332 Clinical and prognostic significance of junctional late gadolinium enhancement in patients with non-ischaemic cardiomyopathy

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Aims: Pulmonary hypertension (PH) carries a poor prognosis in patients with non-ischaemic dilated cardiomyopathy (NIDC). Cardiac magnetic resonance (CMR) with late gadolinium enhancement (LGE) evaluation can identify myocardial abnormalities. In particular, junctional LGE is already an established marker of adverse right ventricular (RV) remodelling in patients with pre-capillary PH. This study sought to assess the prevalence of junctional LGE by CMR in NIDC, its relationship with hemodynamic parameters and, moreover, its prognostic significance.

Methods and results: Patients with NIDC who underwent right heart catheterization (RHC) and CMR within 3 months in a tertiary hospital were enrolled. Patients with acute heart failure were excluded. Among others, RV and left ventricular (LV) volumes, junctional LGE at CMR, pulmonary artery pressure (PAP) and pulmonary capillary wedge pressure (PCWP) at RHC were tabulated. Pulmonary hypertension was defined accordingly to current Guidelines (median PAP at RHC $\geq$ 25 mmHg). The primary endpoint consisted of heart failure (HF) hospitalization during follow-up. A total of 188 patients [median age 49 (SD 15), 71% males] were evaluated. At morpho-functional CMR evaluation, most subjects (76%) had important systolic dysfunction (LV EF $\leq$ 35%). Junctional LGE was observed in 83 (44%) patients. Among patients with junctional LGE, 21 had LGE confined only to the junctional region, while 61 had also mid-wall interventricular septal stria and 21 a mid-wall stria in the lateral free LV wall. Patients with junctional LGE had lower RV EF (49% vs. 56%, $P < 0.001$) and LV EF (27% vs. 30%, $P = 0.012$) when compared to those without junctional LGE although no differences in LV and RV dimensions were found. RHC showed PH in 83 patients (44%). Patients with junctional LGE showed a worse hemodynamic profile in terms of PH (55% vs. 36%; $P = 0.011$) and increase in PCWP (PCWP > 15 mmHg in 60% vs. 42%; $P = 0.015$) compared to subjects without junctional LGE. Among 79 patients with PH and PCWP > 15 mmHg, 75 (95%) had a combined post capillary and pre-capillary PH (diastolic pressure gradient $\geq$7 mmHg). Univariate analysis showed that junctional LGE was associated with a worse hemodynamic profile; on multivariable model, RV EF was significantly associated with the presence of junctional LGE (OR: 0.91; 95% CI: 0.87–0.96, $P < 0.001$). During a median follow-up of 58 months, 33 patients (18%) died or underwent heart transplantation/ventricular assist device implantation, 17% in the junctional LGE group vs. 18% among those without junctional LGE. Thirty-eight patients (20%) had at least one episode of HF, 22 among junctional LGE group and 16 in control group (27% vs. 15%, $P = 0.056$). When adjusted for age, junctional LGE resulted a significant determinant of HF hospitalization (OR: 2.13, 95% CI: 1.02–4.44, $P = 0.044$).

Conclusions: Junctional LGE is detectable in almost half of NIDC patients and it is related to a worse haemodynamic profile, characterized by PH and elevated PCWP. Moreover, after adjustment for age, it was a significant determinant of HF hospitalization during follow-up in our population. Junctional LGE can therefore represent a useful prognostic tool, as marker of adverse ventricular remodelling likely related to ventricular interdependence.

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