Associations of Smoking with Alterations in Renal Hemodynamics May Depend on Sex- Investigations in Potential Kidney Donors

Background/Aims: Cigarette smoking is a risk factor for renal damage, but little is known about subclinical effects of smoking on renal hemodynamics and parameters of renal function in humans. We examined the associations of smoking with systemic and renal hemodynamics and renal function parameters in healthy individuals.

Methods: Data from 196 potential living kidney donors were analysed retrospectively. Mean arterial blood pressure (MAP), effective renal plasma flow (ERPF) and creatinine clearance had been measured. We additionally calculated parameters of renal hemodynamics. Data were analyzed for the effects of smoking and sex dependent on age and MAP.

Results: Systemic and renal hemodynamic parameters did not differ between smokers and non-smokers. In non-smokers of both sexes MAP was negatively correlated with ERPF, and higher MAP was associated with increased renal vascular resistance and with afferent arteriolar resistance, with glomerular pressure (PG) remaining constant. However, in male, but not in female smokers, ERPF and PG increased with MAP. A correlation of age with a steeper decline in ERPF in male smokers was lost in multiple regression analysis. Conclusions: As compared to women, smoking men may exhibit an increased glomerular hydrostatic pressure, which is a