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Protective Effect of Mast Cells in a Unilateral Ureteral Obstruction Model

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Most forms of chronic renal disease progress to tubulointerstitial fibrosis. Renal tubulointerstitial fibrosis is a common feature in unilateral ureteral obstruction (UUO). Recently, conflicting reports on the role of mast cells (MC) in different kidney diseases have brought our attention to their role in an (UUO) model. We examined whether MC suppresses tissue levels of transforming growth factor (TGF)-β and renal fibrotic processes that are triggered by UUO.

Genetically MC deficient KitW/KitW-v mice, MC-reconstituted KitW/KitW-v mice and Kit+/+ control mice were used in UUO model. Kit+/+ mice developed moderate tubular damage and interstitial fibrosis following the induction of UUO. In contrast, tubular damage and renal fibrosis were increased in MC-deficient KitW/KitW-v mice. MC-reconstituted KitW/KitW-v mice showed moderate restoration of both compared to that of Kit+/+ mice. A significant increase in tissue level of TGF-beta was detected in MC-deficient KitW/KitW-v mice as compared to Kit+/+ control mice and MC-reconstituted KitW/KitW-v mice. Thus, our data suggest that MC's have a protective effect in renal fibrosis in UUO mice, possibly by modulating the TGF-β in the kidney.