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Characteristics of a new subgroup in chronic heart failure: heart failure with mid-range ejection fraction (HFmrEF)

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Introduction: Classification of patients with heart failure is based on left ventricular ejection fraction (LVEF). Until recently, two types of patients had been distinguished based on LVEF: those with reduced ejection fraction (HFrEF) and those with HF with preserved ejection fraction (HFpEF). The ESC guidelines of 2016 introduced a third separate subgroup for patients with a LVEF in the range of 40-50%: Heart failure with mid-range ejection fraction (HFmrEF).

Purpose: The goal of this study is to characterize and compare this subgroup (HFmrEF) to the other two subgroups (HFpEF and HFrEF). Secondly, mortality rates were studied and compared, depending on LVEF classification and global longitudinal strain (GLS).

Methods: All patients with Chronic Heart Failure (CHF) seen at the heart failure clinic, during a 1-year period were enrolled in this retrospective study. As an inclusion criterion in our study population, we only allowed patients with chronic heart failure, who were treated at least once with diuretics or a cardiac resynchronization therapy for heart failure. After gathering data of the HF population, the 3 subgroups (HFrEF, HFpEF and HFmrEF) were compared on the basis of different parameters like comorbidities, lab results, medication, ECG and echocardiography.

Results: HFmrEF significantly differed from HFpEF concerning the following parameters: higher prevalence of male gender and ischemic aetiology, lower prevalence of valvular and hypertensive aetiology, more dilated left ventricles and higher usage of ACE inhibitors and beta-blockers. HFmrEF was similar to HFpEF concerning older age, high prevalence of tachyarrhythmia, low use of device therapy and aldosterone antagonists.

The survival rate after 853 days was 81,6% in HFrEF, 76,3% in HFmrEF and 81,1% in HFpEF ($p = 0,634$). When looking at the whole patient population, the Kaplan Meier estimation was significant ($p < 0,001$) with a survival rate after 853 days of 33,3% for the group with lower absolute values than 6,3% for GLS and 85% for group with higher absolute strain values.

Conclusion: Patients with HFmrEF didn't really differentiate as one class apart from HFrEF or HFpEF, but some characteristics were similar to HFrEF, and some others to HFpEF. Finally some characteristics of HFmrEF were more in a grey zone with none of the characteristics of both HFrEF nor HFpEF.

The all cause survival rate in 853 days among the 3 LVEF based groups, were quite similar. While the Kaplan Meier estimation indicated a lot higher mortality when GLS>-6,3% compared to GLS <-6,3%.

Classifying chronic HF patients is probably more complex than simply stratifying patients by LVEF cut-off values. One must not forget to take comorbidities and aetiology in mind while managing heart failure.

Abstract P1584 Figure. Aetiology in LVEF based groups