The Relationship Between Markers Of Disease Severity In Obstructive Sleep Apnea Patients To Hemodynamic And Respiratory Function During Graded Exercise

by

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(ABSTRACT)

Obstructive sleep apnea (OSA) is estimated to affect 2 to 4 percent of the adult population (Young T 1993, Skomro and Kryger 1999). However, an estimated 80 to 90 percent of adults with moderate to severe OSA may be clinically undiagnosed. Identification of those at risk and their subsequent diagnosis is, obviously, of great concern to clinicians. This investigation included three distinct research aims, which were the following: (1): In order to establish reliability of hemodynamic measures to be used during exercise testing, a study was conducted on the acetylene single-breath cardiac output (Q_c) technique in 15 healthy subjects. This was completed in order to establish reliability of exercise Q_c and total peripheral resistance (TPR), these responses could then be investigated acutely in the context of evaluating the relation of these measures to markers of disease in OSA patients. (2): The primary research aim was to describe the extent to which graded exercise testing may reveal abnormalities in hemodynamic function in obstructive sleep apnea (OSA) patients, particularly with respect to cardiac output (Qc), mean arterial pressure (MAP), and TPR that may be related to polysomnography (PSG) markers of OSA severity. Cardiorespiratory and hemodynamic responses that were evaluated included the following: peak oxygen consumption (VO_2pk), end-tidal carbon dioxide production ($P_{ET}CO_2$), end-tidal oxygen pressure

($P_{ET}O_2$), heart rate (HR), blood pressure (systolic = SBP and diastolic = DBP), rate pressure product (RPP), TPR and its derivatives including MAP and Q_c, in OSA patients. A global biochemical marker of vascular function, 24-hour urinary nitrite/ nitrate elimination was also determined for each patient. (3): The last aim was included in order to provide qualitative information concerning treatment, subjective sleep and daytime function, and physical activity levels of the OSA patients in this investigation as well as to give insights into the special challenges and potential for doing trials involving nCPAP and physical exercise training with OSA patients. Results from this study can be used to improve clinical evaluation procedures as well as to better understand underlying mechanisms relative to the link between cardiovascular disease and OSA.

DEDICATION

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