Lacosamide in Paroxysmal Kinesigenic Dyskinesia

We report the case of a 19-year-old boy with idiopathic paroxysmal kinesigenic dyskinesia (PKD), a rare movement disorder, who had an excellent response when treated with lacosamide. He presented with paroxysms of abnormal involuntary posturing of one or both limbs, mainly on the right side, for a brief duration, 15–30 seconds, precipitated by sudden movements such as getting up from a chair or initiating writing. His consciousness was well preserved during the attacks. They began at the age of 4 years; however, the frequency had increased significantly since age 13. The frequency of attacks at presentation was about 100 attacks daily. The patient experienced falls on a few occasions during violent attacks lasting 3–4 minutes. The patient was able to diminish the attacks by holding the affected limb rigidly, and the attacks went unnoticed by most onlookers. The frequency of attacks would worsen with stress. Family history was not significant for PKD. There was no parental consanguinity. His general physical and neurological examinations were normal. His biochemical profile including thyroid and calcium were within normal limits. His hematological parameters were also unremarkable. Magnetic resonance imaging of his brain using 1.5 T was normal. No abnormalities were seen on his electroencephalogram ictally and postictally. Evaluation for Wilson's disease was negative. He was initially treated with oxcarbazepine and responded well; however, he developed an allergic response in the form of skin rashes within a week of taking the medication. Oxcarbazepine was stopped, and other antiepileptic drugs known to cause cross-hypersensitivity and allergic reactions such as phenytoin, carbamazepine, and lamotrigine were avoided. Topiramate was our next drug of choice, and the patient responded fairly well. The frequency reduced to around 10–20 episodes per day after 2 weeks of topiramate. However, after about 3 months, the patient realized that his memory had decreased. He also felt he had difficulty in getting out words during routine conversations. He discontinued topiramate by himself. His attack frequency increased after stopping topiramate, and he came to us for an alternative treatment option. With a review of literature suggesting that PKD would respond well to voltage-gated sodium channel–blocking antiepileptic drugs, lacosamide at a dosage of 50 mg twice daily was started. The patient responded excellently and was totally free of attacks after just 3 days of taking lacosamide. The patient has been on regular follow-up for the last 2 months with no attacks and has not experienced any side effects.

Paroxysmal kinesigenic dyskinesia is 1 of the 3 main types of paroxysmal dyskinesias[1] and has the best response to antiepileptic drugs compared with the others. Pathophysiology is yet to be understood; however, recent studies point toward a possible ion channelopathy.[2] PKD has been linked to the pericentromic region of chromosome 16, which is in the vicinity of some ion channel genes.[1] Studies indicate that antiepileptic drugs like phenytoin, carbamazepine, and oxcarbazepine whose main action is the blockage of voltage-gated sodium channels are the most effective so far in the treatment of PKD. Topiramate, another broad-spectrum antiepileptic drug, is also effective but is associated with several side effects.[3] Data regarding the efficacy of other antiepileptic drugs are minimal, with some showing conflicting reports. Lacosamide is unique compared with others in the sodium channel–blocking class of antiepileptic drugs in that it selectively enhances the slow inactivation of sodium channels .This reduces the long-term availability of sodium channels for activation, resulting in normalization of activation thresholds and a reduced pathophysiological hyperresponsiveness.[4] It is also thought to modulate neuronal plasticity through its interaction with collapsin response mediator protein-2 (CRMP-2), which is involved in neuronal protection from excitotoxicity. To the best of our knowledge, this is the first case report in which lacosamide was used for the treatment of PKD. Considering its excellent response, its good safety profile, and lower side effects, lacosamide may be a good drug for treatment of PKD, but further studies are needed.

Thomas Mathew, MD, DM, Sushanth Aroor, MBBS, Raghunandan Nadig, MD, DNB, G.R.K. Sarma, MD, DM

Department of Neurology, St. John's Medical College, Bangalore, India

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***Correspondence to:** Thomas Mathew, Department of Neurology, St. John's Medical College, Bangalore, India; chakkuthom@hotmail.com

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