Identification and therapy for patients with heart failure with preserved ejection fraction: An expert opinion of the Heart Failure Association of the Polish Cardiac Society

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ABSTRACT

Diagnosis of heart failure with preserved ejection fraction (HFpEF) may be challenging owing to the heterogeneous clinical presentation and comorbidities in this population of patients, along with the limited availability of standard diagnostic tools, including natriuretic peptide tests and functional testing. This expert opinion summarizes the current state of knowledge on the identification and therapy for patients with HFpEF based on recent European and American recommendations. This expert opinion aims to aid clinicians in HFpEF management.

Key words: heart failure, heart failure with preserved ejection fraction

Heart failure (HF) with preserved ejection fraction (HFpEF) is diagnosed in patients with HF and an ejection fraction of 50% or higher. This HF phenotype accounts for at least 50% of HF cases, and the HFpEF population is growing due to aging and the increasing prevalence of risk factors for HF [1]. Of all the HF types, HFpEF is associated with the most heterogeneous clinical presentation and the highest comorbidity burden. Therefore, symptoms often overlap (e.g., dyspnea in patients with concomitant chronic obstructive pulmonary disease), further complicating the HFpEF diagnosis [2, 3]. Importantly, even in the presence of medical conditions with overlapping symptoms, patients should be tested for HF. Moreover, according to the most recent 2023 expert consensus of the American College of Cardiology (ACC), diagnosis of HFpEF should account for medical entities, both cardiac and noncardiac, that can mimic HFpEF (so-called HFpEF mimics) [4]:

Cardiac disease mimics:
- infiltrative cardiomyopathy,
- hypertrophic cardiomyopathy,
- valvular disease,
- pericardial disease,
- high-output heart failure;

Noncardiac disease mimics:
- kidney disease,
- liver disease,
- chronic venous insufficiency.

All this may constitute a challenge in the identification of HFpEF patients in daily clinical practice. Thus, this expert opinion aimed to aid clinicians in the diagnosis of HFpEF.

According to the universal definition proposed in 2021, HF is a clinical syndrome with symptoms and/or signs that are caused by structural and/or functional cardiac abnormality, as confirmed by elevated natriuretic peptide levels and/or objective evidence of pulmonary or systemic congestion [5]. Pulmonary or systemic congestion may be

Table 1. Signs and symptoms of heart failure [2]

Symptoms	
Typical	Breathlessness Orthopnea Paroxysmal nocturnal dyspnea Reduced exercise tolerance Fatigue, tiredness Prolonged recovery after exercise Ankle swelling
Less typical	Nocturnal cough Wheezing Bloated feeling Loss of appetite Confusion (especially in the elderly) Depression Palpitation Dizziness Syncope Bendopnea
Signs	
More specific	Elevated jugular venous pressure Hepatojugular reflux Third heart sound (ventricular gallop) Laterally displaced apical impulse
Less specific	Unintentional weight gain >2 kg/week Weight loss Cachexia Cardiac murmur Peripheral edema (ankle, sacral, scrotal) Pulmonary rales Pleural effusion Tachycardia Tachypnea (>16/min) Irregular pulse Narrow pulse pressure Hepatomegaly Ascites Oliguria Cheyne-Stokes respiration Cold extremities

confirmed by chest X-ray, echocardiography, or hemodynamic measurement (right heart catheterization). The signs and symptoms of HF are summarized in Table 1. The most common manifestations of HFpEF are dyspnea and edema.

For each patient with dyspnea, reduced exercise tolerance, weakness, and easy fatigue, HF suspicion should be raised, and a stepwise diagnostic process should be used to avoid misdiagnosis (Figure 1) [2, 4, 6].

The first step is to establish the probability of HF based on clinical data. The patient should be assessed for the presence of risk factors as well as signs and symptoms of HF. Patients with the following risk factors have a high probability of HFpEF: older age, hypertension, atrial fibrillation (AF), diabetes, chronic kidney disease, previous cardiotoxic cancer treatment, or obesity.

Signs and symptoms of HF are nonspecific and may be present also in other entities. Examples of medical conditions that should be considered in differential diagnosis include coronary artery disease, lung disease, and anemia.

