Distant organ crosstalk in acute kidney injury

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Abstract
Acute kidney injury (AKI) is a common complication in critically ill patients and subsequently worsens AKI outcomes. Although many drugs to prevent and treat AKI have shown benefits in pre-clinical models, no specific agent has been shown to benefit AKI in humans. Moreover, despite remarkable advances of dialysis techniques that enable management of AKI in hemodynamically unstable patients with shock, dialysis-requiring severe AKI is still associated with an unacceptably high mortality rate. Thus, focusing only kidney damage and loss of renal function has not been sufficient to improve outcomes of AKI patients. Recent data from basic and clinical research have begun to elucidated complex organ interactions in AKI between kidney and distant organs including heart, lung, spleen, brain, liver, and gut. Among these organs, organ-crosstalk between kidney and heart/lung has successfully been investigated and several potential therapeutic targets (TLR4-HMGB1 in kidney-lung, mitochondrial dynamics in kidney-heart) have been identified. These findings are expected to improve patient outcomes during AKI-associated multiple organ failure.