

Obstructive sleep apnea during REM sleep and type II diabetic mellitus

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Objective: Obstructive sleep apnea (OSA) is associated with poor glycemic control in type 2 diabetes. We aim to quantify the independent association of OSA during rapid eye movement (REM) sleep and prevalent diabetes mellitus (DM).

Methods: In this cross-sectional study, 1149 sleep-disordered breathing patients who underwent full-night polysomnography in Kaohsiung Chang Gung Memorial Hospital were analyzed. Logistic regression analysis was performed to determine the separate effects of OSA during REM and/or non-REM sleep, apnea-hypopnea index (AHI), and several other polysomnography parameters on the prevalence of DM after adjustment for known risk factors.

Results: Quartile of REM-AHI was independently associated with DM ($P = 0.014$) (Q2: OR 1.224, 95% CI 0.653 to 2.292; Q3: OR 1.582, 95% CI 0.875 to 2.861; Q4: OR 2.227, 95% CI 1.234 to 4.019, relative to Q1), whereas quartile of non-REM-AHI was not ($P = 0.074$). Likewise, categorical REM-AHI ($p=0.048$) ($5 \leq \text{AHI} < 15$: OR 1.837, 95% CI 0.652 to 5.177; $15 \leq \text{AHI} < 30$: OR 0.927, 95% CI 0.319 to 2.8697; $30 \leq \text{AHI} < 50$: OR 2.053, 95% CI 0.922 to 4.573; $\text{AHI} \geq 50$: OR 2.489, 95% CI 1.19-5.207, relative to $\text{AHI} < 5$) was independently associated with DM, whereas categorical non-REM-AHI was not ($P = 0.816$). Age ($p < 0.001$), body mass index ($p < 0.001$), and REM AHI value ($P=0.002$) were independently associated with the prevalence of DM ($n=143$) in OSA patients ($n=1058$). Combining the three independent predictors, receiver operating characteristic curves showed that the risk of DM was well-captured by Prediction Score (AUC=0.747, 95% CI 0.708-0.786, $p < 0.001$).

Conclusions: Our findings indicate that REM OSA is independently associated with type II DM. Future research is needed to determine whether extending continuous positive airway pressure treatment of OSA to the second half of the sleep period can prevent or reverse the development of DM.

中文題目：快速動眼期的阻塞性睡眠呼吸中止症與第二型糖尿病的相關性

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