High Blood Press Cardiovasc Prev 2008; 15 (3): 171-215
1120-9879/08/0003-0171/$48.00/0

Metabolic Aspects and Mechanisms

9.14 Relation Between Resting Metabolic Rate and Blood Pressure in Overweight-Obese People: Effect of Gender

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Introduction. Blood pressure is linearly related to both body weight and resting metabolic rate (RMR). Since obesity is, in its turn, linked with both hypertension (HT) and RMR, the question asked by this study is whether blood pressure (BP) and hypertension are associated to RMR independently of body mass index (BMI), as well as whether gender has any effect in this relationship.

Methods. We studied 353 overweight-obese people [BMI between 25 and 40Kg/m2], of whom 104 males (M), 133 premenopausal (Pre-Menop) and 115 postmenopausal (Post Menop) women who consecutively came to the outpatient clinic of our hospital to obtain dietetic advice. In all patients we measured RMR through bioelectrical impedance (Akern, Florence, Italy) and BP by standardised methods. HT was defined as a systolic BP>140mm Hg and/or a diastolic BP>90mmHg.

Results. In both genders RMR (Kj/d± SD) was significantly higher in patients with hypertension as compared to normotensive individuals (7680± 1835 vs 6352±1257 in men and 5970±1290 vs 5610±1001 in women; p<0.05 for both, by Wilcoxon rank sums test). In addition in either M, Pre-Menop and Post-Menop mean BP was weakly, but significantly related to RMR (r=0. 36 in M, r=0.21 in Pre-Menop and Post-Menop; p<0.05 in all). After adjusting for age and BMI, however, RMR was significantly associated with BMI only in M [XX-coefficient = 0.0128 (p=0.000 6) in M; 0.0063 (p=NS) in Pre-Menop and 0.0073 (p=NS) in Post-Menop]. Finally in M group the adjusted risk for HT, expressed as Odds Ratio [OR(95%CI)] for each increase in RMR SD (about 420 Kcal), was 2.020 (1.1 14-4.1 14), while it was not significant in either Pre-Menop [1.1 68 (0.78 3-1.755)] or Post-Menop [1.432 (0.8 73-2.613)].

Conclusions. In overweight-obese people RMR is significantly related to BP as well as with arterial hypertension, while, after adjusting for BMI and age, this relation is observed only in men and, consequently, any RMR increase seems to be an independent predictor of arterial hypertension only in male individuals.