

## SYNAPTOPODIN EXPRESSION ANALYSIS IN DIABETIC NEPHROPATHY

\*Mythili Ghanta, \*Shuchita Sharma, \*Sri Ranga Bonam, \*\*Hillel Cohen, \*\*\*Tulio Matos, \* Belinda Jim

\*Jacobi Medical Center, Bronx, NY, \*\*Albert Einstein College of Medicine, Bronx, NY, \*\*\*Columbia Medical Center, New York, NY

Pathogenesis of diabetic nephropathy (**DN**) is related to podocyte injury and loss. Synaptopodin (**S**) is an actin-based, podocyte-specific protein and contributes to health of the glomerular filter. Despite the importance of **S**, there has been no systematic study of **S** expression on human **DN** biopsies. Our goal is to demonstrate that podocyte loss, reflected by reduced expression of **S**, leads to proteinuria in **DN** and correlates with severity of renal disease.

**S** expression was evaluated by immunohistochemistry on **DN** (study) and non-**DN** (control) paraffin-embedded renal biopsies. Non-**DN** biopsies served as controls as they consisted of disease states known to have preserved **S** expression. Expression levels were measured as a % of positive staining over entire glomerular area, quantified by ImageJ software (NIH). Comparison of mean ranks between study and control groups was determined by the Mann-Whitney test, while the relationship between **S** expression and clinical parameters was evaluated by estimating Spearman rank correlation coefficients.

Eighteen **DN** and five non-**DN** renal biopsies were analyzed. Non-**DN** biopsies consisted of: IgA nephropathy (1), minimal change disease (2), membranous nephropathy (1), and normal kidney tissue (1). The mean rank of **S** expression for **DN** biopsies was significantly less than for controls (9.94% vs. 19.40%,  $p=0.004$ ). Non-parametric correlations showed that **S** expression inversely correlated with urine protein/creatinine ( $\rho=-0.32$ ,  $p=0.14$ ), serum creatinine ( $\rho=-0.323$ ,  $p=0.14$ ), BUN ( $\rho=-0.35$ ,  $p=0.10$ ), systolic blood pressure ( $\rho=-0.24$ ,  $p=0.28$ ), and hemoglobin A1C ( $\rho=-0.27$ ,  $p=0.26$ ), but not significantly so.

As anticipated, **S** expression is significantly decreased in **DN** biopsies as compared with non-**DN** controls. However, we are presently unable to confirm the use of **S** expression to predict renal endpoints. Our small sample size may be limiting our ability to reveal significant correlations, therefore, we will be verifying our findings in a larger group.