The second step in the diagnosis of HFpEF involves beside physical examination testing (Figure 1). The following tests are recommended in all patients with suspicion of HF (class of recommendation I) [2]:

1) measurement of B-type natriuretic peptide (BNP) levels or N-terminal pro B-type natriuretic peptide (NT-proBNP);
2) routine laboratory testing: complete blood count, urea, creatinine, electrolytes, fasting glucose, glycated hemoglobin HbA1c, iron tests (ferritin, transferrin saturation), lipid levels, thyroid function;
3) chest X-ray (absence of abnormalities does not exclude HF); and
4) resting electrocardiogram (ECG).

ECG in patients with suspicion of HF may reveal AF, abnormal Q waves, signs of left ventricular (LV) hypertrophy, and prolonged QRS complex. ECG sensitivity in HFpEF is lower than that in HF with reduced ejection fraction. Normal ECG findings are reported in 35% to 45% of HFpEF patients [7].

Natriuretic peptides are an important component of the universal definition of HF and the second step in the diagnostic algorithm. Natriuretic peptide levels below the recommended cutoff point (<35 pg/ml for BNP and <125 pg/ml for NT-proBNP) have a high negative predictive value (95%–99%). This means that a patient with dyspnea and an NT-proBNP level below 125 pg/ml has a low risk of HF and should be examined for other causes of dyspnea if there are no other data to indicate a high clinical probability of HF [2–4, 6]. When interpreting the results of natriuretic peptide tests, it is important to consider other conditions that are associated with elevated levels (such as older age, chronic kidney disease, AF) as well as reduced levels of natriuretic peptides, such as obesity or current use of HF medications (Table 2A).

For accurate interpretation of natriuretic peptide measurements, it is important to know the patient's heart rhythm because AF patients have 3- to 3.5-fold higher natriuretic peptide levels, and the cutoff value for HF is 365 pg/ml or higher for NT-proBNP and 105 pg/ml or higher for BNP [2, 8]. Importantly, even up to 25% of patients with invasively confirmed HFpEF may have NT-proBNP levels of less than 125 pg/ml [8].

In line with the universal definition of HF, elevated natriuretic peptide levels constitute an important component of HF diagnosis, and the higher the levels of these markers, the higher the clinical probability of HF.

Natriuretic peptide measurements should always be interpreted together with clinical and echocardiographic data

Echocardiographic examination is the third step in the diagnostic algorithm. It is important not only for assessment of ejection fraction but also for assessment of structural and/or functional abnormalities, whose presence is required for the diagnosis of HFpEF in line with the European Society of Cardiology (ESC) guidelines [2–4].

When interpreting echocardiographic findings, clinicians should look beyond ejection fraction alone. In HFpEF patients, other abnormalities should be considered, including LV hypertrophy, left atrial enlargement, abnormal mitral inflow pattern (which indicates LV diastolic dysfunction and elevated LV filling pressure), and tricuspid regurgitation in-

