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Chronic heart failure with preserved ejection fraction: The modern aspects of management

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Abstract

Chronic heart failure with preserved ejection fraction (CHFpEF) is a complex and common disease, with a high and constantly increasing prevalence. The aim of this study was review of modern guidelines for management of chronic heart failure with preserved ejection fraction. No treatment has yet been shown, convincingly, to reduce morbidity or mortality in patients with CHFpEF. However, since these patients are often elderly and highly symptomatic, and often have a poor quality of life, an important aim of therapy may be to alleviate symptoms and improve well-being. Only diuretics in this syndrome treatment have strong evidence. Thus, the future investigations are needed for improving of its management.

Keywords: Heart failure with preserved ejection fraction, treatment

1. Introduction

It's known, that chronic heart failure (CHF) is a clinical syndrome characterized by typical symptoms (e.g. breathlessness, ankle swelling and fatigue) that may be accompanied by signs (e.g. elevated jugular venous pressure, pulmonary crackles and peripheral oedema) caused by a structural and/or functional cardiac abnormality, resulting in a reduced cardiac output and/or elevated intracardiac pressures at rest or during stress ^[1]. CHF is the important medical and social problem due its high mortality and treatment cost.

The prevalence of this syndrome is approximately 1–2% of the adult population in developed countries, rising to ≥10% among people >70 years of age ^[2, 3]. The lifetime risk of CHF at age 55 years is 33% for men and 28% for women ^[4].

Due last guidelines of European Society of Cardiology (2016) CHF has 3 main clinical variants: with preserved (CHFpEF), mid-range (CHFmrEF) and reduced ejection fraction (CHFrEF) ^[1]. The main diagnostic criteria for its variants are pointed in table 1.

Table 1: The main diagnostic criteria for CHF variants (ESC, 2016)

CHFrEF	CHFmrEF	CHFpEF
Symptoms ± sings	Symptoms ± sings	Symptoms ± sings
LVEF < 40%	LVEF 40-49%	LVEF > 50%
	Elevated levels of natriuretic peptides	Elevated levels of natriuretic peptides
	At least one additional criterion: Revelant structure heart disease Diastolic dysfunction	At least one additional criterion: Revelant structure heart disease Diastolic dysfunction

Notes: LVEF – left ventricular ejection fraction.

Compared with CHFrEF, patients with CHFpEF are older, more often women and more commonly have a history of hypertension and atrial fibrillation, while a history of myocardial infarction is less common ^[5, 6]. Among people older 65 years of age presenting to primary care with typical symptoms or signs, one in six will have unrecognized CHF (mainly CHFpEF) ^[7]. The proportion of patients with HFpEF ranges from 22 to 73%, depending on the definition applied, the clinical setting (primary care, hospital clinic, hospital admission), age and sex of the studied population, previous myocardial infarction etc. ^[8-10].

The aim of this study is review of modern guidelines for management of chronic heart failure with preserved ejection fraction.

2. Results and Discussion: CHFpEF is a complex and common disease, with a high and constantly increasing prevalence. Detecting the syndrome is still difficult because of its non-specific nature of symptoms and signs, especially in the elderly population.

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While CHFpEF patients are at higher risk of death and hospitalizations than similar age and co-morbidity profile patients, treatment is still empirical and no therapy has yet shown significant impact on mortality.

In clinical practice and clinical trials, compared with HFpEF patients, only slightly fewer patients with HFpEF currently appear to receive diuretics, beta-blockers, mineralocorticoid receptor antagonists (MRAs) and angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers (ARBs) [11]. This may reflect treatment of cardiovascular comorbidities, such as hypertension, coronary artery disease and atrial fibrillation, or extrapolation of results from trials conducted for these conditions showing a reduction in new-onset CHF, or failure to distinguish between guideline recommendations for CHFpEF and CHFmrEF/CHFpEF or a belief that existing clinical trials provide some evidence of benefit with these agents [12].

No treatment has yet been shown, convincingly, to reduce morbidity or mortality in patients with CHFpEF. However, since these patients are often elderly and highly symptomatic, and often have a poor quality of life, an important aim of therapy may be to alleviate symptoms and improve well-being [1].

