

Levetiracetam induced behavioral changes: A case report

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Abstract

A 16-year-old girl with a long-standing history of epilepsy and mild learning disability, presented to the neurology unit of the National Hospital of Sri Lanka with a history of abrupt onset of behavioral changes after the initiation of levetiracetam therapy. She did not have any psychiatric illness or behavioural changes prior to this episode, and her

symptoms were not related to any seizure episodes. Her symptoms gradually declined within a week of the cessation of levetiracetam.

Key words: Levetiracetam, epilepsy, behavioral adverse effects

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Introduction

Levetiracetam is a second generation antiepileptic medication approved for the adjunctive treatment of generalized and partial seizures in the paediatric population. Children with epilepsy are more likely to have behavioural problems compared to children without epilepsy. The literature suggests that levetiracetam may lead to behavioral side effects in children with epilepsy. In recent times the prescription of levetiracetam has been on the increase, but behavioural side-effects are not commonly reported. The identification of the possible side effects of this drug depends on careful clinical observation.

We report about a 16-year-old girl who developed acute behavioral disturbances after the administration of levetiracetam.

Case report

Ms. C. had been diagnosed with epilepsy since the age of 1 year, and had taken treatment from the paediatric neurology clinic in the past. At the onset her seizures had been partial with secondary generalization. After a two-year fit free period, her anti epileptic treatment had been stopped at the age of 10 years, in 2011.

Ms. C. started to experience seizures again in 2017, after a seizure-free period of 6 years. She developed seizures during sleep with loss of consciousness. She underwent investigations in the private sector, including MRI brain, which showed no structural brain abnormalities.

She was prescribed levetiracetam in the latter part of 2017 and the dose was increased upto 750mg twice daily.

Her seizure control became better, but her parents noted that she was developing unusual behavioral disturbances. Her parents clearly noted that the behavioral symptoms worsened following the increase in the levetiracetam dose.

Though Ms. C. had mild learning disability, she had not shown major behavioral symptoms in the past. She was a timid and quiet girl who spent most of her time watching TV. With levetiracetam treatment, she started to show increasing irritability and anger outbursts. She became over-talkative and was seen to be using obscene words. At times she also threatened to commit suicide by jumping in front of a vehicle on the road although she never actually carried out the threat. She expressed suicidal ideas whenever her parents declined her demands. But she did not meet diagnostic criteria for an episode of mania or depression.

She was admitted to the Neurology Unit of the NHSL and started on a low dose of haloperidol for control of her behavioral problems but this did not have much effect. Then she was referred to the psychiatry unit and the levetiracetam was completely withdrawn. She was commenced on sodium valproate and clobazam for seizure control. Thereafter her symptoms gradually improved and her behaviour became completely normal within a week of the cessation of medication.

Discussion

The case we report here is, to the best of our knowledge, the first report of levetiracetam induced abnormal behavior from Sri Lanka, although there are several similar findings published internationally.



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Levetiracetam is a second-generation antiepileptic drug that has been approved for the treatment of epilepsy in both children and adults. This anticonvulsant drug has a unique mechanism of action which involves binding to the synaptic vesicle protein 2A, resulting in a possible effect on neurotransmitter release from these presynaptic vesicles, although the exact mechanism of action is still unknown. Behavioural side-effects of levetiracetam have been reported and consist of a variety of behavioural problems, including aggression, changes mood states such as depression, agitation, hostility, irritability and hyper-excitability. There have been only a few reports on levetiracetam induced self-harm behaviour. A significant change in behavior which included increased speech, irritability, aggression, and suicidal threats were observed in this patient following the administration of levetiracetam.

This patient's symptoms did not fulfill criteria for bipolar affective disorder or a psychotic disorder. She had no past history suggestive of a psychiatric illness. The symptoms persisted for about six weeks while she was on treatment with levetiracetam. These behavioural problems continued to worsen despite the initiation of antipsychotic agents but resolved completely after stopping levetiracetam. Thus levetiracetam seems the most likely cause for the significant behavioural changes observed in this patient.

Many anti epileptic drugs can provoke behavioral side effects, including levetiracetam. However, discontinuation of levetiracetam produces a rapid return to normal behavior, which is reassuring.

Conflicts of interest

None declared

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