



Subjective sleep disturbance in epilepsy patients at an outpatient clinic: A questionnaire-based study on prevalence



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ABSTRACT

Objective: The clinically important interaction between epilepsy and sleep is complex. The aim of this paper is to review the frequency of sleep complaints and the comorbidity of sleep disorders in people with epilepsy attending an outpatient clinic.

Methods: Sleep complaints and presence of sleep disorders were assessed by means of a standard questionnaire form composed of 132 questions in 208 patients and 212 controls. The questionnaire includes Pittsburgh Sleep Quality Index, the Epworth Sleepiness Scale, the Beck Depression Scale, and the Berlin Questionnaire for sleep apnea.

Results: We showed poorer sleep quality, a higher frequency of subjective sleep disturbances in epilepsy patients. The major complaints of patients related to poor sleep quality included the symptoms of insomnia, sleep apnea, and parasomnias. They have higher frequency of sleep onset and maintenance insomnia, REM behavioral disorders, and sleep apnea. Nocturnal seizures (47%) and epileptiform activities on EEG (47%) were more frequent in patients with insomnia ($p=0.02$, $p=0.06$). Furthermore, the patients with a high risk of sleep apnea frequently used more than one antiepileptic drugs (AED) (41%, $p<0.01$) and the duration of epilepsy was longer in these patients ($p=0.02$). Moreover insomnia ($p=0.01$) was significantly lower in patients having no seizures in the last 2 years and the risk of apnea ($p=0.04$) and bad quality of sleep ($p=0.01$) was higher in patients with seizures.

Conclusion: The results emphasize the extent of the comorbidity of sleep disorders and epilepsy in an outpatient clinic. They have higher frequency of sleep onset, maintenance insomnia, probable RBD, and sleep apnea than healthy controls do. The severity of epilepsy can increase the risk of some sleep disorders like insomnia and sleep apnea. Aggressive treatment of nocturnal seizures and EEG can be considered to prevent insomnia. On the other hand, chronicity can lead to sleep apnea and so PSG investigations can be routinely done in patients having video-EEG monitoring due to refractory epilepsy.

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1. Introduction

The interaction between epilepsy and sleep is complex (Bazil, 2000). Sleep may influence seizures in a variety of ways. In general, seizures and interictal epileptiform discharges are facilitated during non-rapid-eye-movement (NREM) sleep and suppressed during rapid-eye-movement (REM) sleep (Bazil, 2000).

Epilepsy also modifies sleep. Enhanced sleep fragmentation and higher percentages of wakefulness and light sleep with a decrease during stages N3 and REM are common polysomnography (PSG) findings (Bazil, 2000; 2003a). The treatment of epilepsy with anti-epileptic drugs (AEDs) also influences sleep structure. The old generation AEDs, like phenobarbital and benzodiazepines, induce sleep more easily and increase total sleep time but reduce REM sleep (Bazil, 2003b; Jain and Glauser, 2014; Sammaritano and Sherwin, 2000).

In adults with epilepsy, the prevalence of complaints about sleep is higher than in controls (Bazil, 2003a; Manni and Terzaghi, 2010), with more daytime sleepiness and insomnia. On the other hand, sleep disorders like sleep-related breathing disorders are known to increase seizure frequency in epilepsy patients.

In summary, the clinically important interaction between epilepsy and sleep is complex and reciprocal. The aim of this paper

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is to review the frequency of sleep complaints and the comorbidity of sleep disorders in people with epilepsy attending an outpatient clinic.

2. Methods

This study was conducted between October 2013 and May 2014. Local ethical committee consent was obtained. All patients referred to our epilepsy outpatient clinic were prospectively assessed for sleep/wake habits and disorders by means of a structured interview and a standardized questionnaire. Informed consent was also obtained from each patient.

2.1. Content of questionnaire form

We used a questionnaire form composed of 132 questions addressing sleep/wake habits and complaints. The questionnaire outline was revised and finalized after a pilot study (Türk Uyku Tıbbi Derneği, 2010). The questionnaire covers demographic data, medical problems, and sleep habits. The answers also provide information on symptoms/signs suggestive of sleep apnea, EDS, parasomnia, insomnia, and some movement disorders related to sleep. It includes standardized questions, the Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality within the last month (Buysse et al., 1989), the Epworth Sleepiness Scale (ESS) to determine hypersomnia (Izci et al., 2008; Johns, 1994), the Beck Depression Scale for Primary Care (BDI-PC) to determine major depression signs, and the Berlin Questionnaire (BQ) for evaluation of sleep apnea (Netzer et al., 1999).

The sleep disorders were defined under the headings insomnia, NREM parasomnias, REM parasomnias, hypersomnia, restless legs syndrome (RLS), and sleep apnea.

