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POINT OF VIEW

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The advent of cardiac resynchronization therapy has created a confusing terminology of heart failure

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Three recent trials (Resynchronization reVErses Remodeling in Systolic Left vEntricular Dysfunction [REVERSE], MADIT-CRT, and Resynchronization-Defibrillation for Ambulatory Heart Failure [RAFT]) [1–3] have demonstrated the benefit of cardiac resynchronization therapy (CRT) in a relatively large number of New York Heart Association (NYHA) class II heart failure (HF) patients with a wide QRS complex, and a much smaller NYHA class I group of asymptomatic patients with severe left ventricular (LV) dysfunction also with a wide QRS complex. These trials generated a large number of substudies, meta-analyses and review articles about CRT in NYHA asymptomatic class I patients and class II HF patients and fostered the expansion of indications for CRT. The large number of publications about CRT has created or reactivated problems with the terminology of HF a situation compounded by the common misinterpretation of the NYHA classification [4]. The following descriptions from recent publications illustrate how confusing the terminology of HF has become. Descriptions such as "severe", "chronic" and "refractory" used alone are excluded.

1. **HF with mild symptoms.** Also "…mildly symptomatic patients with heart failure". This terminology is acceptable but the definition of mild symptoms is missing. Presumably it refers to functional class II NYHA, but not class I [4–6].
2. **Mild HF.** Does the word "mild" refer to the degree of structural myocardial disease or symptoms? It probably refers to functional NYHA class II rather than the severity of structural heart disease. HF as a diagnosis is never a "mild" condition because of the seriousness of underlying pathology and poor prognosis [7–15].
3. **Minimally symptomatic HF.** What are minimal symptoms? What is difference between "mild" and "minimal" symptoms? This description should not include asymptomatic NYHA class I patients [16].
4. **Minimal HF.** Does the word "minimal" refer to the underlying structural heart disease or symptoms? It probably refers to functional NYHA class II rather than the severity of structural heart disease but it should be clearly stated. HF is never minimal problem because the seriousness of the underlying pathology and the poor prognosis regardless of symptoms. What is the difference between mild and minimal symptoms? HF? [17].
5. **Patients with less symptomatic HF.** This was part of a meta-analysis of CRT and focused on patients in NYHA class I and II [18].
6. **Mild-to-moderate HF.** The terms "mild" and "moderate" are not defined. This terminology is vague and probably refers to symptoms from a functional class II and/or III NYHA rather than the severity of structural heart disease [3, 19, 20].
7. **Moderate HF.** There is a difference between HF with mild symptoms [4] and moderate HF [21]. What is "moderate" HF? Class II and/or III NYHA class?
8. **Moderate-to-severe HF.** The terms "moderate" and "severe" are not defined. This terminology is vague and probably describes severe symptoms rather than structural heart disease. This terminology has been applied to functional NYHA class III and/or IV patients. What is the real difference between mild-to-moderate HF and moderate-to-severe HF? Both overlap as they both include "moderate" but how? [22–25].

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9. **Advanced HF.** This term is vague and may refer to pathologic findings or symptoms presumably in patients in functional class III or IV NYHA [26–31].
10. **Dyssynchronous HF.** A dyssynchronopathy status with HF can be induced in dogs with experimental left bundle branch block [32–35]. As far as dyssynchronous HF is concerned, a small proportion of CRT responders normalize their LV ejection fraction [36]. Therefore dyssynchronous HF is a diagnosis of exclusion [35, 36] that can only be made after long-term follow-up of patients with nonischemic cardiomyopathy. The diagnosis can be confirmed by turning off CRT whereupon LV function will gradually deteriorate with the passage of time.
11. **End-stage HF.** This term is also imprecise [37–40].
12. **Terminal HF.** "Terminal" is not defined. Another imprecise term [41, 42].
13. **Asymptomatic HF.** This description appears in the literature [43–45] and more recently on the Internet (third party insurers, etc.) in relation to CRT [46–49]. This entity does not exist because HF by definition must have congestion and be symptomatic though the symptoms may sometimes be unimpressive. This mistake is similar to using "class I NYHA HF" to describe HF incorrectly in an asymptomatic patient with substantial LV dysfunction. Some articles are written in a way that suggests the existence of asymptomatic HF. For example a poorly worded title stating a mode of therapy "in asymptomatic and mildly symptomatic heart failure patients," can be easily interpreted as involving asymptomatic HF patients [5, 50–54]. In this respect Dhir [55] correctly called a similar study "in mildly symptomatic heart failure patients and asymptomatic patients" [56, 57]. It is also incorrect to state that a study involved patients with "NYHA class I/II heart failure." This also suggests that both class I and II patients have HF.
14. **Changing HF functional NYHA class.** In the MADIT-CRT trial, 10% of patients started at a higher NYHA class (III or IV) than the one assigned upon entry in the trial which enrolled NYHA class I and II patients [2]. The REVERSE trial included NYHA class I patients only if they had moved from a higher class to class I at the time of entry into the trial [2]. HF is a dynamic process so the question arises as to whether one should base therapeutic decisions on the historically worst NYHA class or the current class.

The problems with HF terminology are compounded by the presence of multiple definitions of HF circulating in the literature and the limitations of the NYHA classification. The significance of the HF definition problem and the need for a uniform definition have been identified but little or no progress has occurred [58–60]. The NYHA classification is subjective and there is little evidence for its reliability or reproducibility. Substantial variability exits in assigning a NYHA class [61–65]. The time has come for the various learned cardiology societies to standardize HF terminology and possibly improve the NYHA functional classification.

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