

P1401

The prognostic value of the reduction of coronary flow velocity reserve in non-ischemic heart failure patients

Borguezan Daros C.¹; Ciampi Q.²; Zanella H.³; Cortigiani L.⁴; Gaibazzi N.⁵; Rigo F.⁶; De Castro E Silva Pretto JL.⁷; Djordjevic-Dikic A.⁸; Amor M.⁹; Merlo PM.¹⁰; Citro R.¹¹; Colonna P.¹²; Lowenstein J.¹⁰; Torres MAR¹³; Picano E.¹⁴

¹Hospital San José, Cardiology, Criciúma, Brazil

²Fatebenefratelli Hospital, Division of Cardiology, Benevento, Italy

³National Institute of Cardiology Ignacio Chavez, Cardiology, Mexico City, Mexico

⁴San Luca Hospital, Cardiology, Lucca, Italy

⁵University Hospital of Parma, Cardiology, Parma, Italy

⁶Hospital dell'Angelo, Cardiology, Mestre-Venice, Italy

⁷Hospital Sao Vicente, Cardiology, Passo Fundo, Brazil

⁸Clinical center of Serbia, Cardiology, Belgrade, Serbia

⁹Ramos Mejia Hospital, Cardiology, buenos aires, Argentina

¹⁰Cardiodiagnosticos, Investigaciones Medicas, Cardiology, buenos aires, Argentina

¹¹AOU S. Giovanni di Dio e Ruggi d'Aragona, Cardiology, Salerno, Italy

¹²Polyclinic Hospital of Bari, Cardiology, Bari, Italy

¹³Federal University of Rio Grande do Sul, Cardiology, Porto Alegre, Brazil

¹⁴Institute of Clinical Physiology, CNR, Cardiology, Pisa, Italy

OnBehalf: Stress Echo 2020 study group of the Italian Society of Cardiovascular Imaging

Background: Coronary microvascular abnormalities determining a reduction of coronary flow velocity reserve (CFVR) have been described in patients (pts) with non-ischemic heart failure (HF).

Aim: To assess the prognostic value of CFVR in HF.

Methods: In a prospective, observational, multicenter study, we recruited 333 pts with angiographically normal coronary arteries: 105 patients with HF and preserved (>50%) ejection fraction (HFpEF); 71 with HF and mid-range (40-50%) ejection fraction (HFmrEF); 157 with HF and reduced (<40%) ejection fraction (HFrEF). All patients underwent vasodilator SE with dipyridamole (0.84 mg/kg) in 10 accredited laboratories of 5 countries (Argentina, Brazil, Italy, Mexico, Serbia). CFVR was calculated as the stress/rest ratio of diastolic peak flow velocity pulsed wave-Doppler assessment of LAD flow. In all patients we also assessed left ventricular contractile reserve (LVCR) based on force (systolic blood pressure/end-systolic volume) Abnormal cutoff values were ≤ 2.0 for CFVR and ≤ 1.1 for LVCR. All pts were followed-up.

Results: After a median follow-up time of 15 months, 78 events occurred: 36 hospital admissions for acute decompensated heart failure, 23 deaths, 16 worsening in NYHA functional class, 2 stroke and 1 late revascularization. Event-free survival was best in patients with preserved CFVR and LVCR and worst in pts with reduced CFVR and impaired LVCR, with intermediate values for patients with either one (CFVR or LVCR) abnormal results: see figure. A preserved CFVR was associated with a better 24-month event-free survival than reduced CFVR in a subset analysis in pts with HFpEF (HR = 16.2, 95% CI, 1.8-145.1, $p = 0.001$) and in HFrEF (HR = 3.06, 95% CI, 1.6-5.6, $p < 0.001$). A multi-variable analysis in the overall group of HF pts identified a reduced CFVR as the only independent predictor of event-free survival (HR = 3.455, 95% CI 1.723-6.929).

Conclusions: A reduction in CFVR identifies a high risk subset in HF patients, outlining a shared role of coronary microvascular abnormalities as a marker and potential therapeutic target of HF, independently of underlying EF.

Abstract P1401 Figure. Event-free survival based on CFVR-LVCR

