Results: A total of 297 patients were enrolled. The hospital mortality was 64.7%. The %FO at RRT initiation and at the end of RRT in the death group was significantly higher than in survival group [5.0 (2.4, 9.3) vs. 2.5 (0.2, 5.8)%; 8.4 (3.6, 14.2) vs. 3.9 (0.4, 9.2)%; $P < 0.05$]. Among AKI-RRT patients, the incidence of low cardiac output syndrome (LCOS) in the death group was significantly higher than in the survival group (66.0% vs. 20.0%, $P < 0.01$). Hospital mortality in the LCOS group was significantly higher than in the non-LCOS group (81.9% vs. 56.7%, $P < 0.001$). The %FO at RRT initiation and at the end of RRT in the LCOS group were higher than in the non-LCOS group ($P < 0.05$).
Conclusion: Among AKI-RRT patients after cardiac surgery, absolute FO and %FO in the death group were higher than in the survivor group. Fluid overload and LCOS increased the risk of mortality.

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0038
Protective Role of Smad7 in Acute Kidney Injury (AKI)

S. Fu[1,2], Y. Tang[2], X. R. Huang[1], M. Feng[1,2], A. P. Xu[2], H. Y. Lan[1]
[1]*Department of Medicine and Therapeutics, Li Ka Shing Institute of Health Sciences, CUHK-Shenzhen Research Institute, The Chinese University of Hong Kong, Hong Kong, China*
[2]*Department of Nephrology, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Guangzhou, China*

Objective: Recent studies indicate that Smad7 plays a protective role in many chronic kidney diseases by attenuating both renal fibrosis and inflammation. However, role of Smad7 in acute kidney injury (AKI) remains unclear, which was investigated in this study in a mouse model of AKI induced in Smad 7 knockout (KO) mice.
Methods: Ischemia/reperfusion mouse model of AKI was induced in Smad7 KO mice and their WT (wild type) littermates by bilaterally clamping their renal arteries with vascular clip for 45 min. In addition, a rescued study was also performed in Smad7 KO mice by Smad7 gene transfer locally into the kidney using a non-invasion ultrasound-microbubble technique. Effect of disrupted or overexpressed renal Smad7 on renal function and tubular epithelial cell regeneration was investigated.
Results: Compared to WT mice, Smad7 KO mice developed more severe renal damage as demonstrated by a significant increase in serum creatinine and tubular necrosis at 48 hour. Future study revealed that cell proliferation, detected by BrdU incorporation and PCNA expression, was greatly suppressed in Smad7 KO mice after AKI. This was associated with enhanced activation of Smad3 and up-regulation of CDK inhibitor p21 and p27, resulting in inactivation of cell cycling by suppressing CDK2 and Cyclin E. In contrast, restored Smad7 locally in the kidney of Smad7 KO mice attenuated the progression of AKI by reversing Smad3-dependent p21/p27-induced inhibition of CKD2/Cyclin E-mediated tubular cell proliferation.
Conclusion: Smad7 plays a protective role in the recovery process of AKI via mechanism of inactivating TGF-β/Smad3-p21/p27-dependent inhibition of CKD2/Cyclin pathway. Thus, Smad7 may be a novel therapeutic agent for AKI.

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0042
Aldosterone Induced NRK Cells Apoptosis in AKI via rno-miR-203 Hypermethylation and Kim-1 Upregulation

X. Xiao[1], R. Tang[1], Z. Xiao[1], L. Peng[1,2], Q. Zhou[1]
[1]*Department of Nephrology, Xiangya Hospital, Central South University, Changsha, Hunan, China*
[2]*The Nephrotic Laboratory of Xiangya Hospital, Central South University, Changsha, Hunan, China*

Acute kidney injury is defined by an acute reduction in kidney function as identified by an increase in the serum creatinine and reduction in urine output. Kidney injury molecule-1 (Kim-1) is the hallmark of kidney diseases which is normally not detectable in non-injured kidney but up-regulated and shed into the urine during the AKI. Aldosterone (Aldo) is an important mediator of the renin-angiotensin-ALD system (RAAS) and plays a pivotal role in the regulation of salt and extracelluar fluid metabolism. It was found that RAAS induced the Kim-1 expression of proximal tubule epithelial cells and the kidney injury while when treated with Aldo receptor antagonist, the Kim-1 expression decreased and kidney injury was eased. These results suggested that Aldo is related with the expression of Kim-1 during AKI. Until now there is few molecular mechanism reported about the mediation of Aldo to the Kim-1 expression. In this research, we found that Aldo induced NRK cells apoptosis in AKI via rno-miR-203 hypermethylation and Kim-1 upregulation, Kim-1 is a target gene of rno-miR-203 in NRK cells. When cells were co-treated with pre-miR-203 and spironolactone, cell apoptosis induced by Aldo reduced significantly when compared with only treated with spironolactone. These results may provide likely promising diagnostic marker or new therapeutic target of acute kidney injury.

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0070
Macrophage Migration Inhibitory Factor Promotes Acute Kidney Injury by Amplifying NF-κB-dependent Inflammation

J. H. Li[1], J. U. N. Lv[2], X. R. Huang[1], A. P. Xu[2], H. Y. Lan[1]
[1]*Department of Medicine and Therapeutics, Li Ka Shing Institute of Health Sciences, CUHK-Shenzhen Research Institute, The Chinese University of Hong Kong, Hong Kong, China*
[2]*Department of Nephrology, Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University, Guangzhou, China*

Objective: Inflammation is a key feature of acute kidney injury (AKI). Macrophage migration inhibitory factor (MIF) is known as an upstream regulator of immune and inflammatory responses. However, its role in AKI remains unclear, which was examined in this study.
Methods: An ischemia/reperfusion mouse model of AKI was induced in MIF knockout (KO) and wild-type (WT) mice and groups of 8 mice were sacrificed at day1, day2 and day7. Sham-operated mice were used as control. Serum creatinine (Scr), tubular epithelial cell necrosis, MIF and NF-kB signaling, and renal inflammation including F4/80$^+$ macrophage infiltration and MCP-1 and TNF-α expression were examined.
Results: Compared to sham-operated mice, MIF WT model mice developed severe AKI including a significant increase in serum creatinine and tubular necrosis, which was associated with upregulation of MIF signaling such as upregulation of MIF and its receptor CD74 and activation of NF-kB signaling, resulting in many macrophage infiltration and marked upregulation of MCP-1 and TNF-α. In contrast, MIF KO mice were protected against the development of AKI by lowering serum creatinine with less extent of tubular necrosis. These protective effects were associated with suppression of NF-kB-dependent renal inflammation including fewer macrophages and inhibition of MCP-1 and TNF-α expression in the AKI kidney (all $p < 0.01$).
Conclusion: MIF plays a pathogenic role in AKI. Enhanced CD74-NF-kB-driven renal inflammation may be a key mechanism by which MIF mediates AKI.

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0137
NMN, a NAD+ Precursor, Can Rescue Age-associated Susceptibility to Cisplatin-induced Acute Kidney Injury in a SIRT1-dependent Manner

Yi Guan, Chuanming Hao
Huashan Hopital, Shanghai, China

Objective: AKI is a common critical condition, the incidence of which increases with age. SIRT1, a NAD+-dependent deacetylase, has been shown to have beneficial effects on both life span and renal health. NMN is a NAD+ precursor involved in NAD+ recycle and thereby SIRT1 activity. This study explores the role of SIRT1 and NMN in age-associated AKI, and mechanism by which SIRT1 deficiency aggravates AKI.