Microalbuminuria and endothelial dysfunction in essential hypertension

Summary

Microalbuminuria (urinary albumin excretion between 20 and 200 µg/min) and endothelial dysfunction coexist in patients with essential hypertension. To evaluate whether the two phenomena are related and the determinants of that association, we recruited 10 untreated males with essential hypertension and microalbuminuria without diabetes to be compared with an equal number of matched patients with essential hypertension excreting albumin in normal amounts and 10 normal controls.

The status of endothelial function was inferred from circulating von Willebrand Factor antigen (vWF), a glycoprotein secreted in greater amounts when the vascular endothelium is damaged. vWF concentrations were higher in hypertensive patients with microalbuminuria than in hypertensive patients without and controls. Individual vWF and urine albumin-excretion values were correlated ($r=0{\cdot}55$, $p<0{\cdot}002$). Blood pressure correlated with both urinary albumin excretion and vWF. Left ventricular mass index and minimal forearm vascular resistances were comparable in patients with hypertension and higher than in controls; total and low-density lipoprotein cholesterol, triglycerides, lipoprotein-a, Factor VII, and plasminogen activator inhibitor-1 did not differ. Fibrinogen was higher and creatinine clearance lower in microalbuminurics.

Albuminuria in essential hypertension may reflect systemic dysfunction of the vascular endothelium, a structure intimately involved in permeability, haemostasis, fibrinolysis, and blood pressure control. This abnormality

may have important physiopathological implications and expose these patients to increased cardiovascular risk.