Editorial

The Life Cycle of the Heart Failure Patient

Heart failure (HF) is an epidemic with an estimated 23 million people afflicted world-wide. In the US, there are 5.1 million people ≥ 20 years of age with heart failure and 875,000 new patients being diagnosed each year [1]. Projections show that by 2030, the prevalence of HF will increase by 23% overall from current 2013 estimates with 26% of patients over the age of 80 years [2]. At 40 years of age, the lifetime risk of developing HF for both men and women is 1 in 5. Hospitalization due to heart failure as a primary diagnosis is reported in over 1 million patients yearly as a first diagnosis with an additional 3 million hospitalizations as a contributing diagnosis. There were 676,000 ED visits for heart failure and 1.8 million outpatient visits in 2010. Although prognosis has improved, the 5-yr mortality rate remains at 50%. Medicare patients have a 30% 1-year mortality rate after HF hospitalization. Heart failure is now the 2nd most common diagnosis for entering hospice. Heart failure was recorded in 1 of every 9 death certificates in 2009. The annual US healthcare cost is enormous, estimated to be 30.7 billion dollars in 2012 [1]. By 2030, the cost of HF care will almost triple for those over the age of 65 yrs.

In 2001, the AHA/ACC Heart Failure Guideline introduced the concept of heart failure stages which was expanded in the 2013 American Heart Association/American College of Cardiology HF Guideline (Fig. **1**) [3, 4]. Stage A represents the patients at high risk for the development of HF. It is critical to identify and aggressively treat Stage A patients to prevent progression to structural heart disease and heart failure. Stage B comprises the patients who have known structural heart disease but who do not yet have symptoms (NYHA class I). Treating these patients will prevent further cardiac remodeling and development of symptomatic HF. Stage C includes both patients with HF and reduced ejection fraction (HFrEF) and those with HF and preserved ejection (HFpEF). Stage C patients have mild to moderate symptoms (NYHA class II - more than ordinary activity produces symptoms and NYHA class III - less than ordinary activity produces symptoms of fatigue, dyspnea). Stage D represents refractory patients – NYHA class IV who experience symptoms at rest or with minimal activity and have recurrent hospitalizations despite receiving guideline-directed therapy. These patients are candidates for assist devices, cardiac transplant, or may be referred to hospice.

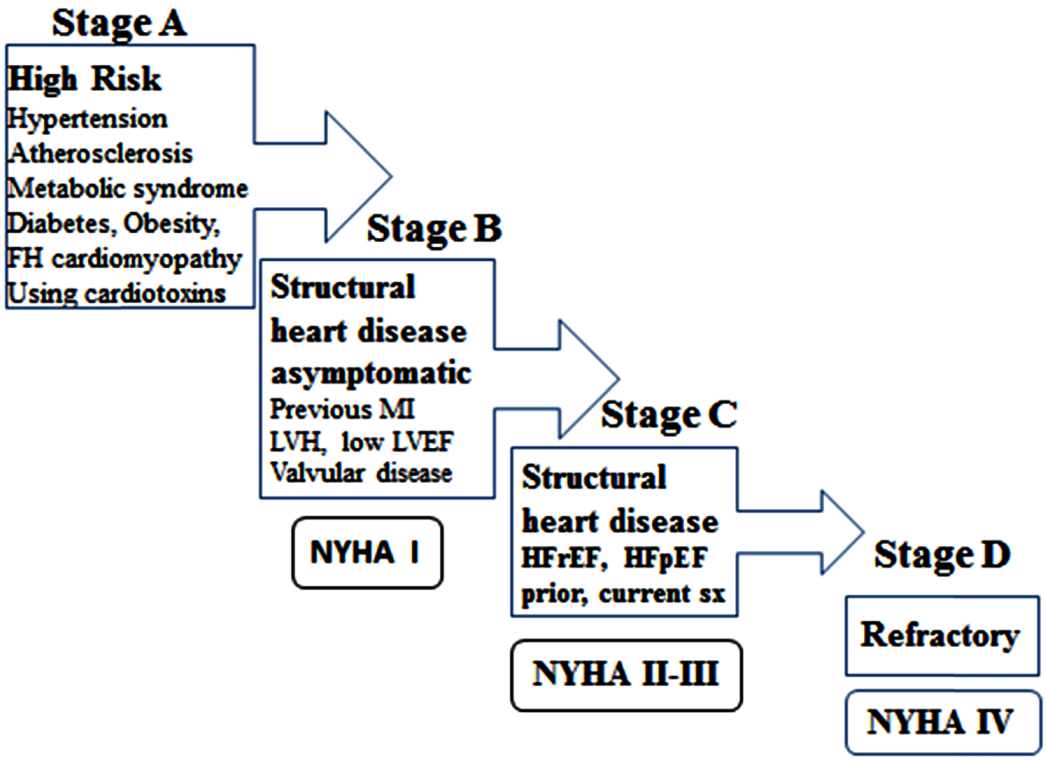

Fig. (1). Heart Failure Stages and NYHA class.

