Metabolic Aspects and Mechanisms

9.19 Relationship of Serum Insulin, Leptin and Adiponectin and their Changes Over Time to the Incidence of Hypertension in Men: Results of the Olivetti Prospective Heart Study

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Introduction. To investigate the relationship of serum insulin (I), leptin (L) and adiponectin (A) levels and their changes over time to the incidence of hypertension (HT) in men.

Methods. The study population was made of 479 adult untreated normotensive (NT) men (mean age 51.6, range 25-74 years) participating in the 1994-1995 examination of the Olivetti Heart Study, who were examined again in 2002-2004 (8-year average follow-up) and had serum I, L and A measured in both occasions. Incident HT in 2002-2004 was defined as a BP more than 140 and/or 90 mmHg or current pharmacological treatment.

Results. Both at baseline and at follow-up examination I and L were positively related and A inversely related to SBP and DBP (p between <0.001 and 0.02). The subjects who developed HT (54%) were older, had higher BMI, I and L levels and lower levels of A at baseline compared with those who remained NT (p between 0.01 and <0.001). By logistic regression, after adjustment for age and baseline SBP, a 1-SD positive difference in log transformed values of basal I, L or A level was associated with 22% higher (p=0.044), 30% higher (p=0.015) and 20% lower rate (p=0.029) of incident HT, respectively. Upon further adjustment for baseline BMI or waist circumference, the association was maintained only for baseline A (p=0.03). The changes occurred during the follow-up period in BMI (p<0.001), waist (p<0.001), I (p=0.015) and L (p=0.018) were also associated with higher rates, whereas the changes in A (p=0.10) with lower rates of incident HT, upon adjustment for age, baseline SBP and baseline level (rank) of the respective variables.

Conclusions. In this adult male population, baseline insulin and leptin levels and their changes over time were associated with higher rates and adiponectin levels with lower rate of incident HT, independently of age and baseline BP levels. Adiponectin maintained its long-term influence on risk of HT also after adjustment for BMI or abdominal adiposity.