

# Clinical Features of Heart Failure and Acute Coronary Syndromes

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## KEYWORDS

- Laboratory medicine • Cardiac markers • Biomarkers • Congestive heart failure
- Acute coronary syndrome • Review • Clinical

## KEY POINTS

- Patients with congestive heart failure (CHF) present with a spectrum of symptoms typically highlighted by lower extremity swelling, weight gain, and dyspnea.
- The diagnosis of CHF is based on the clinical symptoms and is complemented by laboratory and imaging findings.
- The management of patients with CHF is focused on determining the underlying cause and initiating a medical regimen to maintain a stable volume status and improve mortality.
- Patients with acute coronary syndromes (ACS) typically present with symptoms of anginal chest pain; however, variations in chest pain syndromes may be seen.
- The diagnosis of ACS is determined by the clinical presentation in conjunction with electrocardiographic and cardiac biomarker abnormalities.
- Management strategies for ACS are directed at providing timely reperfusion of the obstructed coronary artery.

## CONGESTIVE HEART FAILURE

### *Introduction*

Congestive heart failure (CHF) is a clinical syndrome resulting from impaired function of the ventricular myocardium. The clinical manifestations of CHF are caused by congestion of the venous and pulmonary circulations and insufficiency of the arterial circulation. CHF has become a growing medical concern in the United States as the population continues to age. Data suggest that roughly 5.7 million people in the United States carry the diagnosis of CHF, and CHF was cited as a contributing cause of death in 280,000 Americans in 2008.<sup>1</sup>

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CHF is broadly classified into 2 categories: systolic dysfunction, or heart failure with reduced ejection fraction (HFrEF); and diastolic dysfunction, or heart failure with preserved ejection fraction (HFpEF). The hallmark of HFrEF is dysfunction in the contractile ability of the ventricular myocardium. The criterion for HFrEF is typically an ejection fraction that is less than 40%; however, the symptoms of heart failure do not necessarily correlate with the severity of systolic dysfunction. As a result, the most recent consensus guidelines classified heart failure using a staging system (A–D), which highlights the progression of CHF on a continuum (Table 1).<sup>2</sup> Furthermore, the symptoms of CHF are categorized by the New York Heart Association (NYHA) functional classification, which serves as an estimate of the severity of a patient’s clinical syndrome (Table 2).<sup>2</sup> HFpEF shares many of the symptoms of HFrEF, but is a result of impaired relaxation of the ventricular myocardium. HFpEF is discussed at the end of this section.

### Clinical Presentation of CHF

Patients with CHF tend to present with a spectrum of clinical symptoms. These symptoms can either be classified as being secondary to congestion or as being a result of impaired perfusion of target organs. Congestive symptoms tend to predominate in most clinical presentations. The most common symptom of CHF is dyspnea on exertion, which is secondary to venous congestion of the pulmonary circulation with exercise.<sup>3</sup> Other signs of pulmonary venous congestion include orthopnea, defined as dyspnea when lying flat; and paroxysmal nocturnal dyspnea, which manifests as abrupt awakening from sleep with shortness of breath.<sup>4</sup> Abdominal complaints are also common in CHF and arise secondary to hepatic congestion and intestinal edema from right-sided heart failure. These symptoms typically include abdominal distention and bloating leading to anorexia and right upper quadrant pain. Edema of the intestinal

Stage	Patient Characteristics	Therapy
A. At risk for CHF but without structural heart disease or symptoms of CHF	HTN, CAD, diabetes	Treat underlying risk factors
B. Structural heart disease but without symptoms of CHF	Previous MI, low EF, asymptomatic valvular disease	All measures of stage A. Consider ACE-I, $\beta$ -blockers, and ICD in select patients
C. Structural heart disease with prior or current symptoms of CHF	Known heart disease and dyspnea or fatigue	All measures of stage A and B. Consider diuretics, aldosterone antagonists, CRT
D. Refractory CHF requiring specialized interventions	Symptoms despite maximal medical therapy	All measures of stage A, B, and C. Consider heart transplant, mechanical support, inotropes, hospice

*Abbreviations:* ACE-I, angiotensin converting enzyme inhibitor; CAD, coronary artery disease; CHF, congestive heart failure; CRT, cardiac resynchronization therapy; EF, ejection fraction; HTN, hypertension; ICD, implantable cardioverter-defibrillator; MI, myocardial infarction.

*Adapted from* Yancy CW, Jessup M, Bozkurt B, et al. 2013 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. *J Am Coll Cardiol* 2013;62(16):1495–539.

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