Exercise training in CHF may improve symptoms and quality of life, via beneficial effects on endothelial function, central haemodynamics, inflammatory markers, neurohormonal activation, as well as skeletal muscle structure and function. The Ex-DHF-Pilot Study randomized 64 patients with HFpEF to supervised endurance/resistance training in addition to usual care or to usual care alone. Peak VO₂ increased with exercise training after 3 months and remained unchanged with usual care alone. Exercise training was also associated with improvements in a physical functioning score (36-Item Short-Form Health Survey), atrial reverse remodelling and improved LV diastolic function [13].

Due last ESC guideline (2016) all patients with CHFpEF should be screened for cardiovascular and non-cardiovascular comorbidities for adequate their treatment with the aim of to improve symptoms (class of recommendation I, level of evidence A) [1].

Diuretics will usually improve congestion, if present, thereby improving symptoms and signs of CHF. The evidence that diuretics improve symptoms is similar across the spectrum of left ventricular ejection fraction [14]. Evidence that beta-blockers and MRAs improve symptoms in CHFpEF patients is lacking. There is inconsistent evidence for an improvement in symptoms in those treated with ARBs (only for candesartan was there an improvement in NYHA class) and ACEIs [15, 16].

For patients in sinus rhythm, there is some evidence that nebivolol, digoxin, spironolactone and candesartan might reduce CHF hospitalizations. For patients in AF, beta-blockers do not appear to be effective and digoxin has not been studied. The evidence in support of either ARBs or ACEIs is inconclusive [1].

Thus, in SENIORS study Nebivolol, a beta-blocker with vasodilating properties, was an effective and well-tolerated treatment for CHF in the elderly. There was no significant influence of age, gender, or ejection fraction on the effect of nebivolol on the primary outcome [18]. In pre-specified subanalysis of the SENIORS trial the effect of beta-blockade with nebivolol in elderly patients with CHF was similar in those with preserved and impaired ejection fraction [19]. In ambulatory patients with chronic mild to moderate diastolic heart failure and normal sinus rhythm receiving angiotensin-

converting enzyme inhibitor and diuretics, digoxin was associated with a trend toward a reduction in hospitalizations resulting from worsening heart failure (HR, 0.79; 95% CI, 0.59 to 1.04; $P=0.094$) but also a trend toward an increase in hospitalizations for unstable angina (HR, 1.37; 95% CI, 0.99 to 1.91; $P=0.061$) [20].

In recent randomized, double-blind trial with 3445 patients with heart failure and a preserved ejection fraction, treatment with spironolactone did not significantly reduce the incidence of the primary composite outcome of death from cardiovascular causes, but aborted cardiac arrest, or hospitalization for the management of heart failure [21]. CHARM-Preserved trial showed that candesartan has a moderate impact in preventing admissions for CHF among patients who have heart failure and LVEF higher than 40% [22].

It's important that studies of ACEIs, ARBs, beta-blockers and MRAs have all failed to reduce mortality in patients with CHFpEF or CHFmrEF.

At present time several novel approaches and well-known medications appear promising in pre-clinical or early clinical studies in CHFpEF, but need to be tested in properly designed clinical trials: ivabradine, ranolazine, soluble guanylate cyclase stimulators, neprilysin inhibitors, phosphodiesterase-5 inhibitors, calcium-cycling modulators, micro-riboNucleic acids etc. [17].

3. Conclusion

Chronic heart failure with preserved ejection fraction (CHFpEF) is a complex and common disease, with a high and constantly increasing prevalence. Only diuretics in this syndrome treatment have strong evidence. The future investigations are needed for improving of its management.

