

ALBUMINURIA IN OBESE ADULTS IS ASSOCIATED WITH HYPERTENSION AND SLEEP DISTURBANCE.

Varun Agrawal, Thomas E. Vanhecke, Barry A. Franklin, Kerstyn C. Zalesin, R. Bart Sangal, Basil Hakmeh, Adam T. deJong, Peter A. McCullough, William Beaumont Hospital, Royal Oak MI, USA.

Obstructive sleep apnea (OSA) is frequently found in obese adults. It increases the risk for hypertension by sympathetic activation, insulin resistance and hypoxia induced inflammatory stress. Little is known about the effect of OSA on renal function. We performed a cross-sectional study on 50 obese adults who underwent polysomnography at our institute for symptoms of OSA and were not on treatment for OSA. Patients with previous history of diabetes were excluded. Mean age was 45 yrs, 68% were female and mean body mass index (BMI) was $48.6 \pm 9.4 \text{ kg/m}^2$. Presence of hypertension was based on the diagnosis by the referring physician and defined as blood pressure (BP) $\geq 140/90$ mmHg and/or use of antihypertensive medications. The study sample was divided into obese hypertensives (n=24) and obese non-hypertensives (n=26). Obese hypertensives had a higher mean BMI than obese non-hypertensives (51.3 vs 45.7 kg/m^2 , $p=0.04$), a trend towards higher systolic BP (136.4 vs 129.4 mmHg, $p=0.13$) and higher diastolic BP (86.3 vs 80.5 mmHg, $p=0.02$). The albumin creatinine ratio ACR (geometric mean with 95% confidence intervals) in obese hypertensives ($12.2 \pm 3.6 \text{ mg/g}$) was significantly greater than in obese non-hypertensives ($5.2 \pm 2.6 \text{ mg/g}$); $p=0.01$. There were no differences in lipid profile, C-peptide, high sensitivity C-reactive protein or serum creatinine. The degree of sleep disturbance was evaluated by the apnea-hypopnea index (AHI), defined as the number of apneic and hypopneic episodes per hour of sleep (AHI >5 indicates OSA). The obese hypertensives had greater AHI than obese nonhypertensives (21.6 vs 9.7 ; $p=0.04$). In the entire study sample, ACR correlated with AHI ($r=0.31$; $p=0.03$). Multiple regression analysis showed ACR to be significantly associated with the presence of hypertension ($p=0.01$). We conclude that obese adults with hypertension have increased albuminuria and increased sleep disturbance. The degree of albuminuria correlates with the severity of sleep disturbance and is independently associated with the presence of hypertension. Further studies should evaluate the effect of treating OSA on albuminuria.