



## Levetiracetam Induced Neuropsychiatric Manifestation in a 5-year-old Boy

Kathiravan M.<sup>1</sup> · Sumeet R. Dhawan<sup>1</sup> · Bhanudeep Singanamala<sup>1</sup> · Lokesh Saini<sup>1</sup> · Jitendra Kumar Sahu<sup>1</sup>

Received: 26 July 2018 / Accepted: 31 August 2018 / Published online: 12 September 2018  
© Dr. K C Chaudhuri Foundation 2018

*To the Editor:* A five-year-old developmentally normal boy presented with six episodes of seizures (Generalized tonic-clonic) for last 6 mo. He was initially started on phenytoin but later switched over to levetiracetam (30 mg/kg) because of poor seizure control. Two weeks after starting of levetiracetam, the child had a change in behavior like poor attention, poor concentration span and decreased interaction with others. Three weeks later, he had intermittent episodes of crying and shouting and hitting other family members without any reason. He also had suicidal tendencies in the form of attempts to cut his wrist with a knife and self-strangulation with a belt. Evaluation for vasculitis (complete blood counts and anti-nuclear antibody), autoimmune encephalitis, worsening epilepsy and other structural etiologies were unremarkable (normal awake and sleep electroencephalography and MRI brain with MR-angiography). Clinical diagnosis of genetic generalised epilepsy was considered. A possibility of levetiracetam induced neuropsychiatric side-effects was considered and levetiracetam was switched over to topiramate. Within few days, he had improvement in interaction with parents, sleep, and behavior. Improvement in symptoms following the withdrawal of levetiracetam suggested a probable causality. He was discharged after 1 wk, and he remained symptom-free over the next 3 mo.

Behavioral and cognitive impairments are common in children with epilepsy. These symptoms can be epilepsy itself or due to treatment emergent side-effects of anti-epileptic drugs. Twenty to 30 % of patients with epilepsy have associated mood disorders, and 2–7% may have frank psychosis [1]. Behavioral adverse effects are common with levetiracetam and are seen in 5–34% of children [2]. Most of these are mild and seldom need

discontinuation of levetiracetam. Common adverse effects include aggression, excessive sleepiness, hyperactivity and depression [2, 3]. Rapid titration and prior intellectual/learning disability were associated with higher incidence of adverse effects. Severe adverse effects like severe depression, psychosis, and suicidal tendencies are rare [4, 5]. The suicidal tendencies may be explained by bouts of rage and aggression in the index child, which may lead to self-harm. Concomitant use of pyridoxine has been described to ameliorate behavioral side-effects of levetiracetam by decreasing hyperactivity.

To conclude, the possibility of severe behavioral abnormalities should be borne in mind even with commonly used and seemingly safe antiepileptic drugs.

**Authors' Contributions** KM: prepared the initial draft of manuscript and reviewed the literature; BS, SRD, JKS: patient management and edited the initial draft of manuscript; LS: did the critical review and will act as corresponding author/guarantor.

### Compliance with Ethical Standards

**Conflict of Interest** None.

### References

1. Lin JJ, Mula M, Hermann BP. Uncovering the neurobehavioural comorbidities of epilepsy over the lifespan. *Lancet*. 2012;380:1180–92.
2. Eddy CM, Rickards HE, Cavanna AE. Behavioral adverse effects of antiepileptic drugs in epilepsy. *J Clin Psychopharmacol*. 2012;32:362–75.
3. Somerville ER, McLaughlin DB, Robinson MK, Berkovic SF. Adjunctive therapy of uncontrolled partial seizures with levetiracetam in Australian patients. *Epilepsy Behav*. 2007;11:338–42.
4. Dannaram S, Borra D, Pulluri M, Jindal P, Sharma A. Levetiracetam-induced acute psychotic episode. *Innov Clin Neurosci*. 2012;9:10–2.
5. Molokwu OA, Ezeala-Adikaibe BA, Onwuekwe IO. Levetiracetam-induced rage and suicidality: two case reports and review of literature. *Epilepsy Behav Case Rep*. 2015;4:79–81.

✉ Lokesh Saini  
drlokeshsaini@gmail.com

<sup>1</sup> Department of Pediatrics, Postgraduate Institute of Medical Education and Research, Chandigarh 160012, India