five years ago and developed gradually deterioration over the years. There was no drug use, family history or condition causing this movement disorder. The state of cerebellar signs or symptoms, hyperthyroidism, alcoholism, peripheral neuropathy and anxiety were ruled out and diagnosed definite ET. In his medical history, he had hypertension and diabetes. Brain magnetic resonance imaging showed diffuse cerebral atrophy and mild periventricular leuko-araiosis.

He was having difficulties in everyday activities like drinking, eating, dressing, writing, and other tasks requiring hand movements. Tremor severity was measured by using the Fahn-Tolosa-Marin clinical rating scale and scored as 3 points (markedly) at the first clinical examination.³

Medication was started with propranolol, first with daily dosage of 40 mg/day and increased gradually to 120 mg/day within four weeks. After three
months follow-up, any improvement was acquired and even gradually worsened, finally added primi-
done 250 mg/day, but it had to be discontinued be-
cause of the severe and threatening side effects
like drowsiness, vertigo and unstable gait. After the
ineffective and unwell-tolerated treatment options
with propranolol and primidone, LEV was started
and tolerated well, so the dosage was titrated from
500 mg/day to 2000 mg/day within four weeks. Six
months follow-up, it showed a continuing ameliorat-
ing effect on ET, providing comfort for making sim-
ple activities of daily living. Moreover the repeat of
Fahn-Tolosa-Marin clinical rating scale was scored
as 2 points (moderately abnormal) and no func-
tional disabilities were reported anymore.

DISCUSSION

Antiepileptic drugs are extensively used to treat a
wide range of neurological disorders than epilepsy,
such as neuropathic pain, migraine and ET. 4

Recently, various agents including topiramate,
benzodiazepines, gabapentin, zonisamide and le-
etiracetam that dramatically improve functions in
ET patients have been documented in several tri-
als. 5 In this case of 58-year-old man with ET, after
efficient and unwell-tolerated treatment with pro-
pranolol and primidone, LEV was found to be very
effective. Additionally, the score of decline on Fahn-
Tolosa-Marín clinical rating scale during the course
of ET treatment with LEV also proved the efficiency.
We observed antitremor effect in our patient after
taking 1000 mg/day so the dosage was gradually
titrated to 2000 mg/day for the significant effect.
In literature, the maximum dose of LEV was 3000
mg/day which was reached by patients who did not
benefit from lower doses after one week treatment
with 1000 mg and four weeks treatment with 2000
mg/day. 6

Levetiracetam is originally used as a broad-
spectrum antiepileptic drug. However, it has several
potential mechanisms of action, which is thought to
be the enhancement of GABAergic and a decrease
in glutamatergic neurotransmission. 7 To date, the
definite mechanism of action of LEV in reducing
tremor is not clearly understood. It is suggested that
Levetiracetam may possibly act via an influence on
the increment of GABAergic activity and also the
decline of glutamatergic neurotransmission and ex-
citotoxicity.

Levetiracetam is not only effective in ET but also
it is useful for different types of tremor of neu-
rological disorders. The efficacy of LEV in holmes’
intention, cortical myoclonic tremor and tremor in
multiple sclerosis seems to be promising in some
case reports but needs to be investigated in larger
patient groups. 8,9

In a double-blind, placebo controlled trial of
Bushara et al., the effect of single dose of 1000 mg
LEV on essential tremor was investigated in 24 pa-
ients and they showed significant hand tremor re-
duction for at least 2 hours by using accelerometry
and functional tests. 10

On the contrary, the study of 15 patients diag-
nosed with ET during the treatment of 500-3000 mg/
day during a 5-week slowly titration phase displayed
that the analysis of tremor rating scale revealed a
statistically insignificant trend for all data. 11

Further randomized and blinded studies with a
larger cohort of patients and basic research must
be performed in order to exactly elucidate the anti-
tremor effect of LEV.

Consequently, this case demonstrates that
LEV can be alternative option in the treatment of
patients diagnosed with ET whom propranolol and
primidone had to be discontinued due to unrespon-
siveness and severe side effects.

REFERENCES

1. Whaley NR, Putzke JD, Baba Y, Wszolek ZK, Uitti RJ. Essential
tremor: phenotypic expression in a clinical cohort. Parkinsonism Relat
345(12):887-91.
3. Fahn SE, Tolosa E, Marin C. Clinical rating scale for tremor. In:
Jankovic J, Tolosa E, eds. Parkinson’s Disease and Movement Disorders,
4. Johannesssen Landmark C. Antiepileptic drugs in non-
epilepsy disorders: relations between mechanisms of action and clinical
5. Ondo WG. Essential tremor: treatment options. Curr Treat
45(3):134-6.
tremor in gamma-aminobutyric acidA receptor alpha1 subunit knockout
