The Management of Co-Morbidities in Patients with Heart Failure – Hypertension

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Abstract

The 2016 ESC/HFA HF guidelines carry an important section on the treatments of co-morbidities in HF. Foremost of these in terms of frequency and its relevance to the aetiology of HF, especially HfPEF is hypertension. In this article we will review what the recent guidelines say about the management of hypertension in the setting of HF, both HFREF and HfPEF and expand on some of the practical advice.

Keywords: Hypertension; Heart failure; Guidelines


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Introduction

The 2016 ESC/HFA HF guidelines carry an important section on the treatments of co-morbidities in HF.[1] Foremost of these in terms of frequency and its relevance to the aetiology of HF, especially HfPEF is hypertension. In this chapter we will review what the recent guidelines say about the management of hypertension in the setting of HF, both HFREF and HfPEF and expand on some of the practical advice.

These guidelines carry an extremely important guidance table (reproduced in Figure 1). This table carries an enormous amount of important advice, for it outlines the progressive steps in using evidence-based medicines to manage the hypertensive HF patient, in which order to try agents and how to progressively increase the drug treatment armamentarium used. It also summarises in a colour and alphanumeric schema the strength of the recommendation and the strength of the underlying evidence, and in addition it importantly points out those otherwise widely used agents which should NOT be used in the setting of HF where they would form part of any conventional hypertension guidelines for patients not having co-morbid heart failure. It therefore deserves a much closer look.

![Figure 1](image-url)
In the preamble to this guidance table it is pointed out that hypertension is a potent risk factor for HF (and for HFrEF even more than for HFrEF); that antihypertensive therapy markedly reduces the incidence of HF and that although good control of high blood pressure is essential in all HF patients, poor control in advanced HFrEF is actually extremely uncommon, whereas it is a much more important problem in milder HFrEF cases and in HFrmEF and HFrEF in particular. HF has not been a prominent end-point in many hypertension trials. Despite this there is a consistent and powerful protection from HF that can be achieved by treating hypertension that appears related to the BP control rather than the choice of agent, with the sole exception that alpha-adrenoceptor blockers appear less effective than other drug classes in this effect.[2] Good BP control is an essential part of the management of the HF patients with prospective observations showing in HF patients followed long term, higher baseline systolic, diastolic and pulse pressure levels were associated with higher rates of adverse events.[3] BP targets are the same as in the non-HF hypertensive patient (<140/90 by repeated office BP measurement in most, between 140–150 in elderly with starting SBP's >160 mmHg) with a lower DBP target for diabetics (<85 mmHg).[4] The value of more intensive BP control in hypertensive HF patients remains to be clarified.

The steps to good BP control in heart failure

Step 1 in any hypertensive HF patient is to use an ACE inhibitor (or ARB only if such is not tolerated), a beta blocker and an MRA. As anyone with significant HF will already be recommended a beta blocker an ACEI and a MRA there is really little of clinical change to make here, the main difference being the prominent position of beta-blockade as opposed to this drug class's relative demotion in non-HF hypertension guidelines. Step 2, should greater BP control be needed after the drugs in Step 1 have all been started and up-titrated is to commence a thiazide diuretic (or if the patient is treated with a thiazide diuretic, switching to a loop diuretic). Care will need to be taken if already on loop diuretics for HF as combination diuretics can cause severe fluid depletion, renal impairment and electrolyte disturbances. Step 3 (which will rarely be needed in moderate to severe HFrEF) is to add a calcium channel blocker, but here the choice of agent is critical. Amlodipine and to a lesser extent Felodipine have been shown to be safe in HFrEF.[8,9] If an alternative is needed hydralazine can be added (but should not be used without the ACEI and beta blockers of the earlier steps).[10]

Importantly advice is given in which drugs should never be used in the setting of HF (despite being in hypertension guidelines). These include Moxonidine, alpha receptor antagonists, diltiazem and verapamil, although the latter two are probably safe in HFrEF, because the concern in HFrEF is their negative inotropic effect which is of less concern in true HFPEF. Moxonidine increased mortality in patients in the MOXCON trial in HFrEF[11] and there are concerns of the risk in HFrEF patients of neurohormonal activation, fluid retention and worsening HF with alpha-adrenoceptor antagonists.[12–14]

Lastly in the setting of acute heart failure (AHF) i.v. nitrates (or sodium nitroprusside, starting with 0.3 μg/kg/min and increasing up to 5 μg/kg/min) are recommended to lower blood pressure. For AHF with uncontrolled hypertension (mostly HFrEF rather than HFrEF) Isosorbide dinitrate infusion is recommended starting with 1 mg/h, increasing up to 10 mg/h.

Declaration of Interest
AJSC declares consultancy income from Servier and Vifor.

Acknowledgements
The authors have abided by requirements for ethical publishing in biomedical journals [15].

References