MedicalXpress

Autoimmune attack underlying kidney failure

March 18 2016, by Karin Söderlund Leifler

Interstitial nephritis, a common cause of kidney failure, has a complex and largely unknown pathogenesis. In a new published paper in The *Journal of the American Society of Nephrology* (*JASN*), a team of researchers led from Karolinska Institutet shows how interstitial nephritis can develop from an autoimmune attack on the kidney's collecting duct.

Interstitial nephritis describes a type of morbid lesion often seen in patients with kidney failure that is characterised by tubular atrophy and interstitial scarring. The condition can develop from diverse backgrounds, such as adverse reactions to drugs, hypertension and diabetes; in many patients, however, the underlying cause is never identified.

"Our study sheds light on a new pathogenesis of interstitial nephritis and kidney failure," says researcher Nils Landegren from the Department of Medicine at Karolinska Institutet in Solna. "Our findings suggest that mechanisms similar to those that cause diseases like type 1 diabetes and thyroiditis, in which the immune system targets a specialised type of cell, can also cause interstitial nephritis."

Sometimes, rare diseases present an inroad into understanding common and more complex diseases. In this present study, the researchers studied a monogenic disease called autoimmune polyendocrine type 1 (APS1), which is an important model for the larger group of organ-specific autoimmune diseases. Some people with APS1 develop of interstitial

nephritis and kidney failure.

The renal tubular system

To understand the causes of interstitial nephritis the group focused their investigations on three patients with APS1, all of whom developed kidney failure at an early age, and found that the immune system had attacked their kidneys. The researchers found antibodies that reacted to cells in the collecting ducts, which represent the terminal part of the renal tubular system, and were able to show that the target molecule was a water-channel protein that is only expressed in the collecting duct. All in all, their findings suggest that an autoimmune attack was responsible for the patients' kidney disease. The researchers do not yet know, however, how common this type of pathogenesis is for kidney failure amongst the general population.

More information: N. Landegren et al. Autoantibodies Targeting a Collecting Duct-Specific Water Channel in Tubulointerstitial Nephritis, *Journal of the American Society of Nephrology* (2016). DOI: 10.1681/ASN.2015101126

Provided by Karolinska Institutet