

Interstitial Mast Cell Accumulation in AA-type Renal Amyloidosis

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Abstract: Renal interstitial fibrosis is the final common pathway leading to end-stage renal disease in various nephropathies including renal amyloidosis. However, the role of mast cells (MC) in the fibrotic process of renal amyloidosis is still not fully understood. We compared the distribution of MC in renal biopsies from 20 patients with AA type renal amyloidosis and 20 control cases. The immunoreactivity of renal MC to anti-tryptase and anti-chymase was studied. Positively stained cells were counted, and the relative interstitial and fractional areas of anti- α -smooth muscle cell actin (SMA) stained cells were measured. Anti-CD29 mAb was used to detect β 1 integrin and anti-basic fibroblast growth factor (bFGF) mAb for the growth factor on MC. Samples showing amyloid deposition contained numerous interstitial tryptase-positive (MC_T) compared to control samples [43.99 ± 6.8 vs. $7.14 \pm 1.3/\text{mm}^2$]. A significant relationship was seen between interstitial MCT and creatinine clearance [$r=0.759$] and the interstitial amyloid area [$r=0.853$]. A significant relationship was also observed between the MC number and the fractional area of α -SMA positive interstitium [$r=0.822$] and interstitial fibrotic area [$r=0.81$]. Double immunostaining demonstrated the intracytoplasmic presence of β 1 integrin in 87% of MC_T and correlated significantly with the interstitial amyloid area ($r=0.863$). Basic FGF was also detected in 85.5% of MC_{TC} which thus closely correlated with the interstitial α -SMA-area ($r=0.781$). Our results indicate that MC may play a crucial role in interstitial fibrosis in renal amyloidosis.

Key words: mast cell-renal amyloid-fibrosis-integrin-basic fibroblast growth factor