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Systolic and diastolic dysfunctions affect kidney outcomes in hospitalized patients

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Objectives: The knowledge about cross-talk between heart and kidney has been established based on basic and clinical researches. Nevertheless, the effects of systolic and diastolic heart dysfunction on the development of acute kidney injury (AKI) and end-stage renal disease (ESRD) remain unresolved in hospitalized patients.

Methods: A total of 1,327 hospitalized patients who examined baseline transthoracic echocardiography were retrospectively analyzed. The primary outcomes were the development of AKI and ESRD after admission. Patients were grouped based on the quartile values of ejection fraction (EF) and E/e'. The odds ratio (OR) for AKI and hazard ratio (HR) for ESRD were calculated with or without adjustment for multiple covariates.

Results: During hospital admission, AKI occurred in 210 patients (15.8%). Lowest quartile of EF was associated with the AKI risk (OR, 1.60 [1.07–2.41]); and highest quartile of E/e' was associated with the AKI risk (OR, 1.90 [1.26–2.41]). When two echocardiographic parameters were combined, the patients with low EF (1^{st} to 2^{nd} quartiles) and high E/e' (4^{th} quartile) exhibited highest OR for AKI (OR, 2.27 [1.49–3.45]) compared with the counterpart patients. When the ESRD risk was evaluated, E/e', but not EF, was a significant parameter of high risk: 4^{th} vs. 1^{st} quartile (OR, 4.13 [1.17–14.64]). All these trends remained consistent despite adjustment for other covariates.

Conclusions: Baseline systolic and diastolic dysfunctions are related with subsequent AKI and ESRD risks in hospitalized patients. The monitoring of these parameters may be a useful strategy to predict or reduce the risk of these kidney events.