Obstructive Sleep Apnea and Risk of Parkinson's Disease: A Population-Based Cohort Study

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Background: Sleep disorders might be associated with neurodegenerative diseases. This study aimed to determine the risk of Parkinson's disease (PD) in patients with obstructive sleep apnea (OSA).

Methods: The incident cases of newly diagnosed OSA were identified between 2000 and 2009 from the medical claims database of National Health Institute of Taiwan. The risk of PD onset at least 1 year after the diagnosis of OSA was measured during and up to 11 years of period, as compared to that of age- and gender-matched controls estimated in the same period. A total of 5,864 patients with newly diagnosed OSA and 23,269 subjects without OSA were identified for data analysis.

Results: The incidence of PD in OSA cohort was approximately two times higher than that in the control cohort (2.57 vs. 1.32 per 1,000 person-years), with an adjusted hazard ratio (aHR) of 1.84. Furthermore, PD risk was particularly greater for the OSA with insomnia subgroup [aHR= 1.97, 95% confidence interval (CI)= 1.44-2.69] than for the control cohort. The sex-age-specific analysis further discovered that the most elevated risk of PD onset was noted in female OSA patients aged 50-69 years (aHR: 2.82).

Conclusions: This population-based study indicated that patients with OSA, especially those who suffered from insomnia, are at an increased risk of PD onset.

Discussion: Excessive daytime sleepiness and insomnia were found to be prevalent in PD patients. Subjective insomnia was positively associated with non-motor symptoms (depressed mood, autonomic symptoms, and fatigue), whereas fatigue and dopaminergic medication are associated with subjective daytime sleepiness in PD patients. (Gaenslen et al., 2014). Our study further showed that insomnia might interact with OSA and further increase the risk for PD onset. This clinical observation provided the support for experimental findings showing that tissue hypoxia could lead to neural degeneration, including developmental of PD.