

Prevalence of Low Arousal Threshold and Associated Clinical Features among the Stroke Patients with Sleep Apnea

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Background: The prevalence of sleep apnea in the patients with stroke is four times higher than in the general population and untreated obstructive sleep apnea could be associated with poor clinical outcomes. Low arousal threshold phenotype is proposed to be a subgroup which can benefit from hypnotic agents. Since the polysomnography (PSG) has limited practicability in stroke centers, other clinical biomarkers that can reflect the arousal threshold are needed.

Objective: To investigate the prevalence of low arousal threshold (ArTH) and the associated clinical features among the stroke patients with sleep apnea.

Methods: This was a prospective and non-randomized observational study in which ischemic stroke patients with sleep apnea being treated in a rehabilitation ward were enrolled from 2015 to 2018. A low respiratory ArTH is determined by an ArTH score of two or above (one point for each: apnea–hypopnea index (AHI) < 30/h, nadir oxygen saturation (SaO₂) > 82.5%, fractions of hypopneas > 58.3%). The data were analyzed using a Chi-Square test, student's t test and linear regression models.

Results: A total of 120 subjects were analyzed (44 in low arousal threshold group, 76 in high arousal threshold group). There was a significantly higher proportion of individuals with younger age (62.7 ± 11.93 vs 67.47 ± 11.13), female sex (45% vs 20%) and absence of HTN (5% vs 20%) who had a low ArTH ($P = 0.03, 0.003, 0.014$, respectively). Besides, the proportions of individuals with high respiratory arousal thresholds among individuals with central sleep apnea is significantly higher than that of individuals with obstructive sleep apnea (16% vs 2%, $p=0.03$).

Conclusion: Younger age, female sex and absence of HTN can be viewed as potential surrogate markers for low arousal threshold in patient with stroke and sleep apnea, which provide the hints of the use of hypnotic agents can be beneficial.

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