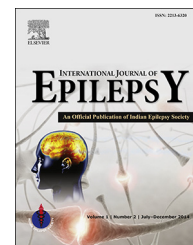


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Research paper

Observational study of prevalence of sleep disorder in patients with epilepsy



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ABSTRACT

Background: Reduced sleep quality with subsequent excessive daytime sleepiness (EDS) is found in patients with epilepsy.

Aim: To know the frequency of sleep disorders in comparison to control group to know the predictors of sleep disorders that have implications on management of patient with epilepsy.

Materials and methods: 199 patients with epilepsy and 48 controls, who attended Nizam's Institute of Medical Sciences were taken into the study.

The Epworth Sleepiness Scale (ESS) and Pittsburgh Sleep Quality Index (PSQI) are two questionnaires commonly used in clinical assessment of EDS and sleep quality.

Results: 24.6% of PWE are found to have problems with sleep disorders when compared to controls (10.6%). PWE had significantly higher scores when compared to controls in global PSQI total scores (3.78 vs. 2.43). Sleep latency and medication use (0.83 vs. 0.53 and 0.52 vs. 0.06 respectively) as well as sleep quality and sleep efficiency are poor as indicated by high scores (0.75 vs. 0.40 and 0.22 vs. 0.20 respectively).

Conclusion: Poor sleep quality of PWE in PSQI correlated with EDS of ESS. Poor control of seizures, polytherapy, and partial epilepsy make the PWE statistically more vulnerable to poor sleep quality thereby having therapeutic implications.

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1. Background

Sleep disturbances is a common complaint and several studies have confirmed that both daytime sleepiness and poor sleep quality are common in patients with epilepsy (PWE), regardless of age.^{1,2} The relationship between sleep and epilepsy are

complex and dynamic affecting each other in bidirectional way. Sleep can affect the expression of epilepsy by activating inter-ictal discharges and nocturnal seizures. IEDs occur most often during NREM sleep due to thalamocortical hyper synchrony. During REM sleep, seizures and IEDs become less frequent. Increased epilepsy severity, including IEDs may be associated with aggravated sleep disturbances in patients

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with epilepsy. Poor sleep quality (insufficient sleep, increased nocturnal and early morning awakenings, impaired sleep initiation) and excessive daytime sleepiness (EDS) are common complaints of patients with epilepsy (PWE). The sleep disorders and epilepsy can have an additive negative impact on quality of life, work productivity and overall health. There are not much data available in India regarding this issue.

2. Aim

The aims of the study are to assess the frequency of sleep disorders in PWE attending epilepsy clinic of Nizam's Institute of Medical Sciences (NIMS), a tertiary care center, in South India, as well as to evaluate the possible predisposing factors for excessive daytime sleepiness, subjective sleep quality in PWE.

3. Materials and methods

199 patients of the epilepsy attending epilepsy clinic of Neurology department and 48 controls who are attendants to other departments of Nizam's Institute of Medical Sciences are taken into study. Those with mental Retardation, psychiatric comorbidities, medical diseases (HTN, DM, COPD, stroke, heart diseases, sleep disorders), night work, shift work who are known to be associated with sleep disorders are excluded from study. Patients who are on medication that could affect sleep, including stimulants, antidepressants, and antipsychotic drugs are also excluded. Consent is taken from all participants of the study.

Clinical data of patients including syndromic diagnosis, age of onset, duration of illness, seizure control, aetiology of seizure, associated medical diseases, current antiepileptic drugs (AEDs) are taken into study. The Epworth Sleepiness Scale (ESS) and Pittsburgh Sleep Quality Index (PSQI) are two questionnaires commonly used in clinical assessment of EDS and Sleep quality. ESS³ is a standardized scale used for measuring sleepiness that is used to evaluate EDS in PWE.^{4,5} PSQI is a questionnaire that is used to evaluate overall sleep quality which includes subjective sleep quality, sleep latency, sleep duration, sleep efficiency, and sleep disturbance, medication use, and daytime dysfunction.^{6,7} The ESS is designed to evaluate the general level of daytime sleepiness.³ In this questionnaire, subjects are instructed to rate, on a scale of 0-3 (never = 0, slight = 1, moderate = 2, high = 3), the likelihood of dozing off or falling asleep in eight different situations. An ESS score ≥ 10 was considered to be EDS.^{2,3} The PSQI is a 19-item self-rated questionnaire for evaluating subjective sleep quality over the previous month.⁷ The 19 questions are combined into seven clinically derived component scores: subjective sleep quality (C1), sleep latency (C2), sleep duration (C3), habitual sleep efficiency (C4), sleep disturbances (C5), use of sleeping medication (C6), and daytime dysfunction (C7). Each item is weighed equally, and is rated from 0 to 3 (0 = no difficulty, 3 = severe difficulty). The component scores are added to obtain a global score of 0-21, with higher scores indicating worse sleep quality.

A global sum of "5" or greater was considered to be poor overall sleep quality.^{6,7}

4. Statistical analysis

Demographics are described as percentages, mean with SD. Variables between patients and controls are correlated with Fisher's exact t test/chi-square test wherever appropriate. P value < 0.05 is taken as significant. As the scores of both ESS and PSQI are not normally distributed, a Mann-Whitney U test is used to explore the relationship between the groups of PWE and Spearman's correlation was used to explore the correlation between ESS and PSQI. All statistical analyses are conducted using the IBM SPSS software package (version 20).

5. Results

A total of 199 epilepsy patients and 48 controls are analyzed for sleep disorders. The number of Males in this study is more than that of females with the ratio being 122:77. The mean age of presentation of epilepsy patients is 25.57 ± 11.2 years. The most common type of presentation in our study is symptomatic focal seizures, yet the commonest type of epilepsy being chronic mesial temporal lobe epilepsy. The mean duration of illness is 9.13 ± 8.71 years. 73.86% (147/199) of patients with epilepsy are on polytherapy, whereas rest are on monotherapy (26.13%) (Table 1).

24.6% of PWE had sleep disorders, whereas 10.4% of control population had sleep disorders (Table 2). EDS which is measured as $ESS \geq 10$ is seen in 10% of PWE when compared to 6.89% in controls. ESS scores are found to be higher i.e., 4.96 ± 3.00 of PWE when compared to 3.60 ± 3.54 in controls which is statistically significant.

PWE had significantly higher scores in various aspects of sleep quality in PSQI though they are not amounting to abnormal range. PSQI total global scores are higher in PWE

Table 1 – Comparison of demographic data of PWE with and without seizures.

	Controls (n = 48)	Seizure free (n = 69)	Non-seizure free (n = 130)
Age	31.47 \pm 10.49	24.51 \pm 12.14	26.2 \pm 9.9
Sex (M:F)	23:25	2:1	9:6
Age of onset, years		16.67 \pm 13.97	13.16 \pm 9.33
Duration, years		8.77 \pm 9.11	7.52 \pm 8.62
Aetiology, %			
Cryptogenic		33.3%	25%
Symptomatic		47.6%	50%
Idiopathic		19.04%	25%
Seizure type, %			
Partial		69.2%	40%
Generalised		30.7%	60%
Mode of therapy, %			
Monotherapy		61.5%	90.9%
Polytherapy		38.4%	9.1%

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