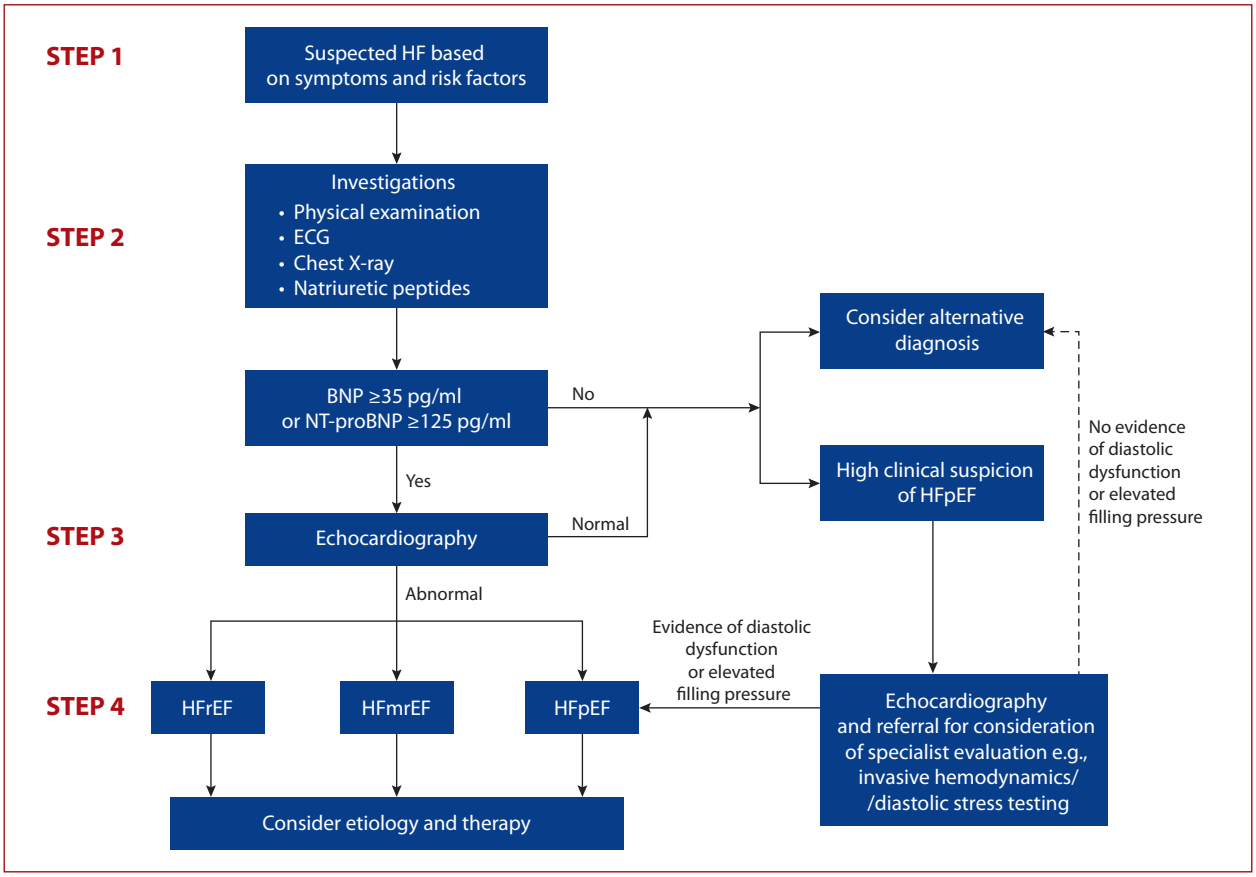

Figure 1. Algorithm for the diagnosis of heart failure [2, 4, 6]

Abbreviations: BNP, brain natriuretic peptide; ECG, electrocardiography; HF, heart failure; HFmrEF, heart failure with mildly reduced ejection fraction; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; NT-proBNP, N-terminal pro B-type natriuretic peptide

Table 2. Practical principles for the use and interpretation of natriuretic peptides

A. Causes of elevated and reduced natriuretic peptide concentration (modified from McDonagh et al. [2])

Selected causes of elevated natriuretic peptide levels		Reduced natriuretic peptide levels
Cardiac	Noncardiac	
Heart failure	Advanced age	Obesity (by 50%)
Acute coronary syndrome	Anemia	Dehydration
Cardiomyopathy, including hypertrophic cardiomyopathy	Kidney disease	Hypovolemia
Valvular heart disease, congenital heart disease	Liver disease (e.g., cirrhosis with ascites)	Previous heart failure treatment
Pericardial disease	Chronic obstructive pulmonary disease	Cardiac tamponade
Atrial fibrillation	Severe pneumonia, sepsis	
Myocarditis	Ischemic stroke	
Cardiac surgery	Subarachnoid hemorrhage	
Cardioversion, ICD shock	Paraneoplastic syndrome	
Cardiotoxicity, including cancer treatment	Severe burns	
Pulmonary hypertension	Severe metabolic and hormone abnormalities (e.g., thyrotoxicosis, diabetic ketoacidosis)	

Abbreviations: ICD, implantable cardioverter-defibrillator

B. Rule-out cutoff values for natriuretic peptide levels in acute and chronic heart failure according to the body mass index [13]

Heart failure	Natriuretic peptide	BMI	Cut-off points (ng/l)
Acute	BNP	All	<100
		If BMI <25 kg/m^2	<170
		If BMI 25–35 kg/m^2	<110
		If BMI ≥35 kg/m^2	<54
	NT-proBNP	–	<300
Chronic	BNP	–	<35
	NT-proBNP	–	<125

Abbreviations: BMI, body mass index; other — Figure 1

Table 3. Echocardiographic abnormalities in heart failure with preserved ejection fraction [2, 4]

