Case Report

Nocturnal Temporal Lobe Epilepsy

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Case Report

Nocturnal Temporal Lobe Epilepsy

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Abstract: Background: Epilepsy and sleep have been reported to be closely associated. However, the mechanisms involved in this association remains unclear. Epileptic seizures during sleep may be misdiagnosed as parasomnias or movement disorders and can be associated with daytime sleepiness and poor quality of life. Nocturnal temporal lobe epilepsy (NTLE) has recently been recognized and is considered rare. Herein, we intend to present a case of a patient with NTLE with epileptic seizures occurring exclusively during sleep—initially diagnosed and treated as a sleep disturbance disorder. Case Presentation: A 24-year-old female reported to have been treated for disturbed sleep. A 24-hour video-electroencephalogram (V-EEG) was then performed, which showed acute waves, spikes, and complex spike-slow waves of great amplitude, isolated, and in outbreaks in the left temporal region, with abrupt choreoathetotic, generalized, and asymmetric body movements. Conclusion: The importance of this case lies in the presentation of exclusively nocturnal epileptic seizures, without personal or family history of epilepsy, with normal imaging findings along with V-EEG evidence of epileptic discharges in the left temporal lobe. Therefore, diagnosing NTLE is challenging and must be considered in patients presenting with paroxysmal motor sleep events. Additionally, detailed description of the seizures and V-EEG are fundamental factors that could aid in confirming the diagnosis.

Keywords: epilepsy; seizures; temporal lobe epilepsy; clinical neurophysiology; sleep; electroencephalography

Introduction

Epilepsy and sleep have been reported to be closely associated [1,2]. Gowers in 1885 considered that patients could present predominantly nocturnal, diurnal or independent seizures of the sleep-wake cycle [3]. Janz in 1962 classified patients with awakening epilepsy, sleep epilepsy and a third group without significant diurnal variations [4].

Epileptic seizures during sleep may be misdiagnosed as parasomnias or movement disorders and can be associated with daytime sleepiness and poor quality of life [1,5,6]. For Peter-Derex et al. [7] the differential diagnosis between sleep-related epileptic seizures and parasomnia remains a challenge and pathophysiological markers are necessary to differentiate both conditions.

The association of epileptic seizures and sleep occurs most frequently in frontal lobe epilepsy, benign epilepsy with centrotemporal spikes, childhood epilepsy with occipital paroxysms, Landau-Kleffner syndrome and electrical status epilepticus during slow wave sleep [8,9]. In many patients, epileptic seizures may occur only during sleep, making their diagnosis difficult [1,5].

Nocturnal temporal lobe epilepsy (NTLE) has recently been recognized and is considered rare [1,3]. Herein, we intend to present a case of a patient with NTLE with epileptic seizures occurring exclusively during sleep—initially diagnosed and treated as a sleep disturbance disorder.

The term nocturnal temporal lobe epilepsy is attributed to Bernasconi et al. [8] in 1998, who described the clinical features of patients with NTLE with seizures occurring exclusively or predominantly during sleep.

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Here, we present a case of a patient with NTLE with epileptic seizures occurring exclusively during sleep, initially diagnosed and treated as a sleep disorder.

Case Report

A 24-year-old female college student reported to have been treated for restlessness, sleep disturbances, daytime sleepiness, and unrefreshing sleep since the age of 2 or 3 years. She denied any history of febrile or daytime epileptic seizures. She had normal psychomotor development, and no family history of epilepsy. The patient was on pregabalin 75 mg daily for one year without improvement.

The results of a general physical examination and laboratory tests included complete blood count, erythrocyte sedimentation rate, folic acid, vitamin B12, vitamin D, coagulation test, blood glucose, magnesium, sodium, potassium, calcium, lipid test, liver, kidney and thyroid function were normal. Computed tomography, magnetic resonance imaging of the brain, and cerebral arterial and venous angiography were normal.

