Metabolic Aspects and Mechanisms

9.11 Association between Plasma Aldosterone, Metabolic Syndrome and Left Ventricular Mass in Essential Hypertension

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Introduction. Plasma aldosterone has been associated with the metabolic syndrome (MetS) in black subjects. The same association has not been fully elucidated in white individuals.

Aim. To evaluate the relationships of plasma aldosterone concentration (PAC) to MetS and left ventricular mass (LVM) in non-diabetic Caucasian patients with essential hypertension.

Methods. Measurements were obtained in 450 essential hypertensive patients with subjects off antihypertensive medications and included 24-hour blood pressure monitoring, plasma rennin activity and aldosterone, and an echocardiogram. Primary aldosteronism was excluded on the basis of an aldosterone/renin ratio > 400.

Results. Compared with subjects without the MetS (n = 249), those with the MetS (n = 201) had higher age-adjusted PAC (101.9 ± 58 vs 116.1 ± 59 pg/ml; $p = 0.01$) and greater age adjusted LVM indexed for height^{2.7} (LVM H2.7) (56 ± 19 vs 62 ± 20 g/m^{2.7}; $p = 0.001$). The difference regarding PAC between the two groups was independent from plasma rennin activity and was chiefly explained by obesity. After adjustment for potential confounders, in the overall population LVMH 2.7 was associated with the MetS as a whole ($r = 0.11$; $p = 0.02$) and with body mass index ($r = 0.19$; $p < 0.0001$). The latter relationship was attenuated ($r = 0.15$; $p = 0.001$) after further adjustment for PAC. In the MetS group the association of LVMH2.7 with PAC held ($r = 0.19$; $p = 0.007$) in multivariate analyses. In subjects without the MetS, the same relationship became of borderline statistical significance.

Conclusions. Our study suggests that the elevated PAC related to obesity may help to explain the increased LVM observed in the MetS and may contribute to enhance the cardiovascular risk associated with the MetS.