Parameter	Threshold	Comment
LV mass index	≥95 g/m² (women) ≥115 g/m² (men)	The absence of LV hypertrophy does not exclude the diagnosis of HFpEF
Relative wall thickness	>0.42	
Left atrial volume index	>34 ml/m² (sinus rhythm) >40 ml/m² (atrial fibrillation)	Left atrial enlargement reflects chronically elevated LV filling pressure (in the absence of atrial fibrillation or valve disease)
E/e'	>9 at rest	Sensitivity, 78%; specificity, 59% for the presence of HFpEF confirmed by invasive exercise testing
Tricuspid regurgitation velocity	>2.8 m/s at rest	Sensitivity, 54%; specificity, 85% for the presence of HFpEF confirmed by invasive exercise testing
Pulmonary artery systolic pressure, estimated	>35 mm Hg	

Abbreviations: LV, left ventricular; other — Figure 1

Table 4. The H_2FPEF score for the diagnosis of heart failure with preserved ejection fraction [2, 8]

	Clinical variable	Values	Points
H_2	**H**eavy	BMI >30 kg/m²	2
	Hypertensive	≥2 antihypertensive drugs	1
F	Atrial **F**ibrillation	Paroxysmal or persistent	3
P	**P**ulmonary hypertension	PASP >35 mm Hg	1
E	**E**lderly	Age >60 years	1
F	**F**illing pressure	E/e' >9	1

Abbreviations: E/e', ratio of early diastolic mitral inflow velocity to early diastolic mitral annulus velocity; PASP, pulmonary artery systolic pressure; other — see Table 2

dicating elevated right ventricular systolic pressure, which in the absence of pulmonary stenosis, suggests elevated pulmonary artery pressure.

The 2021 ESC guidelines [2] and the 2019 consensus recommendation of the Heart Failure Association of the ESC [8] indicate the echocardiographic parameters that provide objective evidence of structural and/or functional abnormalities specific to HFpEF (Table 3) and propose diagnostic workup including minor and major echocardiographic criteria in the HFA-PEFF score [8]. The algorithm for echocardiographic evaluation of left ventricular filling pressure in HFpEF is well described in the expert consensus document of the European Association of Cardiovascular Imaging [9]. However, in clinical practice, it is possible that echocardiographic assessment will not include all these parameters. In such cases, it is recommended to examine the parameters that are used in clinical trials of HFpEF: 1) LV wall thickening at ≥12 mm; 2) left atrial enlargement, increased left atrial volume, and/or increased left atrial volume index; and 3) signs of diastolic dysfunction or elevated filling pressure (formerly referred to in the literature as impaired relaxation, pseudonormal mitral inflow pattern, or restrictive mitral inflow pattern). The higher the number of abnormalities on echocardiography, the greater the probability of HFpEF.

Patients with normal echocardiographic findings and/or low natriuretic peptide levels (NT-proBNP <125 pg/ml, BNP <35 pg/ml), but with a high clinical probability of HFpEF, should be referred to a specialist center for extensive diagnostic workup with functional or invasive hemodynamic testing (right heart catheterization) (Figure 1) [6]. The diagnosis of HFpEF is established based on the presence of signs of diastolic dysfunction or elevated LV filling pressure; however, this kind of testing is not widely available. These signs are

1) in diastolic stress testing: stress echocardiography with average E/e' ≥15; tricuspid regurgitation velocity >3.4 m/s or invasive testing with pulmonary capillary wedge pressure >25 mm Hg at peak exercise, or
2) right heart catheterization at rest: pulmonary capillary wedge pressure >15 mm Hg [6].

In the absence of these findings, the patient should be examined for other causes of the presenting symptoms [6].

The HFA experts emphasized that the use of the clinical scoring system H_2FPEF and the HFA-PEFF diagnostic algorithm can aid in diagnosis of suspected HFpEF. Both algorithms are based on the assessment of the likelihood that HFpEF is the underlying cause of the patient's dyspnea.

In patients with dyspnea and no signs of fluid overload, use of the H_2FPEF score is recommended to establish the diagnosis of HFpEF. The H_2FPEF score is a simple diagnostic tool that includes 4 clinical and 2 echocardiographic variables (Table 4), each assigned several points [10]. A total score of 6 points or higher indicates a high probability of HFpEF (>90%). The H_2FPEF algorithm can be used when natriuretic peptide testing or echocardiography is not available. For example, a patient with obesity (body mass index 31 kg/m²), hypertension, treated with 2 antihypertensive drugs, and a history of paroxysmal AF obtains a total H_2FPEF score of 6 points (probability of HFpEF = 90%). If this patient was older than 60 years, then the H_2FPEF score would be 7 points, and the probability of HFpEF would reach 95%.

