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TITLE: IMPROVING PROGNOSTIC ASSESSMENT IN HEART FAILURE: THE INTERPLAY BETWEEN NYHA CLASSIFICATION AND CARDIOPULMONARY EXERCISE TESTING

PEDRO HENRIQUE DE BORBA ENGSTER[1], PEDRO HENRIQUE DE BORBA ENGSTER[1], ANDRÉ ZIMERMAN[1], ANDERSON DONELLI DA SILVEIRA[1], MARINA S. BORGES[1], THOMAS U. SCHAAN[1], GABRIEL C. DE SOUZA[1], GIOVANNI DONELLI COSTA[1], LUÍS EDUARDO ROHDE[1]

(1) HOSPITAL DE CLÍNICAS DE PORTO ALEGRE; (2) UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

Background: For patients with heart failure (HF), the validity of the New York Heart Association (NYHA) functional class to assess prognosis may be limited when compared with the objective cardiopulmonary exercise test (CPET). Purpose: To investigate the prognostic value of NYHA classification and CPET parameters. Methods: We included the first CPET of every adult patient with HF who in a tertiary care center in Brazil. NYHA class was determined on the day of CPET or during the prior ambulatory visit. NYHA and Weber classes were stratified into "favorable" (NYHA I or II; Weber A or B) or "poor" (NYHA III or IV; Weber C or D), and subjects with discordant classes were compared in a survival analysis. Primary endpoint was all-cause mortality at 5 years. We used a Cox proportional hazards model to estimate the probability of death in 5 years according to relative peak VO2 and NYHA class, adjusted for age and sex. Results: We included 855 patients, of which 30% (255) were classified as NYHA I, 43% (368) as NYHA II, 24% (202) as NYHA III, and 4% (30) as NYHA IV. Mean age was 56 years (±13), 42% (359) were female, and mean LVEF was 36% (±15). Mean relative peak VO2 ranged from 19.6 (NYHA I) to 14.0 (NYHA IV) ml/kg/min. Patients with poor NYHA and favorable Weber classes displayed similar rates of all-cause mortality as patients with favorable NYHA and poor Weber classes (hazard ratio 1.54 [95% CI 0.88–2.70]. In the multivariable model, both NYHA and relative peak VO2 significantly predicted mortality in 5 years after mutual adjustments (Figure 1). The distinction between NYHA I and II did not, however, improve prognostic assessment. Conclusions: Physician-assigned NYHA class and objective CPET measures provide complementary prognostic information, and NYHA classification may be particularly limited for mild cases of HF. These findings question the use of NYHA as the main determinant to guide HF therapy.