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EDITORIAL ARTICLE

HEART FAILURE: AN OVERALL ASSESSMENT

Heart failure (HF), also known as congestive heart failure (CHF), is a syndrome including a group of signs and symptoms, caused by impairment of ventricular filling or ejection of blood or both. It is characterized by dyspnea or exertional limitation. HF is a global problem with an estimated prevalence of 38 million patients worldwide, a number that is increasing with the ageing of the population, being the most common diagnosis in patients at the age of 65 years and over.

Echocardiographic parameters, such as left ventricular ejection fraction (LVEF), have been used for classification of this clinical syndrome: HF with reduced LVEF (HFrEF; EF < 40%), mid-range LVEF (HFmrEF; EF 41–49%), and preserved LVEF (HFpEF; EF ≥ 50%) have all been classified as different entities of HF. In developing and developed countries, HF incidence continues to rise and various etiologies have been identified. The etiological factors of HFpEF and HFrEF seem to be different. Patients with HFrEF are more likely to have coronary artery disease, valvular heart disease, hypertension, and cardiomyopathies. Patients with HFpEF may also have valvular heart disease, hypertension or atrial fibrillation, while many studies show that patients with HFpEF are in most cases older women with hypertension. Additionally, obesity, diabetes, atrial fibrillation, metabolic syndrome, chronic obstructive pulmonary disease, sleep-disordered breathing, renal dysfunction and anemia play also an essential role.

Symptoms include shortness of breath, fatigue and leg swelling. Patients may have shortness of breath that decreases exercise tolerance. Furthermore, they are unable of lying down, or may wake up at night. Finally, fatigue, and fluid retention, seen as pulmonary and peripheral edema are common findings. According to the severity of the HF (2019 meta-analysis) it is estimated that the 1-y, 2-y, 5-y and 10-year survival rates of all-type HF are 87%, 73%, 57%, and 35% respectively. Although life expectancy for a person with HF has significantly improved over time, half of people diagnosed today can expect to live at least 5 more years, compared with 41% in 2000, according to relevant studies. The rate of mortality and prognosis remains particularly poor after hospitalization, while the 5-year survival after hospitalization for HFrEF is 25%. Therefore, HF remains a leading cause of morbidity and mortality globally, even more than some forms of cancer.

Biomarkers, such as NT-proBNP, are helpful to prognosis, since patients with low concentrations tend to have a more benign course, with fewer events and they might require less aggressive follow up evaluation.

The "2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure" is intended to provide patient-centric recommendations for clinicians to prevent, diagnose, and manage patients with HF. Treatment strategies include the use of diuretics to relieve symptoms. Moreover, an evidence-based β-blocker should be prescribed in all patients with HFrEF, unless contraindicated or not tolerated, as these agents reduce all-cause and cardiovascular mortality, sudden cardiac death, and HF hospitalizations in patients with HFrEF.

The cornerstone of guideline-directed medical therapy for HFrEF involves inhibition of the renin-angiotensin-aldosterone (mineralocorticoid receptor antagonist-MRA). Numerous studies have shown that MRA with either angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARBs) reduces morbidity/mortality and all-cause

mortality in HFrEF. Care must be taken in patients with low blood pressure (systolic blood pressure <80 mm Hg), chronic kidney disease (creatinine >3.0 mg/dL), or hyperkalemia (potassium >5.5 mEq/L).

The PARADIGM-HF trial found that the angiotensin receptor–neprilysin inhibitor (ARNI) sacubitril/valsartan, when compared with enalapril, reduced cardiovascular mortality and hospitalization for HF in patients with chronic HFrEF. These findings were extended to patients with acute HF in the PIONEER trial, which included hemodynamically stable patients, who were admitted to the hospital with a primary diagnosis of acute decompensated HFrEF.

Randomized clinical trials have shown that the use of MRAs' (spironolactone and eplerenone), which contribute to renin-angiotensin-aldosterone system blockade, reduced mortality and HF hospitalizations in patients with chronic HFrEF, including patients who have had a myocardial infarction. An MRA inhibitors should be added to therapy in addition to an ACE inhibitor/ARB/ARNI and β-blocker in patients with LVEF of 35% or less and NYHA class II to IV symptoms, except in patients with a baseline serum creatinine level above 2.5 mg/dL (or estimated glomerular filtration rate <30mL/min/1.73m 2) or serum potassium level above 5.0 mEq/L.

