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Benefit and risk of BP control in heart failure patients

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Hypertension (HT) is a significant modifiable risk factor for cardiovascular disease, particularly heart failure (HF). The causative association of HT with HF has been continuously observed since the first report from the Framingham heart study.

BP control target becomes the most crucial discussion among HT experts for primary prevention of HF development and secondary prevention of death or repeated hospitalization in established HF patients. The recent European guidelines strongly suggest that lowering office SBP/DBP to less than 140/90 mmHg is beneficial for all patients groups but recommend further reduction of SBP/DBP under 130/80 mmHg in high-risk patients, including patients with HF. The Korean Society of HT (KSH) guideline recommends BP target of less than 140/90 mmHg for uncomplicated HT in the general population including the elderly, and more strict BP target of less than 130/80 mmHg is recommended for those who previously suffered from cerebrovascular disease, chronic kidney disease with albuminuria, DM, and CVD.

Besides HF prevention, BP-lowering was beneficial for controlling HF. The Val-HeFT trial compared the effectiveness of valsartan versus placebo in HF patients. Valsartan showed better result, reducing the relative risk for AF by 37%. Standard HF therapy is effective in patients with HFrEF but does not reduce morbidity or mortality in patients with HFpEF. In a meta-analysis by Gomes et al., HF medications with BP-lowering properties significantly decreased cardiovascular mortality and HF hospitalization by 10%. Secondary prevention of HF is not targeting BP reduction but targeting LV reverse remodeling, relief of subjective discomfort, improving functional status and prevention of repeated hospitalization or death.

However, management of HT in patient with HHF is challenging. In the KorAHF registry, BP and HF mortality showed inverse J-curve shape relationship. The mortality was the lowest with BP of 132/74 mmHg and increased with further decrease in BP towards 130/70 mm Hg. This finding is consistent with the recommendations of The KSH guidelines, which reports an optimal BP is 130/80 mmHg in hypertensive HF patients.

Not all hypertensive medications share beneficial effect for HF. ARBs, ACEIs, beta-blockers

are effective both in primary prevention and secondary prevention of HF, constituting the important components of guideline-directed management and therapy (GDMT) of HF. Diuretics are beneficial for symptom relief and for primary prevention of HF but it is not clear whether they have a role in secondary prevention. Alpha-blockers does not have a role in HF prevention, but rather have adverse effect in HF prevention, especially for the secondary prevention. CCBs are effective BP-lowering medications but they may increase fluid retention and should be cautiously used in hypertensive HF patients.

In conclusion, in HF patients, HT is the most prevalent comorbidity and is one of the common cause of HF. HT control is essential for both primary and secondary prevention of HHF. The optimal BP target in hypertensive HF remains unclear yet, and further research is needed to establish the BP target for primary and secondary prevention of HF.