This Month’s Highlights

BRIEF COMMUNICATION

Th17 Cells Promote ANCA-Associated Glomerulonephritis

The role of Th17 cells, which compose the most recently defined subset of T-helper cells, in immune-mediated renal diseases is unknown. Because CD4^+ T-helper cells contribute to the pathogenesis of ANCA-associated glomerulonephritis, Gan et al. studied Th17 cells in a mouse model of this disease. They found that a deficiency of the Th17 effector cytokine IL-17A protects mice from anti-myeloperoxidase–induced glomerulonephritis, partly through reduced recruitment of inflammatory cells to the kidney. These results suggest that modulation of pathways involving IL-17A may be a therapeutic target for autoimmune glomerulonephritis. See Gan et al., pages 925–931.

BASIC RESEARCH

Vitamin D Suppresses Renin-Angiotensin System

Animal models of kidney disease suggest a renoprotective role for vitamin D, but the mechanisms by which this occurs are incompletely understood. Here, Zhang et al. report that vitamin D receptor (VDR)-null mice experience greater histologic damage and inflammation in response to ureteral obstruction than wild-type mice. Furthermore, blockade of AT1 with losartan prevents the enhanced injury in VDR-null mice, suggesting that activation of VDR is renoprotective, in part, through inhibition of the renin-angiotensin system. These data support the belief that vitamin D may benefit patients with chronic kidney in more ways than simply modulating bone health. See Zhang et al., pages 966–973.

Smelly Gas Treats Renovascular Hypertension

The release of renin from juxtaglomerular cells mediates renovascular hypertension. Lu et al. hypothesized that hydrogen sulfide (H_2S) could modulate renin release through its inhibition of adenyl cyclase. Using a rat model of renovascular hypertension, they found that treatment with the H_2S donor NaHS prevents and treats hypertension by significantly attenuating the upregulation of renin in affected kidneys and blunting the elevation in plasma renin activity and angiotensin II levels. These preclinical data suggest that pharmacologic delivery of H_2S may have therapeutic potential for renovascular hypertension. See Lu et al., pages 993–1002.

CLINICAL EPIDEMIOLOGY

DCD Kidneys Beat Dialysis

Kidneys donated after cardiac death (DCD) have a higher incidence of both delayed graft function and primary nonfunction than kidneys donated after brain death (DBD). To determine whether dialysis patients who are awaiting transplantation should accept an offer for a DCD kidney or remain on dialysis until a DBD kidney becomes available, Snoeijis et al. analyzed outcomes for approximately 2500 patients who were awaiting a first kidney transplant. They found that although graft failure within 3 months of transplantation is twice as common for DCD kidneys compared with DBD kidneys, accepting a standard-criteria DCD kidney associated with a 56% reduction in mortality risk compared with remaining on dialysis. See Snoeijis et al., pages 1015–1021.

CLINICAL RESEARCH

Sirolimus Halts Cysts in ADPKD

Because activation of mammalian target of rapamycin pathways may promote cyst growth in patients with autosomal dominant polycystic kidney disease, the mammalian target of rapamycin inhibitor sirolimus could have therapeutic potential for this disease. In this issue, Perico et al. present the results from the SIRENA study, a randomized, crossover trial that compared 6 months of sirolimus with conventional therapy in 21 patients with autosomal dominant polycystic kidney disease. This encouraging proof-of-concept study suggests that sirolimus may halt cyst growth and increase parenchymal volume, calling for additional trials to assess the impact of sirolimus on clinical outcomes. See Perico et al., pages 1031–1040.

Octreotide Abrogates Severe Cystic Disease

Animal models, anecdotal experience, and a pilot study of humans suggest a possible therapeutic role for the long-acting somatostatin analogue Octreotide in polycystic kidney disease or polycystic liver disease. Here, Hogan et al. randomly assigned 42 patients with severe polycystic liver disease to a monthly formulation of Octreotide or placebo for 1 year. They found that Octreotide significantly decreased liver volume and halted growth of renal cysts. Furthermore, treated individuals reported improved quality of life. These data suggest that patients with cystic diseases may benefit from therapy with long-acting Octreotide. See Hogan et al., pages 1052–1061.