2.1.1. Pittsburgh Sleep Quality Index (PSQI)

It was used to evaluate sleep quality and sleep disorders in the last month, and to record patients' own opinions about subjective sleep quality, sleep latency, sleep duration, sleep habits, sleep disorders, drug use, and daytime function disorders in the last month. Sleep quality was accepted as good if the score was 0–5 and as bad if the score was 6–21 (Buysse et al., 1989).

2.1.2. Insomnia

Diagnostic and Statistical Guide of Mental Disorders, Fourth Edition (DSM-IV-TR) criteria were adapted to describe insomnia (AAP, 2000) based on a “yes” response to any of the following: 1. Difficulty initiating sleep at least three times a week for a month or more, 2. Difficulty maintaining sleep, a fragmented sleep at least three times a week for a month or more, 3. Early morning awakening at least three times a week in the last month.

2.1.3. Hypersomnia-Excessive Daytime Sleepiness (EDS)

This is characterized by an increased need for naps during hours when the person should be awake and active. It is defined by the ESS (Izci et al., 2008; Johns, 1994), a scale for assessment of subjective excessive daytime sleepiness based on eight questions related to the urge to sleep in various life situations (Johns, 1991). Each question is rated on a 4-point scale ranging from 0 to 3, and thus the maximum score is 24 points. A cut-off score of 10 is considered abnormal.

2.1.4. Parasomnia

Somnambulism and night terrors were included in NREM parasomnias. REM behavioral disorders (RBD) and sleep paralyzes were included in REM parasomnias. RBD was described as various abnormal insignificant movements, speaking, screaming, punching, and kicking during sleep, which can result in injury to the patient or

bed partner. Since “REM sleep without atonia” is the main feature of REM sleep in RBD and PSG is necessary to establish the diagnoses of RBD, the overall symptoms related to RBD were defined as “probable RBD” (AASM, 2014; Boot et al., 2012).

2.1.5. Restless legs syndrome (RLS)

Restless legs syndrome was included in movement disorders. RLS complaints were defined according to the International Restless Legs Syndrome Study Group criteria (Allen et al., 2003). RLS was present if a “yes” response was given to the following: 1. Having unpleasant feelings in the legs like tingling, restlessness, or throbbing when resting (e.g., sitting or lying) frequently (5–15 times a month) or almost every day (16 times a month or more), 2. This happens sometimes in one and sometimes in the other leg, 3. Increase in complaints during the evening, 4. Moving leads to partial relief, 5. This condition hampers sleeping.

2.1.6. Risk of sleep apnea

Risk of apnea was described by a positive score in at least two of the three categories in the BQ, including questions on snoring, apnea, daytime sleepiness, hypertension, and measurement of body mass index (BMI). It is accepted as significant if two or more points were given for questions 2–6 in category-1, at least two points were given for questions 7–9 in category-2, a “yes” answer was given to the tenth question in category-3, and/or if BMI was >30 kg/m². High risk: Positive score in two or more categories. Low risk: Positive score in only one category or absence of any positive score in the three categories (Netzer et al., 1999).

2.1.7. Beck Depression Scale

The Beck Depression Scale for Primary Care was used for screening of depression, described under seven headings, namely sadness, pessimism, past failure, self-dislike, self-reproach, loss of interest, and suicidal thoughts or wishes. The reliability and validity of the scale were shown and it was adapted to our national language (Aktürk et al., 2005; Beck et al., 1997). The headings were taken from the Beck Depression Inventory (Beck et al., 1996), which reflects major depressive disorder according to DSM-IV criteria (AAP, 1994). The patients were asked about moods in the last two weeks to fulfill the requirements of DSM-IV. Every heading includes four levels from “0” to “3” points. BDI-PC score was calculated by adding the highest scores under each heading. The threshold score was accepted as at least four for major depressive signs.

2.2. Patients and controls

Only patients older than 17 years with a confirmed diagnosis of epilepsy according to the criteria of the International League Against Epilepsy (ILAE) were included in the study. Patients with one or more provoked convulsion; patients having an uncertain differential diagnosis of epileptic seizures such as psychogenic seizures or syncope; patients with a combination of both epileptic and psychogenic seizures; severely mental retarded patients; patients having a primary neurological disease causing seizures like intracerebral tumors, cerebrovascular disorders, demyelinating lesions, or other neurodegenerative disorders; and patients with systemic diseases like heart failure, chest disease, and connective tissue disorders were not included in the study. Subjects with spontaneous reports of treated or untreated sleep disorders (15 patients) were also excluded. To prevent overestimation (i.e. symptoms of hypersomnia and parasomnia) and underestimation (i.e. insomnia) of sleep disorders/complaints, subjects taking hypnotics within the previous 4 weeks (4 patients) were also excluded.

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