FH family history; MI myocardial infarction; LVH left ventricular hypertrophy;LVEF left ventricular ejection fraction, NYHA New York Heart Association, HFrEF heart failure with reduced ejection fraction; HFpEF heart failure with preserved ejection fraction, sx symptoms

The diagnosis of HF depends on the combination of symptoms, signs, and assessment of left ventricular ejection fraction with supportive evidence provided by X-ray findings and brain natriuretic peptide elevation. Determining the type – HFREF or HFPEF and the etiology of heart failure is critical for management. Ischemic heart disease is the single most common etiology of HF, accounting for one-half to two-thirds of cases. Therefore assessment of coronary artery disease should be part of an initial evaluation.

This theme issue highlights the life cycle of the HF patient from primary prevention and genetics to advanced therapies. Prevention is critical in decreasing the incidence of HF. Seventy-five per cent of patients with heart failure have antecedent hypertension [1]. Although there are no trials addressing primary prevention, many clinical trials report HF outcomes as secondary outcomes in patients with hypertension and those at high risk. Thiazide diuretics are the most effective agents for preventing HF in patients with hypertension. ACE-Inhibitor (ACE-I) / angiotensin receptor blockers (ARB) are drugs of choice in patients with atherosclerosis, diabetes, or chronic kidney disease. Genetics is becoming increasingly more important in terms of etiology. More than one half of idiopathic cardiomyopathy is now attributable to genetic mutations. Genetically targeted pharmacological therapy may aid in identifying optimal medical therapy for individual patients in the future. Assessing left ventricular function in patients at high risk for the development of HF is important. A population study revealed that among asymptomatic individuals, the prevalence of mild left ventricular diastolic dysfunction was 21%: 7% for moderate or severe diastolic dysfunction, and 6% for systolic dysfunction [5]. The presence of any left ventricular dysfunction (systolic or diastolic) was associated with an increased risk of developing overt HF, and diastolic dysfunction was predictive of all-cause mortality. The evidence for treatment of Stage B asymptomatic patients suggests benefits for ACE-I/ARB therapy, beta blockers, and statins in appropriate patients. In contrast to Stage A and B patients, there are many randomized clinical trials that guide therapy in symptomatic Stage C patients with HFrEF. ACE-I/ARB, beta blockers, and aldosterone antagonists are now considered baseline therapy. Doses should be uptitrated to target doses in clinical trials or highest tolerated dose. Additional agents include diuretics, nitrate plus hydralazine, digoxin, statins and aspirin in ischemic patents, and omega-3 fatty acids. Device therapies should be considered in HFrEF patients only after patients receive guideline directed medical therapy for a minimum of 3-6 months. Patients with HFrEF and HFpEF have a similar prognosis [6, 7]. However, there have been no trials demonstrating a mortality benefit from a specific drug in HFpEF patients. Diagnosis of HFpEF may be challenging. The pathophysiology is multi-faceted and treatment strategies focus on treatment of hypertension, volume overload, and comorbidities. Pro/Brain natriuretic peptides aid in the diagnosis of HF and biomarkers also provide prognostic information in patients with acute and chronic HF. However, biomarker guided management is controversial. Pulmonary hypertension is present in the majority of patients with HFpEF and portends a poor prognosis in both types of HF. Evaluation and monitoring should be performed, and potential therapies considered. Hospitalization is common in patients with heart failure; 80% of HF care is attributable to hospitalization. Treatment of acute decompensated heart failure has become the focus of new therapies. Identifying precipitating factors, optimizing oral medical therapy before discharge, and timely follow up is critical to prevent readmission. Heart transplant and left ventricular assist devices can be offered to end-stage patients but patients should be referred early to ensure the best outcome. End of life discussion and hospice has become a critical aspect of patient care.

This issue will provide a practical guide for the management of all Stages of patients with HF. Recommendations as to when to refer to a heart failure specialist will be provided.

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