B. DIABETES CLINICAL

Sa006 INCREASED PRE-GLOMERULAR RESISTANCE AND KIDNEY HYPOPERFUSION MAY SUSTAIN ACCELERATED GFR DECLINE IN HYPERTENSIVE, TYPE 2 DIABETICS WITH NORMAL AND HIGH NORMAL ALBUMINURIA

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INTRODUCTION AND AIMS: Diabetic kidney disease is the leading cause of end-stage renal disease worldwide. Despite optimized blood pressure the glomerular filtration rate (GFR) may progressively decline by a median of 3 mL/min/1.73m²/year. The aim of this study is to investigate whether changes in glomerular hemodynamics could explain GFR decline in type 2 diabetes (T2D) patients with normal or high normal albuminuria.

METHODS: Afferent (Ra), efferent (Re) arteriolar resistance and glomerular hydrostatic pressure (Pglo) were estimated by the Gomez equations in 60 T2D patients. GFR and renal plasma flow (RPF) were measured at baseline by plasmatic clearances of non-radioactive iohexol and ParaAmminoHippurate, respectively. GFR was prospectively monitored every six months up to three years of follow up. Patients with a GFR decline > or < the median cut-off of 3 mL/min/1.73m²/year were categorized as "progressors" and "non progressors", respectively.

RESULTS: Progressors compared to non-progressors had a higher baseline Ra (3487.3±1349.3 dynessec·cm⁻¹ vs. 2877.0±668.9 dynessec·cm⁻¹, p<0.05) and higher resistance ratio Ra/Re (1.4±0.5 vs. 1.1±0.3, p<0.01), respectively (Figure). Ra inversely correlated with GFR (p<0.001), while Re directly correlated with GFR (p<0.001). Ra and Re, inversely correlated with RPF (p<0.001). Multivariable logistic analysis showed that Ra/Re was significantly and independently associated with GFR decline: Odds ratio 5.82 [95% CI: 1.44-23.49]. ROC curve analysis determined Ra/Re cut-off of 1.52 between progressors and non progressors. On Kaplan-Meier analysis the risk of 30% GFR reduction was associated with Ra/Re at baseline (p<0.05).

CONCLUSIONS: Evaluation of the Ra/Re might help identifying T2D patients at increased risk of progressive kidney function loss even without evidence of overt proteinuria and/or glomerular hyperfiltration.