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Title: Cardiopulmonary exercise response in children with obstructive sleep apnea syndrome

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Body: Introduction: Cardiopulmonary exercise testing (CPET) is a valuable tool in the evaluation of cardiac and pulmonary function. In adults' patients with obstructive sleep apnea syndrome (OSAS), recent studies addressed reduced exercise capacity, but there is no data in literature for pediatric patient. Aim: To evaluate cardiopulmonary response to exercise in children with OSAS. Methods: Twenty seven subjects, without any systematic disease, aged 7 to 14 years (mean age 10,5 ± 1,8 years), referring for evaluation of systematic snoring (≥4 nights/week), underwent overnight polysomnography (PSG) and CPET. According to the Apnea Hypopnea Index (AHI) subjects were divided into two groups: A. mild OSAS (1≤AHI<5, n=15), B. moderate – severe OSAS (AHI>5, n=12). Control group (group C) consisted of 13 children. Results: There were no significantly differences in age, sex, BMI, among groups ($p<0.05$). Mild OSAS had 55,6% of children (group A) and moderate to severe 44,4% (group B). According to CPET children with OSAS had shorter duration of exercise (12,4±2,6min vs 13,3±2min), significantly lower VO2max (40,3±8,4 ml/kg/min vs 47,6±7,9 ml/kg/min, p=0,013), significantly lower VO2max(%) (77,7±15 vs 92,9±10,5, p=0,002), higher VO2AT (%) (48,2±14,7 vs 43,7±19,8) and higher systolic blood pressure level at peak exercise (145±27,4mmHg vs 143,92±20 mmHg) compared to control group. Children with mild OSAS had higher VO2max (%) (80,8±9,3 vs 73,8±19,7) but not statistically significant compared to moderate - severe OSAS. Conclusion: The present study demonstrates that young patients (mean age 10,5 ± 1,8 years) with OSAS, even with mild OSAS, had reduced exercise capacity (lower VO2max) as compared to control group.