

## **S2-1 (PP)**

### **CONGENITAL REDUCTION IN NUMBER OF NEPHRONS IMPAIRS PROXIMAL TUBULAR GROWTH IN THE CONTRALATERAL KIDNEY DURING PARTIAL UNILATERAL URETERAL OBSTRUCTION**

Maria SERGIO<sup>1</sup>, C.I. GALATARREA<sup>2</sup>, B.A. THORNILL<sup>2</sup>, M.S. FORBES<sup>2</sup> and R.L. CHEVALIER<sup>2</sup>

*1) Pediatric Surgery, Pediatric Urology, University of Palermo, Dipartimento Materno Infantile e di Andrologia ed Urologia, Palermo, ITALY - 2) University of Virginia, Department of Pediatrics, Charlottesville, USA*

## **PURPOSE**

To compare the response of the contralateral (CL) kidney during partial unilateral ureteral obstruction (PUO) and from obstruction/release (PUO/Rel) to sham-operated kidneys in both wild-type (WT) mice and mice with 50% reduction of nephron number (Os/+)

## **MATERIAL AND METHODS**

C57/BL6 WT and mice with oligosyndactylism and 50% reduction of nephron number (Os/+), were subjected to sham operation or PUO in the first 2 days of life. Additional mice underwent release of obstruction at 7 days (PUO-Rel). All kidneys were harvested at 6 weeks (adulthood). Using histomorphometry, glomerular number and area were determined by PAS staining, and proximal tubular (PT) mass and injury to the glomerulotubular junction (GTJ) were measured in Lotus tetragonolobus lectin-stained kidneys. Interstitial collagen deposition was quantitated using Picrosirius red staining

## **RESULTS**

kidney weight was not different between groups. Compared to WT, glomerular number was lower in all groups of Os/+ mice, and glomerular area increased in Sham and contralateral kidney following release (CL/Rel) Os/+ kidneys, but not in CL Os/+ kidneys with persistent PUO. Compared to Sham, PT mass decreased in CL Os/+ kidney, but not in CL/Rel kidney. The % of intact GTJ in CL kidneys was not different between groups. Deposition of interstitial collagen was increased in CL kidney regardless of strain.

## **CONCLUSIONS**

compared to Sham, CL and CL/Rel kidney showed no difference in kidney weight, glomerular number, glomerular area, and % of intact GTJ in both strains. The 50% reduction in the number of nephrons reduced fractional PT mass in CL kidney, which was prevented by release of PUO. Obstruction increased interstitial collagen in both strains. We conclude that reduction in the number of nephrons impairs adaptation to contralateral PUO, and that early release of obstruction preserves CL kidney PT mass. Thus, timely release of PUO may be of particular importance in the context of prematurity or contralateral renal hypoplasia.