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Association of Overnight Pulse Oximetry Screened Obstructive Sleep Apnea with Risk of Serious Cardiovascular Events: 5 Years Historical and Prospective Cohort Study in the Primary Care Setting

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Introduction

Obstructive sleep apnea (OSA) is a condition characterized by sleep disordered breathing resulting in cardiovascular and neuropsychological morbidities and increased risk of motor vehicle accidents. Long term follow up community-based cohort and systematic review have confirmed risk of OSA associated with stroke and cardiovascular mortality. Oximetry alone is often used as the first screening tool for OSA. According to study conducted in a regional primary care clinic of Hong Kong, the overnight pulse oximetry is a good OSA screening tool. This study follows up the patients with OSA screening performed in year 2011 and 2012, and aims to evaluate the risk factors associated with the incidence of cardiovascular complications.

Objectives

To investigate whether overnight pulse oximetry screened obstructive sleep apnea independently increases the risk of cardiovascular disease, stroke or coronary heart disease.

Methodology

This is a historical and prospective cohort study involving consecutive patients whom had performed OSA screening by overnight pulse oximetry in a primary care clinic from January 1, 2011 to December 31, 2012. OSA screening positive patients were the cohort group while OSA screening negative patients were the control group. 180 patients were consecutively allocated to cohort and control group respectively. The five year incidence of cardiovascular complications and associated predictive factors were examined.

Result

180 cohort and 180 control patients had followed up for 5 years. Higher proportion of males (68.3% versus 45.0%), smokers (27.8% versus 15.0%), concomitant with diabetes mellitus (19.4% versus 12.8%), obesity (58.3% versus 41.1%) were

observed in the cohort group. There was no difference in mean blood pressure and Epworth Sleepiness Scale score among two groups. At five year follow up, there was no cardiovascular related mortality among two groups. OSA screening positive patients, patients with HT or hyperlipidaemia, and smokers associated with significant higher risk for cardiovascular complications ($p < 0.05$). Logistic regression model showed that OSA screening positive was an independently predictive factor for cardiovascular complication and coronary heart disease, HR was 3.521 (1.268-9.776, $p = 0.016$) and 4.24 (1.176-15.289, $p = 0.007$) respectively. OSA screening positive was also a risk factor for stroke, but did not achieve statistical significance. (HR=1.686, 95% CI 0.397-7.161).