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Editorial



# Renal Dysfunction in Korean Acute Heart Failure Patients

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▸ See the article "Relation of Renal Function with Left Ventricular Systolic Function and NT-proBNP Level and Its Prognostic Implication in Heart Failure with Preserved versus Reduced Ejection Fraction: an analysis from the Korean Heart Failure (KorHF) Registry" in volume 47 on page 727.



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Acute heart failure (AHF) is a common cause of hospitalization, and the prognosis of affected patients is poor.[1] AHF usually coexists with a number of comorbidities, of which declining renal function is of particular importance. Both worsening kidney function and chronic kidney disease can result in further dysfunction of both systems, which was defined as a cardio-renal syndrome.[2] Renal dysfunction is common in patients with heart failure and is associated with high morbidity and mortality.[3] Given the high prevalence of renal dysfunction and its potential consequences, there is substantial interest in the actual prevalence and prognostic implication of renal dysfunction in Korean AHF patients.

Park et al.[4] reported in this issue of *Korean Circulation Journal* the prevalence and the prognostic value of renal dysfunction in 1,932 AHF patients with preserved ejection fraction (HFpEF) and with reduced left ventricular ejection fraction (HFrEF) using data from the Korean Heart Failure Registry, which is a prospective multicenter registry designed to reflect the 'real-world' clinical data of Korean patients admitted for AHF. The authors demonstrated that the prevalence of renal dysfunction (defined as glomerular filtration rate [GFR]<60 mL/min/1.73 $m^2$) was common and did not differ between HFpEF and HFrEF (49% vs. 52%, p=0.210). In addition, renal dysfunction was independent of left ventricular systolic function, but dependent on N-terminal prohormone of brain natriuretic peptide (NT-proBNP) level. They also showed that renal dysfunction could predict all-cause mortality in patients with HFrEF (log-rank p<0.001) and that with HFpEF (log-rank p=0.010) in Kaplan-Meier analysis. The prognostic implication changed in the multivariate analysis after adjustment for significant covariates including age, sex, diastolic blood pressure, and diabetes. Although renal dysfunction retained its prognostic value (hazard ratio [HR], 2.43; 95% confidence interval [CI], 1.52–3.89) in HFrEF patients, its prognostic value was no longer significant in HFpEF patients (HR, 1.46; 95% CI, 0.66–3.21).

The overall results of this study are in line with previous meta-analysis[3] that renal dysfunction is common and is associated with high mortality in patients with AHF. But, they showed a differential prognostic impact of AHF type in that renal dysfunction is an independent predictor of 12-month mortality in HFrEF patients, while its impact seems to be attenuated in HFpEF patients. These observations implied that HFpEF patients present with a different clinical and biochemical profile than HFpEF patients and possibly a different reason

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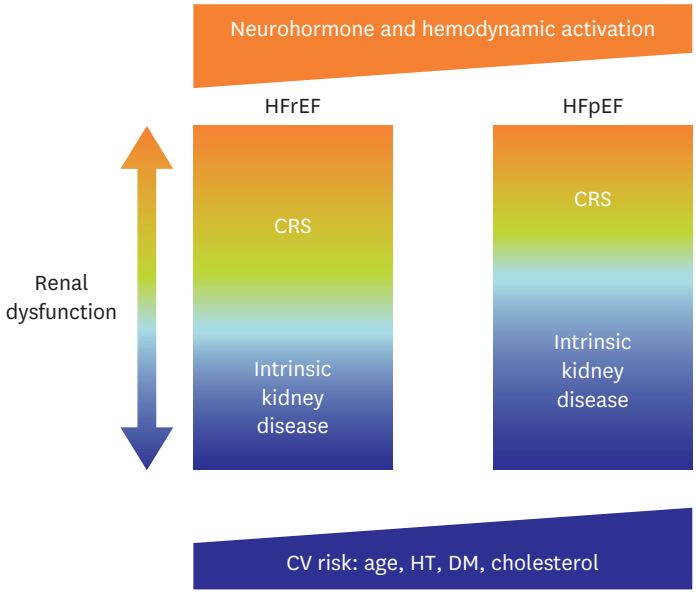


**Figure 1.** The possible explanation for the different prognostic values of renal dysfunction between HFrEF and HFpEF. CRS = cardio-renal syndrome; CV = cardiovascular; DM = diabetes mellitus; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction; HT = hypertension.

for a lower GFR.

The authors provide a hypothesis regarding the differential prognostic impact of renal dysfunction according to AHF type in this study.[4] It is of note that renal dysfunction in AHF comprises both cardiorenal syndrome and intrinsic kidney disease. Considering 1) the same prevalence of renal dysfunction, 2) but different levels of brain natriuretic peptide (BNP) between patients with HFrEF and those with HFpEF, and 3) the different prevalence of baseline comorbidities, the authors hypothesized that HFpEF and HFrEF have different proportions of intrinsic nephropathy and cardiorenal syndrome. This might explain the phenomenon that HFrEF and HFpEF patients have the same prevalence of renal dysfunction, but different prognostic values (**Figure 1**). This is an interesting and hypothesis-generating concept. Future research is needed to examine these relationships, especially in HFpEF.

## REFERENCES

1. Lee SE, Lee HY, Cho HJ, et al. Clinical characteristics and outcome of acute heart failure in Korea: results from the Korean Acute Heart Failure Registry (KorAHF). *Korean Circ J* 2017;47:341-53.
PUBMED | CROSSREF
2. Ronco C, Haapio M, House AA, Anavekar N, Bellomo R. Cardiorenal syndrome. *J Am Coll Cardiol* 2008;52:1527-39.
PUBMED | CROSSREF
3. Damman K, Valente MA, Voors AA, O'Connor CM, van Veldhuisen DJ, Hillege HL. Renal impairment, worsening renal function, and outcome in patients with heart failure: an updated meta-analysis. *Eur Heart J* 2014;35:455-69.
PUBMED | CROSSREF
4. Park CS, Park JJ, Oh IY, et al. Relation of renal function with left ventricular systolic function and NT-proBNP level and its prognostic implication in heart failure with preserved versus reduced ejection fraction: an analysis from the Korean Heart Failure (KorHF) registry. *Korean Circ J*. 2017;47:727-41.
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