Using Biomarkers to Predict the Risk of Cardiovascular Disease among Occupational Workers with Obstructive Sleep Apnea

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Background and Aims: Workers with non-regular shift work could lead the high risk of obstructive sleep apnea (OSA) occurred. OSA was one of the independent risk factor for cardiovascular disease (CVD). However, limited studies have been postulated the relations between OSA and CVD among occupational workers. The objectives of this study were to estimate the severity of OSA and risk of CVD, and to build the potential mechanistic relations of biomarkers including oxidative stress and inflammatory markers with OSA and CVD.
Methods: We recruited 189 non-regular shift workers who examined by polysomnography (PSG) to gain the the apnea-hypopnea index (AHI) and divided into normal (AHI<5) and OSA (AHI≧5) groups. Blood and urine samples were collected to analyses the biomarkers of inflammation and oxidative stress such as TNF-α, interleukin-10, MDA, and 8-OHdG. High-sensitivity C-Reactive Protein (hs-CRP) and homocystein were also analyzed to be the CVD risk biomarkers of early response. Ten years CVD risk was calculated by the index from Framingham Heart Study.
Results: The results show that group of OSA in CVD risk is 9.4%, which is significant higher than normal group (7.9%, p=0.048). Significant increase of OSA group compared with normal group was also shown in hs-CRP (p=0.019). Moreover, the same patterns were showed in TNF-α and MDA, indicating the workers with OSA could have more inflammation and oxidative stress level than normal group.
Conclusion: Non-regular shift workers with OSA could lead the raising CVD risk and the oxidative stress and inflammation might be the potential mechanism.
References:
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