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Sleep-disordered breathing and uric acid in overweight and obese children and adolescents.

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OBJECTIVE: The aim of this study was to determine whether the severity of sleep-disordered breathing (SDB) was associated with increased levels of uric acid (UA), both in serum and in urine, as a marker of tissue hypoxia, in a sample of overweight and obese subjects, irrespective of indexes of adiposity. METHODS: Consecutive subjects underwent polysomnography, fasting blood sampling, and 24-h urine collection. Outcome parameters were serum UA, UA excretion ([24-h urinary UA x serum creatinine]/urine creatinine) and urinary UA/creatinine ratio. RESULTS: A total of 93 subjects were included (44% boys; mean [+/- SD] age = 11.1 +/- 2.5; 73% obese). A fasting measurement of serum UA levels was available for 62 patients. The respiratory disturbance index was a significant covariate (beta = 0.09 +/- 0.03; p = 0.01) in the regression model for serum UA, controlling for sex (beta = 0.32 +/- 0.29; p = 0.3), puberty (beta = 0.87 +/- 0.34; p = 0.01), and waist circumference (beta = 0.04 +/- 0.01; p = 0.005). The percentage of total sleep time with arterial oxygen saturation < or = 89% (beta = 0.94 +/- 0.45; p = 0.04) was also significantly associated with serum UA level, controlling for sex (beta = 0.22 +/- 0.30; p = 0.5), puberty (beta = 0.83 +/- 0.35; p = 0.02), and waist circumference (beta = 0.04 +/- 0.02; p = 0.02). None of the SDB variables correlated with UA excretion or with urinary UA/creatinine ratio. CONCLUSION: This study in overweight children and adolescents demonstrated a relationship between the severity of sleep apnea and increased levels of serum UA, independent of abdominal adiposity. In view of the known associations between UA and cardiovascular risk, this finding may contribute to the mechanisms linking SDB with cardiovascular morbidity.

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