Vessels and Endothelium

12.12 Estimated GFR is Not Associated with Endothelium-Dependent and Independent Vasodilation in the Brachial Artery

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Introduction. The relation between endothelial and renal function in patients with normal or mildly reduced renal function is still controversial.

Aim. To evaluate the relationship between the endothelium-dependent (EDV) and independent (EIV) vasodilation in the peripheral macrocirculation and the estimated glomerular filtration rate (eGFR) in a population with a wide range of cardiovascular (CV) risk factors and without previous CV events.

Methods. 586 subjects (age 19-79 years; 56% males; 8% smokers; 55% with untreated hypertension; LDL-cholesterol 130.2 ± 34.7 mg/dl; blood glucose 94.2 ± 15.8 mg/dl) were recruited. eGFR was calculated by the Modification of Diet in Renal Disease formula. EDV and EIV were evaluated as brachial artery flow mediated dilation and vasodilation to glyceryltrinitrate, respectively.

Results. Mean eGFR was 86.6 ± 15.1 (range 41-132) ml/min and 66% of patients had eGFR <90 ml/min. EDV was significantly blunted in males, smokers, patients with hypertension and dyslipidaemia, while these conditions did not influence EIV. A weak direct correlation between eGFR and EDV ($r=0.13$; $p<0.05$) but not EIV ($p=n.s.$) was observed in the overall group but not in the subgroups of normotensive and hypertensive patients. Logistic analysis showed that patients with an FMD response in the lowest tertile had an odd ratio of 2.07 (1-36-3.15 95% C.I.) of having an eGFR <90 ml/min as compared to those in the highest tertile. Moreover, when multiple regression analysis was applied (age and sex, parameters used in the calculation of eGFR, were not included), only systolic blood pressure and LDL-cholesterol were independent predictors of eGFR.

Conclusions. Our data show that EDV and EIV in the brachial artery are not associated to eGFR both in normotensive and hypertensive patients.