Sugar and lipid metabolism biomarkers evaluation in patients with obstructive sleep apnea before and after continuous positive airway pressure treatment after 6 months

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Vajira Med J. 2019; 63 Suppl: S203

Abstract

Introduction: Obstructive sleep apnea (OSA) is inspiratory collapse of the pharyngeal airway, and generation of reactive oxygen species due to repetitive hypoxia and inflammation. Severity of OSA were defined as apnea–hypopnea index (AHI), higher than 30 event/hour. Continuous positive airway pressure (CPAP) is recognized as the gold standard treatment for OSA. Studies on the effects of treatment are equally conflicting.

Objectives: We evaluated the association between sugar and lipid metabolism biomarkers (SLMB) and severity of OSA, and whether CPAP treatment ameliorated SLMB.

Methods: Forty patients with severe OSA (AHI: 37.8 ± 5.8 /h) that were newly diagnosed using polysomnography were recruited. Patients received CPAP treatment for six months. The levels of fasting blood sugar (FBS) and lipid profiles were measured before and after three and six months in both groups.

Results: FBS was positively correlated with AHI ($r = 0.3179$, $p < 0.05$), arousal index ($r = 0.3461$, $p < 0.05$), and apnea index ($r = 0.3368$, $p < 0.05$). On day 180, FBS, cholesterol, triglyceride, and low-density lipoprotein (LDL) levels were lower in the CPAP group compared to Day 0 ($p < 0.001$, $p < 0.01$, $p < 0.05$, and $p < 0.01$, respectively).

Conclusion: Our study demonstrates that there was a positive correlation between FBS with severity of OSA, and that CPAP therapy in OSA patients shows clinical benefits, as measured by reduction in FBS, cholesterol, triglyceride, and LDL levels after six months.