

<b>Topic</b>	<b>Leptospirosis Kidney Disease: A Model to Understand AKI to/on CKD and CKDu</b>
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<p>Acute kidney injury (AKI) is a prominent feature of leptospirosis, characterized by tubulo-interstitial nephritis and tubular dysfunction. Non-oliguric hypokalemic form of AKI is a hallmark of leptospiral nephropathy. The association of leptospirosis kidney disease with CKD has recently been discovered. Two pathways have been hypothesized including first, AKI to CKD due to acute infection leading to chronic kidney injury if not treated as early and as effectively. Secondly, AKI on CKD by secondary AKI superimposed on the subclinical chronic kidney injury of leptospirosis leading to progression of CKD.</p> <p>AKI to CKD: It has been reported that CKD may be a consequence of acute leptospirosis. Recently, we studied 2145 patients with leptospirosis over an 8-year follow-up from the National Health Insurance Research Database. Four hundred and forty-three (20.6%) patients had AKI, among them 77 (3.6%) patients received replacement therapy (AKI-RRT). Long-term mortality is increased in AKI-RRT group while compared to AKI group and non-AKI group using multivariate logistic regression model. Along the same line, the rate of CKD is increased in the AKI-RRT group followed by AKI and non-AKI group.</p> <p>AKI on CKD: In a survey of human CKD, populations with anti-leptospira seropositivity were associated with lower eGFR and higher prevalence of CKD in endemic areas. In an animal study, an adenine-induced kidney injury in chronically leptospira-infected murine model was performed recently to evaluate renal function, inflammation, and fibrosis gene expression in comparison to controls. Results showed that an increased gene expression of immune/inflammatory gene and fibrosis may be aggravated by low and high dose adenine nephrotoxic injury, respectively. System biology study with transcriptome analysis indicated highly aggravated and synergistic gene expressions of kidney injury may be induced whenever secondary nephrotoxic injury is superimposed on the subclinical kidney injury in this chronic leptospirosis model. This model explained how AKI on CKD may aggravate progression of kidney disease.</p> <p>In summary, leptospirosis kidney disease helps to understand how infection can induce CKD via AKI and a model to decipher mechanism of AKI to/on CKD and as a possible cause of CKDu.</p>	