

Sleep and Respiratory Alterations in Experimental Models of Obstructive Sleep Apnea: A
Potential Role of IL-17

研究目的 (Objective)

We investigated the potential role of interleukin-17-mediated inflammation in obstructive sleep apnea, with particular emphasis on its involvement in the development of oxidative stress, DNA damage, cell death, and subsequent neurodegenerative changes. This study further aimed to explore whether increased IL-17-related inflammatory responses are associated with alterations in sleep quality and behavioral outcomes, and to provide a better understanding of the potential mechanisms linking obstructive sleep apnea (OSA)-induced inflammation to neurological dysfunction.

研究方法 (Methods)

Four-week-old male C57BL/6 mice were fed with high-fat diet (HFD) for 12 weeks. At 12th week, electroencephalography (EEG) electrodes were implanted. One week after surgery, sleep recording, whole-body plethysmography (WBP), and behavioral assessments were performed. Mice were then treated with an IL-17 receptor antagonist, followed by repeated sleep recording and behavioral assessments to evaluate changes before and after treatment. At the end of the experiment, brain tissues were collected for further analysis of biomarkers related to neuroinflammation, oxidative stress, DNA damage, cell death, and neurodegeneration.

研究結果 (Results)

At baseline, differences in sleep-related parameters were observed in control, HFD-treated and HFD+polytetrafluoroethylene (PTFE) groups, the PTFE was further injected into the tongue to create OSA by inducing macroglossia. Compared to the control group, the HFD and HFD+PTFE groups exhibited different patterns of rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep. WBP also revealed differences in respiratory patterns in the HFD and HFD+PTFE groups when compared to the control group. Locomotor activity was assessed to evaluate the potential contribution of obesity-related reductions in physical activity to the observed behavioral differences.

結論 (Conclusion)

Our preliminary findings demonstrated differences in sleep architecture and respiratory patterns among the control, HFD, and HFD+PTFE groups. These results provide a basis for further investigating the relationship between IL-17-mediated inflammation, sleep and respiratory disturbances, and neurological alterations in OSA.

中文題目：_阻塞性睡眠呼吸中止實驗模型中的睡眠與呼吸改變：IL-17
的潛在作用_

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