Polysomnography showed abrupt, choreoathetotic, arrhythmic, asynchronous, and asymmetric body movements followed by arousals from all stages of sleep. EEG during wakefulness and spontaneous sleep of 1 hour duration: left frontotemporal irritative activity. A 24-hour video-electroencephalogram (V-EEG) was then performed, which showed isolated and intermittent high-amplitude sharp waves, spikes, and complex spike-slow waves in the left temporal region, suggestive of a localized left temporal etiology for the symptoms (Figure 1). Lamotrigine was started with a progressive increase in dosage up to 50 mg in the morning and 100 mg in the evening. The nocturnal hyperkinetic movements were controlled, improving sleep and eliminating daytime sleepiness. The patient reported improved school performance and interpersonal relationships. She has been seizure-free for two years and has had normal and restful sleep.

Discussion

We consider the patient's movements during sleep as dystonic movements caused by focal hyperkinetic seizures originating in the left temporal lobe, which were confirmed during V-EEG recording. The recurrence of focal epileptic seizures and the presence of exclusively nocturnal seizures lead to a diagnosis of NTLE.

Bernasconi et al. [8] in 26 cases with NTLE found absence of lesions; mean age at onset of seizures of 16.3 years; 11 had unilateral temporal abnormalities and 15 bilateral temporal abnormalities on EEG; only two patients had a positive family history of epilepsy and two were free of seizures with medication. Furthermore, in their conclusions, they emphasized that a family history of epilepsy is rare and there is a low prevalence of febrile seizures in childhood.

Hussain et al. [5] reported the following clinical peculiarities in 7 cases of NTLE, more frequent in females; age of onset between 1-17 years; normal neurological examination; family history of epilepsy in 28.5% and a seizure frequency of 42/month.

Giuliano et al. [10] comment that nocturnal seizures originating in the temporal lobe may have clinical characteristics similar to those of frontal onset, being characterized by recurrent hypermotor events during sleep. In our patient, abrupt, choreoathetotic, arrhythmic, asynchronous and asymmetric body movements followed by awakenings were recorded on PSG, similar to that published by Giuliano et al. [10]. Her 24-hour V-EEG showed isolated and bursty high-amplitude sharp waves, spikes and complex spike-slow waves in the left temporal region, suggesting a localized left temporal etiology for the symptoms. We believe that the similarity in seizures in NTLE and nocturnal frontal seizures could be explained by the propagation of the epileptic discharge from the initial temporal lobe to the frontal lobe. Note that the EEG during wakefulness and spontaneous sleep of one hour duration in the case presented showed irritative frontotemporal activity on the left.

Mai et al. [11] published that patients with hyperkinetic crises related to NTLE had anamnestic characteristics, with agitated movements, high frequency of seizures and no history of febrile

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seizures, in comparison with our case, have as similarity the hyperkinetic movements and the absence of febrile seizures.

The importance of this case lies in the diagnostic error between paroxysmal motor events of sleep and exclusively nocturnal epileptic seizures, particularly with NTLE. Therefore, we suggest the use of clinical tools for their differentiation, such as: complete and detailed medical interview; PSG and as the gold standard exam, prolonged V-EEG of 12 to 24 hours. Therefore, the diagnosis of NTLE is challenging and should be considered in patients who present paroxysmal motor events of sleep. In our case, the response to lamotrigine was good, controlling the seizures, improving sleep and eliminating daytime sleepiness. And as a consequence, it improved the patient's quality of life.

Conclusions

The diagnosis of NTLE is challenging when seizures occur exclusively during sleep and there is no personal or family history of epilepsy. Therefore, we recommend always considering the possibility of nocturnal epilepsy when faced with paroxysmal motor events that occur during sleep. A complete and detailed clinical history, together with the use of complementary exams, are necessary tools for this differentiation. We consider V-EEG as the exam of choice for this differentiation. Once nocturnal epileptic seizures are identified, treatment with anti-seizure drugs should be initiated. Therapeutic control of seizures will improve the patient's sleep and quality of life, as happened in our case.

Conflict of interest: There is no conflict of interest to declare.

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