In contrast, the HFA-PEFF diagnostic algorithm, is less well validated and performs worse than the H_2FpEF score in terms of HFpEF diagnostics in the outpatient setting. In our

Table 5. Multimodality imaging and etiology approach in HFpEF [9]

Etiology	Echo	Coronary angiography (CT or invasive)	CT	CMR	SPECT	DPD (bone and cardiac)	PET	Right catheterization at rest/exercise
Arterial hypertension	+++	+		+				
CAD	+++	+++		+++	+++		+++	
HCM	+++			++				
Cardiac amyloidosis	+++			++		+++	+	
Cardiac sarcoidosis	++			+++			+++	
Storage disease e.g. Fabry	+++			+++				
Constrictive pericarditis	+++		+++	+++				+++
Non-cardiac PH	+++		++					+++

Abbreviations: CAD, coronary artery disease; CMR, cardiovascular magnetic resonance imaging; CT, computed tomography; DPD, 99mTc with 3,3-diphosphono-1,2-propanodicarboxilic acid bone and cardiac scintigraphy, planar scintigraphy; HCM, hypertrophic cardiomyopathy; PET, positron emission tomography, useful for assessing cardiac sarcoidosis; PH, pulmonary hypertension; SPECT, single photon emission computed tomography

opinion, it is challenging to use this diagnostic algorithm in the Polish healthcare system because of the limited access to functional/invasive testing [4, 8, 11].

Once HFpEF diagnosis is confirmed, the fourth step is to determine the etiology of HF using advanced imaging (advanced echocardiography, cardiac magnetic resonance, DPD single-photon emission computed scintigraphy, cardiac computed tomography coronary angiography, or positron emission tomography). Table 5 presents the multimodality imaging and etiology approach in HFpEF [9].

Previous hospitalization is important for the identification of an HFpEF patient if:

- that hospitalization was for reduced exercise tolerance, peripheral edema, and/or pulmonary congestion, and fluid overload was confirmed by imaging tests;
- the patient received intravenous drugs (diuretics, vasodilators, and/or positive inotropic agents). The diagnosis is further confirmed by elevated natriuretic peptide levels and echocardiographic abnormalities described above if the tests were done during hospitalization. A positive response to standard HF treatment such as loop diuretics also increases the probability of HFpEF.

The most important clinical scenarios associated with the risk of HFpEF are described below.

OBESITY

Obesity is one of the strongest risk factors for HFpEF. Overweight or obesity was reported in 80% of patients with HFpEF [12]. Diagnosis of HFpEF in patients with obesity remains challenging. Clinical symptoms such as shortness of breath or fatigue are observed in patients with obesity with and without HFpEF. On the other hand, HFpEF patients often do not present with typical HF symptoms such as neck vein distension, third heart sound, displaced apex beat, or ankle edema. Moreover, chest X-ray and transthoracic echocardiography, the cornerstones of HF diagnostics, provide poorer-quality images in obese patients as compared to lean individuals. Furthermore, it was reported that diagnosis of acute congestive HF may be missed in 1 of every 5 patients with a body mass index of more than 35 kg/m^2 when using the standard cutoff point of 100 pg/ml for BNP [13]. The link between obesity and low natriuretic peptide levels is well-known and constitutes an important problem in clinical practice. Therefore, to improve the accuracy of HFpEF diagnosis in obese patients, new cutoff values were proposed for acute HF (Table 2B) [13]. However, the BNP and NT-proBNP cutoff points for identifying chronic HF in obese patients remained the same as in the general HF population.

ATRIAL FIBRILLATION

Atrial fibrillation is a common comorbidity in patients with any HF phenotype. It is estimated that AF is present in about 50% of HFpEF patients [2, 4, 8]. On the one hand, it may lead to HF (it is a major risk factor for HF, especially HFpEF). On the other hand, HF is a common cause of AF.

Diagnosis of HF in AF patients constitutes a considerable challenge because of the nonspecific symptoms (like in HF). The most common symptoms related to AF are fatigue/tiredness, dyspnea on exertion, and, less commonly, palpitations.