Ivabradine and hydralazine/isosorbide dinitrate have also a role in certain patients with HFrEF. More recently, sodium-glucose co-transporter 2 (SGLT2) inhibitors (Dapagliflozin) have further improved disease outcomes, significantly reducing cardiovascular and all-cause mortality irrespective of diabetes status.

Vericiguat, an oral soluble guanylate cyclase stimulator, reduces HF hospitalization in high-risk patients with HFrEF. The recent VICTORIA trial enrolled patients with higher-risk HFrEF than those in other contemporary clinical trials, found that vericiguat reduced the composite primary outcome of cardiovascular death or first HF hospitalization over median follow-up of almost a year.

Device therapies, such as cardiac resynchronization therapy (CRT) may be beneficial in patients with interventricular dyssynchrony. Implantation of pacing leads to the right and left ventricles, timed to pace at an interval maximizing synchrony. Clinical trials have established the morbidity/mortality benefit of CRT in certain patients with HFrEF. CARE-HF found that CRT reduced all-cause mortality, compared with optimal medical therapy over a mean follow-up of more than 2 years. Transcatheter mitral valve repair (tMVR) may be considered for patients with HFrEF and severe secondary mitral regurgitation. Implantable cardiac defibrillators (ICD) have a place in patients with more severe left ventricular dysfunction, in order to reduce the risk of sudden cardiac death, particularly of ischemic etiology. Finally, implantation of a wireless pulmonary artery pressure monitor (CardioMEMS) may be considered in patients with persistent NYHA class III. In the CHAMPION trial application of the device reduced HF hospitalizations over a mean follow-up period of 18 months. A ventricular assist device (bridge to transplant or as a destination therapy) or cardiac transplant is reserved for those with severe disease despite all other measures.

Beyond the HF clinical syndrom, a percentage of HF patients also have noncardiovascular comorbidities. Diabetes mellitus, atrial fibrillation, kidney dysfunction (cardio-renal syndrome refers to highly interdependent relationship between the heart and kidneys), chronic kidney disease and coronary artery disease are comorbidities that often complicates management and may worse prognosis. The patients should be assessed regularly, so that the decision for further treatment can

be made.

Medically supervised cardiac rehabilitation program can be useful to improve exercise duration, patient health-related quality of life, mood disorders, offering as well the opportunity of patient's education. It is safe, accompanied by a very low incidence of cardiovascular events.

At present, with the rapid progress of medical technology, the nursing mode is remarkable and must be updated accordingly. The effects of a nursing care program including follow-up on a HF patient's life quality, self-care, and the rehospitalization of the patients is significant.

Nursing care should include: observation of symptoms and signs of decreased cardiac output, detection of activity intolerance, estimation of excess fluid volume or ineffective tissue perfusion, inspection of risk for impaired skin integrity, recognizing of ineffective breathing pattern and impaired gas exchange, remark of fatigue and anxiety of the patient.

In addition, the nursing care plan for patients with HF should include: relieving fluid overload symptoms, relieving symptoms of anxiety and fatigue, promoting physical activity, increasing medication compliance, decreasing adverse effects of treatment, teaching patients about dietary restrictions, teaching patient about self-monitoring of symptoms.

Conclusion

Heart failure remains a leading cause of morbidity and mortality globally. The 2022 HF guideline provides recommendations based on contemporary evidence for the treatment of these patients. Besides the basal HF medication and recent developments, including SGLT2 inhibitors, vericiguat, and transcatheter mitral valve repair that might improve prognosis, disease's morbidity and mortality remain high. In this context, nursing care is noteworthy along with an interprofessional team approach endorses optimization of patient care.

Studies

PARADIGM-HF: Prospective Comparison of ARNI with ACEi to Determine Impact on Global Mortality and Morbidity in Heart Failure

PIONEER-HF: Comparison of Sacubitril-Valsartan vs Enalapril on Effect on NT-proBNP in Patients Stabilized from an Acute Heart Failure Episode

VICTORIA: Vericiguat Global Study in Subjects with Heart Failure with Reduced Ejection Fraction

CARE-HF: Cardiac Resynchronization in Heart Failure Trial

CHAMPION: CardioMEMS Heart Sensor Allowing Monitoring of Pressure to Improve Outcomes in NYHA Class III Heart Failure Patients

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