Increased Risk of Idiopathic Pulmonary Fibrosis in Sleep Apnea Patients

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Objective: Sleep-related disorder such as sleep apnea (SA) has been thought as an important comorbidity for idiopathic pulmonary fibrosis (IPF). Some studies proposed a bidirectional relationship between SA and IPF. Current guidelines suggest to evaluate the possible comorbidities, including SA, during IPF diagnosis. Nevertheless, whether SA is a true risk factor or just a comorbidity for IPF is not clear. We used Taiwan National Health Insurance (NHI) Research Database to perform a nationwide population-based cohort study to determine the associated risk of IPF in SA patients in Taiwan.

Methods: From an NHI Research Database of about three million people randomly sampled from all beneficiaries enrolled in the NHI system, we selected adult patients with SA diagnosis after polysomnography, and excluded those diagnosed with IPF prior to SA. Each SA patient was matched to 7 randomly-selected control subjects by age and sex. The cumulative incidence of IPF was assessed with Kaplan-Meier method and log-rank test. Poisson regression and Cox regression analyses were performed to assess the effect of SA on incident IPF.

Results: A total of 11768 SA patients and 82376 control subjects was identified. SA patients had a significantly higher cumulative incidence of IPF than the control subjects (p=0.0046). SA patients had a significant higher incidence rate of IPF than the control subjects (adjusted incidence rate ratio [95% CI]: 3.80 [3.59-4.01], p<0.0001). Multivariable Cox regression analysis, adjusting for age, sex, residency, income level, and comorbidities, showed that SA was an independent risk factor for IPF (HR [95% CI]: 3.62 [1.10-11.98], p=0.0349).

Conclusion: This study revealed that SA was associated with increased risk of IPF. SA is not only a comorbidity but also an independent risk factor for IPF. SA-related intermittent hypoxia causing oxidative stress, systemic inflammation, and tissue damage could potentially lead to pulmonary fibrosis. Further prospective studies are needed to confirm the pathophysiological association between SA and IPF. The effect of the SA-specific treatment in reducing the risk of IPF development may also be the study aim in the future.

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