Atrial fibrillation alone causes elevated levels of natriuretic peptides. Therefore, it is recommended that clinicians use higher thresholds for BNP and NT-proBNP to establish HF diagnosis in AF patients than those used for sinus rhythm, as mentioned above. According to the 2021 ESC guidelines on HF management, the threshold for HFpEF diagnosis in AF patients is >365 pg/ml for NT-proBNP (>105 pg/ml for BNP), as compared to 125 pg/ml in those with sinus rhythm [2]. Atrial fibrillation, especially in cases with a rapid ventricular rate, may lead to tachycardia-induced cardiomyopathy. In some patients, it may initially be fully asymptomatic. We recommend that AF patients should be routinely assessed for HF and those with HF should be routinely assessed for AF.

It is important to note that in the H_2FPEF scoring system for HFpEF diagnosis, the presence of AF scores 3 points. It seems that the H_2FPEF score should be recommended for use in daily clinical practice also in those patients who have limited access to natriuretic peptide testing.

CARDIAC AMYLOIDOSIS

In the 2023 ACC consensus, cardiac amyloidosis is listed as one of HF mimics [4]. Although in some patients, cardiac amyloidosis leads to the development of HF symptoms, its treatment is different. Cardiac amyloidosis is typically a type of restrictive cardiomyopathy, which is caused by extracellular accumulation of amyloid deposits. The two most common types of amyloidosis include immunoglobulin light chain (AL) amyloidosis, characterized by the deposition of abnormal light chains, and transthyretin (TTR) amyloidosis, which is caused by the deposition of amyloid fibrils composed of the TTR protein.

Recent advances in research have vastly improved the accuracy of noninvasive diagnostic evaluation for TTR amyloidosis based on scintigraphy. As a result, TTR amyloidosis is increasingly commonly diagnosed, especially in older patients [13]. However, TTR amyloidosis is still underdiagnosed in a large proportion of HF patients, particularly those with HFpEF. The most common symptoms that indicate amyloidosis [14] are left ventricular hypertrophy ≥12 mm + ≥1 of the following:

- HF in patients aged ≥65 years,
- elevated NT-proBNP levels (disproportionately to the degree of HF),
- aortic stenosis in patients aged ≥65 years,
- low or normal blood pressure in patients with previous hypertension,
- autonomic or sensory neuropathy,
- peripheral polyneuropathy,
- proteinuria,
- bilateral carpal tunnel syndrome,
- biceps tendon rupture,
- subendocardial late gadolinium enhancement or increased extracellular volume,
- reduced longitudinal strain with apical sparing pattern on echocardiography,
- reduced QRS voltage to the degree of LV thickness,
- pseudo-infarct ECG pattern,
- atrioventricular conduction disorders on ECG
- family history.

OLD AGE AND HFpEF

The percentage of patients at older age has been increasing due to a global increase in longevity. HFpEF is common in the elderly population. The incidence of HF gradually increases with age, reaching about 20% in patients older than 75 years. Therefore, some authors describe HF as a geriatric syndrome associated with poorer prognosis, longer residual disability, and the presence of common age-related comorbidities. The typical causes of HFpEF at older age or comorbidities in elderly patients with HFpEF include hypertension, obesity, diabetes, AF, coronary artery disease, obstructive sleep apnea, and chronic kidney disease [15].

In daily clinical practice, it may be difficult to differentiate between physiological aging and the presence of HFpEF in elderly patients. Cardiac abnormalities associated with aging and differences between the physiological symptoms of aging and symptoms of HFpEF are summarized in Table 6.

Table 6. Age-related cardiac changes and differences between the symptoms of physiological aging and heart failure with preserved ejection fraction

Age-related cardiac changes	
Left ventricle	Left ventricular hypertrophy, preserved or impaired diastolic function
Right ventricle	Preserved ejection fraction, diastolic dysfunction, changes in the geometry of the right ventricular outflow tract
Atria	Atrial enlargement, mechanical dysfunction, atrial fibrillation
Systolic function	Reduced maximal cardiac output, reduced cardiac output reserve
Coronary arteries	Endothelial dysfunction, atherosclerosis
Chronotropic activity	Reduced maximal heart rate, increased chronotropic response to beta-adrenergic receptor stimulation
Cardiac muscle	Cardiac fibrosis due to chronic neurohumoral activation
Peripheral arteries	Vascular stiffness, endothelial dysfunction, hypertension, vasodilatation, aneurysms, pulmonary hypertension
Aging heart	**HFpEF**
Symptoms	
Mild Subjective fatigue Reduced exercise tolerance Low mood	Significant Objective evidence of reduced exercise tolerance Dyspnea on exertion/at rest Peripheral edema
Comorbidities	
Less common Typically, obesity	Common Chronic kidney disease, chronic obstructive pulmonary disease, anemia
Cardiac comorbidities	
Less common Typically, hypertension	Common Typically, atrial fibrillation Atherosclerosis
Echocardiography	
Physiological changes associated with aging: • Mild atrial enlargement • Low LV volume • Reduced LV mass • Mild LV hypertrophy • Age-related diastolic function	Pathological cardiac remodeling Significant atrial enlargement Increased LV volume Increased LV mass Increased LV filling pressure Signs of diastolic dysfunction
Natriuretic peptides	
Normal or slightly elevated	Significantly elevated

