



2015 USCAP Ghadijally Award Winner

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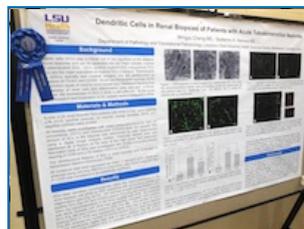
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Abstract: Dendritic Cells in Renal Biopsies of Patients With Acute Tubulointerstitial Nephritis. [JPG/3.6mb]

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Background: Dendritic cells (DCs) play a critical role in the regulation of the adaptive immune response and can be separated into two major subsets: myeloid and plasmacytoid DCs. Their involvement in acute tubulointerstitial nephritis (ATIN) is unknown. In this study, the participation and localization of DC subsets were investigated in ATIN. Design: A total of 29 renal biopsies from patients with ATIN (n=12), lupus nephritis (n=10, positive controls), or minimal change disease (MCD, n=7, negative controls) were studied. All biopsies were investigated with direct immunofluorescence (DIF) for myeloid (CD1c) and plasmacytoid (CD303) renal DC subsets. The amount of DCs in the biopsies was determined by area measurement using the digital image analysis system ImageJ. Positively stained area was expressed as a fraction of the area of the high power field examined. The ultrastructural features of DCs in renal biopsies were evaluated by transmission electron microscopy (TEM). All numerical data were expressed as mean \pm standard error (SEM) and analyzed using one-way ANOVA in conjunction with Tukey's post hoc test.



Results: DCs were identified morphologically within the tubulointerstitium in the renal biopsies by TEM interacting with surrounding tubules and inflammatory cells. DIF staining showed few CD1c positive cells and CD303 positive cells in the biopsies with MCD. As compared with MCD, biopsies with ATIN had significantly increased CD1c positive cells ($4.81\% \pm 0.37\%$ vs $0.91\% \pm 0.31\%$, $p < 0.001$) and CD303 positive cells ($3.61\% \pm 0.4\%$ vs $0.59\% \pm 0.26\%$, $p < 0.001$). The number of CD1c positive cells in ATIN were significantly higher than that in lupus nephritis ($4.81\% \pm 0.37\%$ vs $3.15\% \pm 0.45\%$, $p < 0.02$), whereas the number of CD303 positive cells in ATIN was slightly but not significantly higher than that in lupus nephritis ($3.61\% \pm 0.4\%$ vs $2.75\% \pm 0.47\%$, $p = 0.2$). CD1c and CD303 positive cells in biopsies with ATIN and lupus nephritis were exclusively restricted to the tubulointerstitium.

Conclusions: Both myeloid and plasmacytoid DCs are significantly increased in the tubulointerstitium in ATIN as compared to those in MCD, suggesting these two subsets of DCs may be important in the inflammatory process of ATIN. The number of myeloid DCs in ATIN is significantly higher than that in lupus nephritis, whereas the number of plasmacytoid DCs is similar in these two diseases, suggesting DC subsets may be differentially involved in the pathogenesis of ATIN and lupus nephritis.