4. References

1. Ponikowski P, Voors AA, Anker SD *et al.* ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *European Heart Journal*. 2016; 37(27):2129-2200.
2. Mosterd A, Hoes AW. Clinical epidemiology of heart failure. *Heart*. 2007; 93:1137-1146.
3. Bleumink GS, Knetsch AM, Sturkenboom MC *et al.* Quantifying the heart failure epidemic: prevalence, incidence rate, lifetime risk and prognosis of heart failure The Rotterdam Study. *Eur. Heart J England*. 2004; 25:1614-1619.
4. Yancy CW, Jessup M, Bozkurt B *et al.* ACCF/AHA Guideline for the Management of Heart Failure: executive summary: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013; 128:1810-1852.
5. Owan TE, Hodge DO, Herges RM *et al.* Trends in prevalence and outcome of heart failure with preserved ejection fraction. *N. Engl. J Med*. 2006; 355:251-259.
6. Meta-analysis Global Group in Chronic Heart Failure (MAGGIC). The survival of patients with heart failure with preserved or reduced left ventricular ejection fraction: an individual patient data meta-analysis. *Eur Heart J*. 2012; 33:1750-1757.
7. van Riet EES, Hoes AW, Limburg A *et al.* Prevalence of unrecognized heart failure in older persons with shortness of breath on exertion. *Eur. J Heart Fail*. 2014; 16:772-777.

8. Filippatos G, Parissis JT. Heart failure diagnosis and prognosis in the elderly: the proof of the pudding is in the eating. *Eur. J Heart Fail.* 2011; 13:467-471.
9. Tiller D, Russ M, Greiser KH *et al.* Prevalence of symptomatic heart failure with reduced and with normal ejection fraction in an elderly general population—the CARLA study. *PLoS One.* 2013; 8:e59225.
10. Mureddu GF, Agabiti N, Rizzello V *et al.* Prevalence of preclinical and clinical heart failure in the elderly. A population-based study in Central Italy. *Eur J Heart Fail.* 2012; 14:718-729.
11. Maggioni AP, Anker SD, Dahlström U *et al.* Are hospitalized or ambulatory patients with heart failure treated in accordance with European Society of Cardiology guidelines? Evidence from 12 440 patients of the ESC Heart Failure Long-Term Registry. *Eur. J Heart Fail.* 2013; 15:1173-1184.
12. Kostis JB, Davis BR, Cutler J *et al.* SHEP Cooperative Research Group. Prevention of heart failure by antihypertensive drug treatment in older persons with isolated systolic hypertension. *JAMA.* 1997; 278:212-216.
13. Edelmann F, Gelbrich G, Düngen HD *et al.* Exercise training improves exercise capacity and diastolic function in patients with heart failure with preserved ejection fraction: results of the Ex-DHF (Exercise training in Diastolic Heart Failure) pilot study. *J Am Coll Cardiol.* 2011; 58:1780-1791.
14. Faris RF, Flather M, Purcell H, Poole-Wilson PA, Coats AJ. Diuretics for heart failure. *Cochrane Database Syst. Rev.* 2012; 2: CD003838.
15. Yusuf S, Pfeffer MA, Swedberg K *et al.* Effects of candesartan in patients with chronic heart failure and preserved left-ventricular ejection fraction: the CHARM-Preserved Trial. *Lancet.* 2003; 362:777-781.
16. Cleland JGF, Tendera M, Adamus J, Freemantle N, Polonski L, Taylor J. The perindopril in elderly people with chronic heart failure (PEP-CHF) study. *Eur. Heart J.* 2006; 27:2338-2345.
17. Komajda M, Lam CSP. Heart failure with preserved ejection fraction: a clinical dilemma. *European Heart Journal.* 2014; 35(16):1022-1032.
18. Flather MD, Shibata MC, Coats AJS *et al.* Randomized trial to determine the effect of nebivolol on mortality and cardiovascular hospital admission in elderly patients with heart failure (SENIORS). *European Heart Journal.* 2005; 26(3):215-225.
19. van Veldhuisen DJ, Cohen-Solal A, Böhm M *et al.* Beta-blockade with nebivolol in elderly heart failure patients with impaired and preserved left ventricular ejection fraction. *J Am Coll Cardiol.* 2009; 53:2150-2158.
20. Ahmed A, Rich MW, Fleg JL *et al.* Effects of Digoxin on Morbidity and Mortality in Diastolic Heart Failure. *Circulation.* 2006; 114:397-403.
21. Pitt B, Pfeffer MA, Assmann A *et al.* Spironolactone for heart failure with preserved ejection fraction. *N. Engl J Med.* 2014; 370:1383-1392.
22. Yusuf S, Pfeffer MA, Swedberg K *et al.* Effects of candesartan in patients with chronic heart failure and preserved left-ventricular ejection fraction: the CHARM-Preserved Trial. *Lancet.* 2003; 362:777-781.