More severe nocturnal hypoxemia is associated with a better sleep efficiency in patients with epilepsy and obstructive sleep apnea

Wei-Chih Yeh, Chung-Yao Hsu

Sleep Disorders Center, Department of Neurology
Kaohsiung Medical University Chung-Ho Memorial Hospital
Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University

Introduction

- Patients with epilepsy experience worse sleep quality and disrupted sleep architecture.
- The prevalence of obstructive sleep apnea (OSA) was higher in patients with epilepsy then healthy controls. Epilepsy and OSA could both disturbed sleep architecture.
- However, few studies have assessed the relationship between severity of oxygen desaturation and parameters of sleep macrostructure in epileptic patients comorbid with OSA.
- This study focusing on the role of nocturnal hypoxemia.

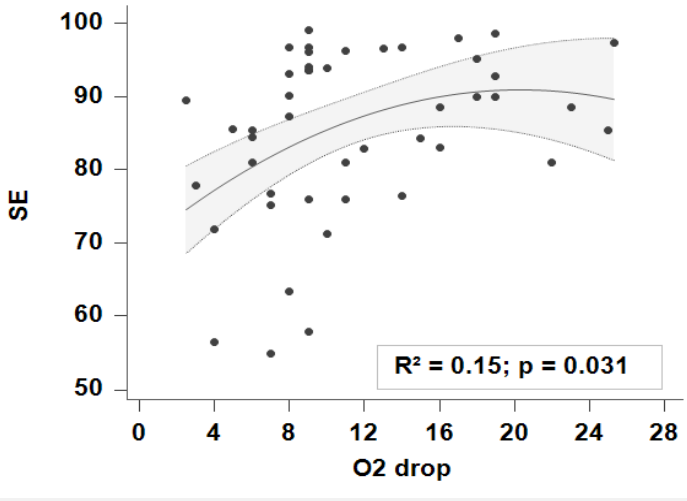
Methods

- Polysomnography (PSG) studies of 46 patients with epilepsy and OSA were reviewed.
- We compared the differences in parameters of sleep macrostructure among patients based on the apnea-hypopnea index, oxygen desaturation index, and pulse oxyhemoglobin level (SpO2).
- Associations between these indices and sleep macrostructure were analyzed.
- We performed polynomial regression analysis to investigate the correlations between SpO2 drops and sleep macrostructure.

	SpO_2 drop ≥8% (n = 35)	SpO_2 drop <8% (n= 11)	*p*-value
Sleep efficiency (%)	88.01 ±10.13	76.22±11.41	0.0021*
Sleep latency (min)	10.44±16.10	38.09±56.08	0.0113*
REM sleep latency (min)	129.9±70.38	150.3±76.91	0.4169
Stage N1 (%)	15.87±12.54	19.36±11.31	0.4149
Stage N2 (%)	57.92±11.56	58.20±10.84	0.9443
Stage N3 (%)	10.85±10.13	10.08±11.49	0.8336
REM sleep (%)	15.42±6.17	12.35±5.42	0.1460
Arousal index (/hour)	16.13±13.40	14.33±8.78	0.6779

Results

- had significantly better SE then those with less Patients with more severe SpO2 drop (≥8%) severe SpO2 drop(<8%) (88.01% ± 10.13% vs. 76.22% ± 11.41%, *p* = 0.0021)
- The sleep architecture and arousal index was comparable between two groups.
- A greater SpO2 drop was positively associated with better SE (r = 0.3503, p = 0.017).
- There was a significant correlation between SpO2 drop and SE (r2 = 0.15, p = 0.031).



Conclusions

- More severe hypoxemia is associated with better SE among patients with epilepsy and OSA.
- The underlying mechanisms of the relationship between nocturnal hypoxemia and SE are unclear.
- SE-based assessments of the severity of sleep disturbances in patients with epilepsy and OSA may be misleading.