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Hormonal Mechanisms

6.9 Plasma Aldosterone and Albumin Urinary Excretion in Hypertension

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Introduction. Preclinical studies indicate that exposure to increased aldosterone levels might result in renal damage but the clinical evidence supporting this role of aldosterone is preliminary. Recent evidence indicates that aldosterone-related renal damage might in part reflect functional and potentially reversible abnormalities initiated by glomerular hyperfiltration.

Methods. In this study we examined the relationship between plasma aldosterone (ALDO) and urinary albumin excretion inpatients with hypertension. We analyzed data of 222 grade 1-2 hypertensive patients (age: 49±12; 116 M, 106 F) who were consecutively referred to our unit. Secondary causes of hypertension were excluded after extensive diagnostic work-up that was performed after appropriate drug washout. Anthropometric indices and measurements of plasma lipids, uric acid, glucose, insulin, and HOMA-index were obtained after an overnight fast. Renal function was assessed by 24-h creatinine clearance and urinary albumin excretion, and the albumin-to-creatinine ratio (ACR) was calculated. Plasma active renin and ALDO were measured according to current guidelines and values were referred to the urinary Na excretion.

Results. When patients were subdivided according to the median value of ACR (8.6 m g/g) patients with higher values were found to have significantly greater BP, ALDO, insulin, and uric acid levels and HOMA. ACR was directly correlated with mean BP ($P<0.001$), ALDO ($P<0.001$), uric acid ($P=0.005$), and C-peptide ($P=0.033$). Multivariate regression analysis revealed that both mean BP and ALDO were independently correlated with ACR (both $P<0.001$). ALDO was also correlated with plasma insulin and HOMA.

Conclusions. This study demonstrates that ALDO is related to urine albumin excretion independent of BP values and renal function in hypertensive patients and supports a possible role of this hormone in the development of renal damage.