Abbreviations: see Table 3

The aging process and the above comorbidities may induce chronic systemic inflammation, leading to myocardial remodeling and HFpEF [16]. Owing to the specific characteristics of the elderly age group and the presence of various comorbidities with overlapping symptoms, HF is often underdiagnosed in these patients [17].

SEX-RELATED DIFFERENCES IN THE DIAGNOSIS OF HFpEF

Compared with men, women with HFpEF have more severe dyspnea and more often have a reduced quality of life [18].

Table 7. Recommendation for the treatment of patients with symptomatic heart failure with preserved ejection fraction [2, 22]

Recommendation	Class	Level
An SGLT2 inhibitor (dapagliflozin or empagliflozin) is recommended to reduce the risk of heart failure hospitalization, or cardiovascular death	I	A
Diuretics are recommended for patients with fluid retention to alleviate symptoms and signs	I	C
Treatment for etiology, cardiovascular, and non-cardiovascular comorbidities is recommended	I	C

Physical examination is usually similar in men and women with HFpEF; however, diagnostic tests may reveal some sex-related differences. For example, women with HFpEF more often have more severe LV concentric remodeling on echocardiography, which is associated with greater impairment of LV relaxation and higher diastolic stiffness, as compared with men [19]. Due to a more concentric remodeling, women typically have a smaller LV diameter and thus higher ejection fraction than men. This may lead to underestimation of impaired LV systolic function in women. It is important to note that patients with HFpEF are typically women at an older age who report reduced quality of life and present with numerous comorbidities such as hypertension, AF, obesity, chronic kidney disease, and type 2 diabetes.

THERAPY OF HFpEF

Taking into account the results of two trials, EMPEROR-Preserved [20] and DELIVER [21], the 2023 ESC guidelines have recommended using sodium-glucose co-transporter 2 (SGLT2) inhibitors (empagliflozin and dapagliflozin) in symptomatic patients with HFpEF to reduce the risk of HF hospitalization or cardiovascular death (class I, level A) [22]. The positive clinical effect of SGLT2 inhibitor therapy is seen in a short time from the initiation, as well as in the quality of life [20–23]. There are also the 2023 ESC recommendations concerning patients with HFpEF for using diuretics in fluid retention and treatment for etiology, cardiovascular, and non-cardiovascular comorbidities in class I level [22]. Pharmacotherapy of HFpEF depending on the congestion, etiology, and comorbidities was also described in the 2021 ESC guidelines [2] and emphasized in the Expert Opinion of the Heart Failure Association of the Polish Cardiac Society [24, 25] and in the statement of three European associations related to different HFpEF phenotypes [26]. Table 7 presents the recommendation for therapy in HFpEF.

Finally, after the positive results of the STEP-HFpEF trial [27], it seems that a new therapeutic approach proposed by Verma et al. for patients with HFpEF and obesity will be the next change — SGLT2 inhibitors to reduce clinical events and SGLT2 inhibitors with glucagon-like peptide-1 receptor agonist (semaglutide) to improve symptoms, physical limitations and exercise function [28].

In summary, the diagnosis of HFpEF is complex, and already at early stages of the diagnostic workup, it is necessary to establish if the patient has any cardiac or noncardiac disease that may lead to symptom overlap, affect the levels of natriuretic peptides, or mimic HFpEF. Nevertheless, to identify patients with suspected HFpEF in the outpatient setting and to establish definitive diagnosis, it is necessary to follow the diagnostic algorithm presented in this expert opinion. After identification of HFpEF, the etiology and therapy should be established.

Article information

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