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Opinion

Sleep Disorders in Epilepsy

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Epilepsy is one of the most common neurological diseases and ranks 3rd among organic brain diseases.

According to the consensus of the International League against epilepsy (International League Against Epilepsy, ILAE) and International Bureau for epilepsy (International Bureau for Epilepsy, IBE), epilepsy is a disease of the brain defined by any of the following conditions:

1. At least two unprovoked (or reflex) seizures occurring >24h apart.
2. One unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years.
3. Diagnosis of an epilepsy syndrome.

According to the World Health Organization, about 50 million people worldwide suffer from epilepsy, 2.5 million new cases of the disease are diagnosed annually.

Sleep is a special physiological condition capable of modulating epileptic seizures, their frequency and severity. Even at the time of Aristotle and Hippocrates, they described the possibility of developing epileptic seizures during sleep.

Epilepsy is closely connected with the sleep-wake cycle: the disease often causes sleep disorder and its structure and this, in turn, worsens epilepsy. Sleep disorders often provoke the appearance of various paroxysmal conditions, which are then difficult to differentiate from epileptic phenomena.

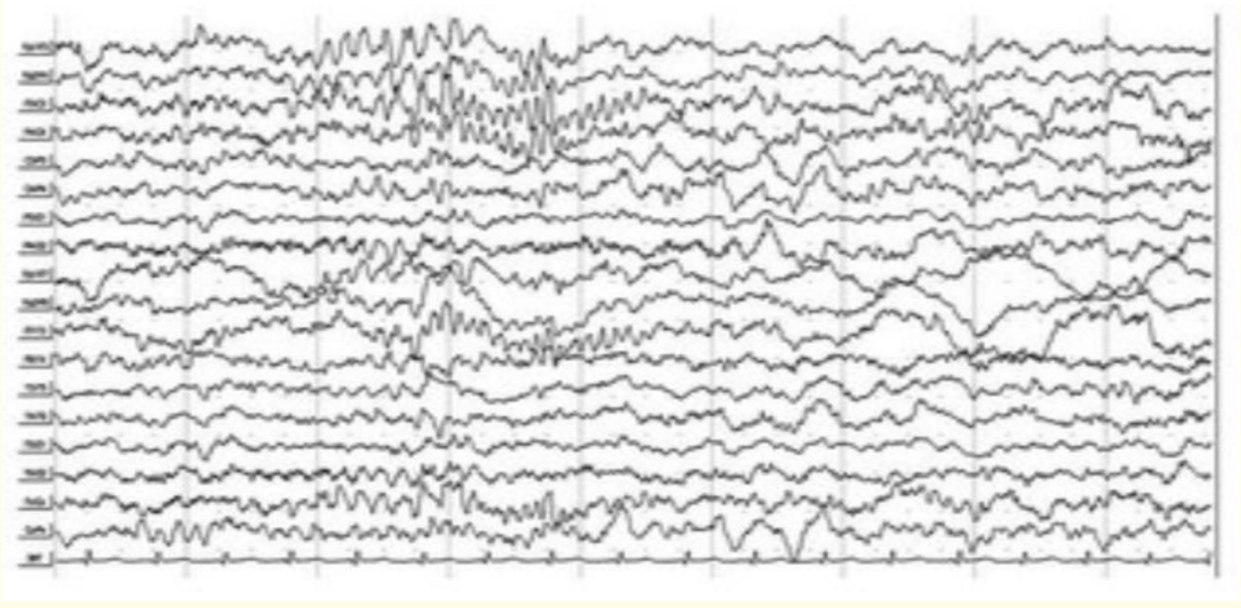

Figure 1: *Patient A, female, 20 y.o. EEG (NREM-sleep phase).*

The purpose of this study is to determine the nature of paroxysmal disorders occurring during sleep, and study the impact of anti-epileptic drugs (AEDs) on sleep architecture.

Figure 2: *Sleep Histogram.*

Studies were conducted on the basis of the analysis of clinical symptoms and instrumental studies. EEG, EEG-video monitoring and polysomnography were used as screening methods.

Data analysis of 300 patients aged 18-55 revealed the presence of epileptiform (25%) and non-epileptiform phenomena (28%), among which there were present parasomnias (somnambulism, nightmares, bruxism) - 5% and dyssomnias (difficulty falling asleep, frequent nocturnal awakenings, hypersomnia) - 23%. 10% of patients had a combination of both non- epileptiform and epileptiform phenomena, which greatly hampered the diagnosis. 15 patients (5%) didn't have any sleep disorders.

In the study of 137 patients with epilepsy during an inter-paroxysmal period, EEG showed certain increase in the number of "sleep spindles" and their high synchronization (amplitude, duration) in comparison with 163 patients with wakeful epilepsy.

The influence of AEDs on sleep structure cannot be excluded either.

To analyze the effect of AEDs on sleep structure, patients were not included whose taking polytherapy.

In patients receiving carbamazepine (7%), the REM-sleep phase decreased, especially at the beginning of treatment. In patients treated with valproate (5%), the 1st stage of sleep increased while the clinical course of obstructive sleep apnea worsened as a result of side effects. In patients taking lamotrigine (3%), the slow-wave sleep stage decreased, while in patients treated with levetiracetam (8%), sleep continuity improved and there was some increase in the slow-wave stage.

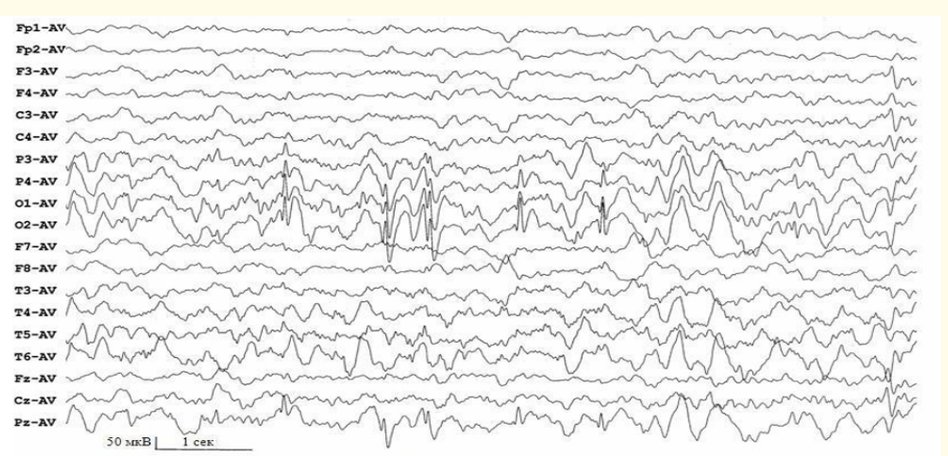

Figure 3: *Patient A, female, 20 y.o. EEG (NREM-phase. Sleep stage II).*

The study revealed that sleep disorders in patients with epilepsy are observed in 53% of cases. AEDs affects the structure and quality of sleep. The differential diagnosis of epileptic and non-epileptic sleep disorders has a lot of problems in clinical practice. Adequate assessment of the syndrome is essential for developing optimal treatment strategies [1-5].

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