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Sleep Architecture in Patients with Juvenile Myoclonic Epilepsy

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Abstract:

The aim is to analyze the sleep architecture using polysomnography (PSG) in patients with Juvenile Myoclonic Epilepsy (JME): (newly diagnosed and those on valproate drug) attending epilepsy clinic at Alexandria University Hospitals.

Methods: This study involved 20 patients with JME on valproate (age: 22.40 ± 5.80 years; M: F = 6:14), 20 newly diagnosed patients (age: 18.55 ± 6.0 years; M: F = 6:14), and 20 matched healthy controls (age: 22.10 ± 5.0 years; M: F = 6:14). Clinical assessment, electroencephalogram (EEG), evaluation with comprehensive sleep questionnaire, and PSG were done for all patients.

Results: PSG showed significant alterations in sleep architecture in the total JME group in the form of reduced mean sleep efficiency ($p = 0.001^*$), increased mean Rapid eye movement (REM) onset latency ($p = 0.046^*$), decrease mean REM percentage ($p = 0.011^*$), increased mean wakefulness after sleep onset ($p = 0.018^*$), increase the index of total arousal ($p = 0.005^*$), increased mean periodic limb movement index ($P = 0.001^*$), and reduced apnea hypopnea index ($P = <0.001$) in comparison to control group. Valproate treated group showed increased sleep efficiency ($p = 0.040^*$), decreased REM arousal index ($P = 0.012$), longer stage 3 ($P = 0.038$), and prolonged stage 2 ($P = 0.049^*$) than the newly diagnosed group.

Conclusions: Sleep architecture was significantly disturbed in JME, with improvement in sleep efficiency in valproate treated patients.

Keywords: Juvenile myoclonic epilepsy, Valproic acid, Polysomnography, Sleep architecture.

Introduction:

Juvenile Myoclonic Epilepsy syndrome is a good example for studying the relation between epilepsy and sleep through the circadian distribution of its seizures, precipitation by sleep deprivation and its different seizures types.⁽¹⁾ It also causes excessive day time sleepiness and also affects the quality of night sleep as well.⁽²⁾ Moreover, it causes disturbances at the

level of sleep microstructure in the form of reduced sleep efficiency, prolonged wakefulness duration and longer sleep onset latency.⁽³⁾ Sleep disturbance leads to poor treatment compliance and poor seizures control. The abnormal arousal mechanism during sleep is an important key for sleep disturbance; it leads to activation of epileptiform activities.⁽⁴⁾⁽⁵⁾ According to 1989 International Classification of Epilepsies

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