35. Real World Eligibility and Cost Effectiveness For Empagliflozin in Patients With Heart Failure

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Background: The sodium-glucose cotransporter 2 (SGLT2) inhibitor, empagliflozin, showed clinical benefits in patients with heart failure (HF) with reduced ejection fraction (HFrEF) and HF with preserved ejection fraction (HFpEF). However, limited data are available for the generalizability of empagliflozin to clinical practice. Therefore, we evaluated the real-world eligibility and cost-effectiveness for empagliflozin based on a nationwide prospective HF registry.

Methods: From March 2011 to February 2014, 5625 patients admitted for HF were enrolled in the Korean Acute Heart Failure registry. After excluding in-hospital death, 3108 HFrEF patients and 2070 HFpEF patients were analyzed. The eligibility of empagliflozin was estimated based on inclusion and exclusion criteria of EMPEROR-reduced and EMPEROR-preserved trials. The cost-effectiveness analysis was done using a decision tree model with one-way deterministic sensitivity analysis, where the effectiveness was the avoidance of the first hospitalization.

Results: According to the analysis, 36.0% in total HF, 37.4% in HFrEF, and 33.9% in HFpEF patients would be eligible for empagliflozin. The main factor for exclusion was low systolic blood pressure (SBP), including 18.7% of HFrEF and 11.0% of HFpEF patients. Other factors were acute myocardial infarction and impaired renal function. The use of empagliflozin reduced 3.6 hospitalizations with expected cost savings of US$14,885 per 100 eligible HF patients per year. However, in the HFpEF population, the cost was increased by US$7,576, even though 1.7 hospitalizations were reduced. In the HFrEF population, empagliflozin reduced 4.8 hospitalizations, and the cost savings were US$28,442 per 100 eligible patients per year.

Conclusion: We found approximately one-third of HF patients would have been potentially eligible for empagliflozin. Low SBP was the main reason for the empagliflozin ineligibility. Empagliflozin reduced hospitalization in both HFrEF and HFpEF, but the cost-effectiveness benefit was more evident in HFrEF than in HFpEF. The efficacy and safety of empagliflozin in real-world HF patients should be further investigated for proper clinical use.

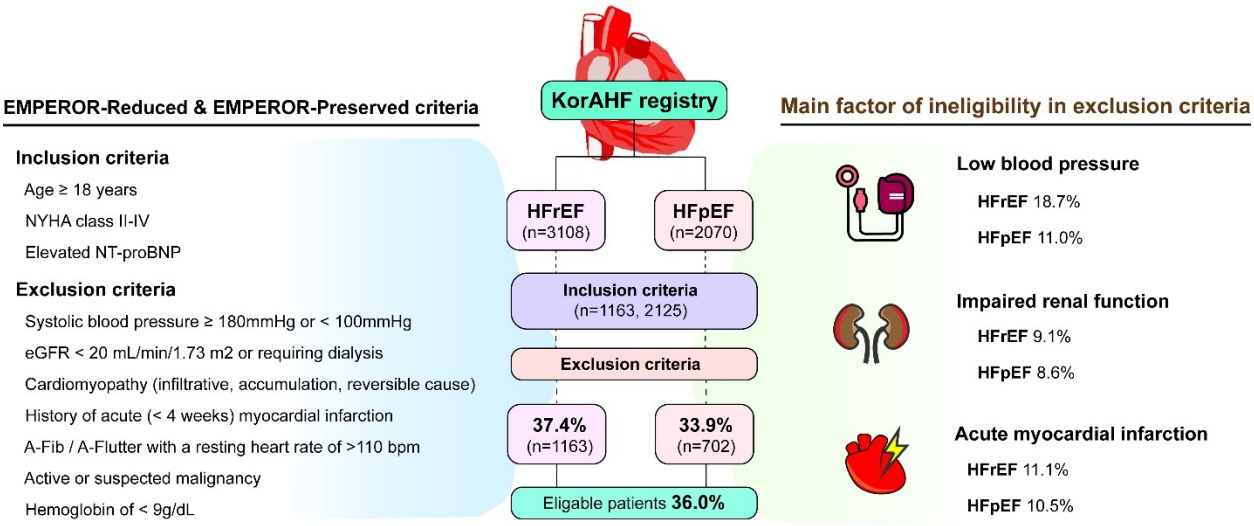

Figure 1. The eligibility for empagliflozin based on EMPEROR-Reduced and EMPEROR-Preserved trial criteria in the KorAHF registry. A-Fib = atrial fibrillation; A-Flutter = atrial flutter; eGFR = estimated glomerular filtration rate; HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction; KorAHF = Korean Acute Heart Failure; NT-proBNP = N-terminal pro-B type natriuretic peptide; NYHA = New York Heart Association.

Table 1. Results of the cost-effectiveness analysis of empagliflozin add-on therapy compared to standard of care

	Events[a] per year		Incremental value	Costs[b]		Incremental value
	Empagliflozin	Placebo		Empagliflozin	Placebo	
Base-case analysis						
Total population	8.3	11.9	-3.6	105,568	120,453	-14,885
HFrEF	10.7	15.5	-4.8	134,169	162,611	-28,442
HFpEF	4.3	6	-1.7	58,186	50,610	7,576
One-way sensitivity analyses (Total population)						
Analysis 1	12.1	17.0	-4.9	143,851	171,589	-27,738
Analysis 2	8.3	11.9	-3.6	83,699	88,859	-5,159
Analysis 3	7.5	10.8	-3.3	96,177	106,610	-10,433

Events and costs were calculated per 100 eligible patients.
[a] First hospitalization
[b] In US dollars.
HFpEF = heart failure with preserved ejection fraction; HFrEF = heart failure with reduced ejection fraction

Clinical Implications: My study will help enable cardiovascular clinicians to access the real-world eligibility and cost-effectiveness of empagliflozin in both HFrEF and HFpEF populations and give insights into decision-making in everyday practice.