Periodic limb movements and insomnia, a common but under-recognized association

Saravanan Varadharajulu, Baskaran Chandrasekaran
Senior Sleep Technologist, Neurofoundation, RS Puram, Coimbatore, 1Department of Pulmonary Medicine, PSG Hospitals, Coimbatore, Tamil Nadu, India

INTRODUCTION

The most overlooked causes of sleep disorders are restless leg syndrome (RLS) and periodic limb movement syndrome (PLMS).1 Periodic limb movements during sleep (PLMS) are spontaneous sleep related limb movements occur at intervals of 5–90 s, lasts for 0.5–10 s with a periodicity of 20–40 s occurring during nonrapid eye movements (NREMs) stage of sleep. Though RLS is readily assessable through history, PLMS can be confirmed only through polysomnograph.2 We report a case whose sleep quality was affected for 30 long years by periodic limb movements alone.

CASE REPORT

A 49-year-old female was referred to our sleep disorder unit of a neuro specialty laboratory with the complaints of suicidal attempts and depressive disorder due to sleeplessness on 18/07/2014. Her symptoms tracked a 30-year history and depressed with her day to day activities. Though long history, she had depression status due to her sleep deprivation only for past few months. Her Epworth score was 16 on 18/07/2014. She was under medication of ropinirole. Her body mass index was 32 kg/m² which signified a moderate obesity. Neurological examination revealed no striking features. Polysomnograph was administered under the supervision of the pulmonary care physician and experienced sleep technologist with Alice 5 (Philips respironics, 2008, USA). The polysomnograph adjuncts were noted with electroencephalograph (EEG), electromyography (EMG [chin and legs – anterior tibialis muscles]), electrocardiograph, electro occulograph, airflow (nasal cannula and thermistor), efforts (chest and abdomen).

Polysomnograph findings
Her overnight hypnogram is projected in Figure 1.

Sleep data
Sleep data (of 364.5 min total sleep time) showed neither snoring nor sleep disordered breathing. She showed 77.4% sleep efficiency. Table 1 shows the stages of her sleep.
Wake after sleep onset was 91.5 min (25% of total sleep time). There was neither desaturation nor hypoventilation except apnea/hypopnea index being 2.1/h.

Her vitals too were stable with her average heart rate was 55.8 beats/min, and average nonsignificant saturation drop is 98% during sleep with negligible 2% drop from baseline saturation.

Arousals
Of 66 arousals during her total sleep (10.9 arousals/h), only 15 were spontaneous, 2 were respiratory, and 49 were exclusively due to leg movements. Significant leg movements were found during NREM stage. Her leg movement’s and arousal pattern plots were shown in Figure 2.

Leg movement (RLS) index was 48.4, and periodic limb movement index was noted as 5.2 which concluded that the patient has a moderate PLMS. This was diagnosed to be the root cause for her underlying insomnia. She was discharged with the advice of clonazepam on 22/07/2014.

DISCUSSION
The present case states the limb movements as a cause for chronic insomnia. This present case study demonstrates the importance of monitoring EMG, EEG other than relying exclusively on only respiratory events during sleep study.

Profuse Western literature are available stating the association between periodic limb movements and insomnia. The existing literature states that hyperactivity in the pituitary – hypothalamus – adrenal axis leads to parasomnias and periodic leg movements. Dearth of Indian literature is available regarding the association of periodic limb movements and sleep disturbances. Recent study warrants further clinical studies of establishing an association between sleep disturbances and periodic limb movements. Though the present study is a case report, it may add to the existing evidence regarding the relation between insomnia and PLMS. Hence, further randomized trials with adequate power may confirm these reports findings in the near future.
CONCLUSION

Our report concludes that periodic limb movements may be an important causative factor in insomnia. Though the leg movement may project as simple symptom like artifact during sleep, it may be the root cause of the underlying disorder.

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