The Impact of Myosin 1e Knockout on Podocyte Structure

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The objective of this study was to look at the relationship between glomeruli structures and the presence myosin 1e. Myosin 1e (Myo1e) is a protein which is present in the cytoskeleton of podocytes in the glomerulus. The study was done on four adult mice. There were two categories of images, the first being knockout mice and the other control mice. For each category there are two series of images each series are of a unique mouse though they share the same genotype. Foot process density (FP/μm) and glomeruli basement (GBM) thickness were measured from the images using the software, Image J. A student t-test analysis was done to compare the measurements of the control and knockout mice. There was a statistically significant difference between the FP/μm measurements of the control and knockout mice ($p=1.49923x10-5$). The FP/μm of the control mice was significantly greater than that of the knockout mice. The difference in GBM thickness, however, was not statistically significant ($p=.792764$). Though the t-test indicated that the difference in GBM thickness was statistically insignificant, irregularity in GBM thickness was exhibited within the electron microscope images from the knockout mice. The lower FP/ μm coupled with the irregular GBM thickness indicate that the structure of the glomerulus was damaged due to the lack of myosin 1e. It is known that glomerular structural damage is associated with various kidney disorders such as proteinuria and different stages of renal disease. The results in this study may have significance in early diagnosing kidney disorders by testing for the presence of the myosin 1e gene.