Abstract: P1704

Echo-derived hemodynamic profiles and BNP are useful to risk stratify patients with chronic heart failure and reduced ejection fraction

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Topic(s):
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Background. Doppler echocardiography is useful for noninvasive determination of left ventricular filling pressure (LVFP) by the ratio of mitral E peak velocity and averaged e’ velocity (E/e’) and it can also provide reliable and repeatable measures of cardiac index (CI): this information can be used to identify hemodynamic profiles. Integration of echocardiographic estimates of LVFP with B-type natriuretic peptide (BNP) circulating levels and measures of CI can be utilized to predict outcome of heart failure (HF) patients in an ambulatory setting. Aim. We analysed different hemodynamic profiles based on echo assessment of LVFP and CI, together with BNP levels, to risk stratify patients with chronic HF and reduced ejection fraction (HFrEF). Methods and results. A population of 310 outpatients (age: 66 ± 12 years, EF: 33 ± 8) with chronic HFrEF were classified according to the echo-derived hemodynamic profile: A) well-perfused, without congestion: CI = 2.0 l/min/m2 and E/e’<13; B) low-perfused, without congestion: CI < 2.0 l/min/m2 and E/e’< 13; C) well-perfused and congested: CI = 2.0 l/min/m2 and E/e’=13; D) hypo-perfused and congested: CI < 2.0 l/min/m2 and E/e’=13. The best outcome was observed in patients with profile A (90% survival at 60-months), while profile D was associated to the worst prognosis (54%; p<0.0001). In order to assess whether the predictive value of hemodynamic profiles was improved by the assessment of BNP, patients were further stratified according to BNP levels (Figure). Patients with profile A and BNP < 150 pg/ml had a 94% survival at follow-up (p<0.0001). Moreover, BNP > 150 mpg/ml provided additional information (c2=51.9; p=0.005) to an interactive stepwise model that included demographic and clinical parameters (c2=30.6), EF<30% (c2=37.6; p=0.003) and hemodynamic profile D (c2=48.8; p=0.007). Conclusion. Survival analyses showed that echo-directed hemodynamic profiles and BNP significantly predict outcome in HFrEF.
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Aim. We analysed different hemodynamic profiles based on echo assessment of LVFP and CI, together with BNP levels, to risk stratify patients with chronic HF and reduced ejection fraction (HFrEF).

Methods and results. A population of 310 outpatients (age: 66 ± 12 years, EF: 33 ± 8) with chronic HFrEF were classified according to the echo-derived hemodynamic profile: A) well-perfused, without congestion: CI = 2.0 l/min/m² and E/e’<13; B) low-perfused, without congestion: CI < 2.0 l/min/m² and E/e’<13; C) well-perfused and congested: CI = 2.0 l/min/m² and E/e’=13; D) hypo-perfused and congested: CI < 2.0 l/min/m² and E/e’=13. The best outcome was observed in patients with profile A (90% survival at 60-months), while profile D was associated to the worst prognosis (54%; p<0.0001). In order to assess whether the predictive value of hemodynamic profiles was improved by the assessment of BNP, patients were further stratified according to BNP levels (Figure). Patients with profile A and BNP < 150 pg/ml had a 94% survival at follow-up (p<0.0001). Moreover, BNP > 150 pg/ml provided additional information (c²=51.9; p=0.005) to an interactive stepwise model that included demographic and clinical parameters (c²=30.6), EF<30% (c²=37.6; p=0.003) and hemodynamic profile D (c²=48.8; p=0.007).

Conclusion. Survival analyses showed that echo-directed hemodynamic profiles and BNP significantly predict outcome in HFrEF.