

## Supplementary material

### Methods

Left atrial volume was assessed by the biplane area-length method from apical 2- and 4-chamber views at end-systole and was indexed to body surface area (LA volume index, LAVi). If LA volume was not available, LA area (cm<sup>2</sup>) from an apical four-chamber was used to evaluate remodeling. Patients with either LAVi > 40 ml/m<sup>2</sup> or LA area > 20 cm<sup>2</sup> were considered to have a dilated LA.

Peak velocities of early (E) and late (A) waves of transmitral flow, the E-wave deceleration time (DT), and the duration of antegrade flow during atrial contraction (Ad), were measured from the pulsed-wave Doppler obtained between the tips of the mitral leaflets. Septal and lateral mitral annular velocities (for measurement of e' and s') were obtained by pulsed tissue Doppler imaging (TDI). The E/e' ratio was calculated using the peak E-wave velocity and the average of septal and lateral e' and used both as continuous variables and according to thresholds. E/e' ≥ 13 and 15 were used as previously suggested<sup>1,2</sup>. We were however not able to use the usual threshold of 8<sup>2</sup> (as less than 5% of the population had a E/e' < 8 - in line with the mean E/e' of 8.5 cm/s in healthy participants 60 or older in the NORRE study<sup>1</sup>) and consequently used 9 as an additional threshold.

LV outflow tract (LVOT) time velocity integral, isovolumic relaxation time (IVRT), and colour M-mode of early diastolic mitral inflow into the left ventricle (for measurement of the flow propagation velocity, Vp) were acquired from apical four- and five-chamber views. Pulmonary venous flow (PVF) was sampled using pulsed-wave Doppler at 1 cm into the orifice of the right upper pulmonary vein and used to measure the ratio of systolic and diastolic antegrade velocities (S/D) and the duration of retrograde flow during atrial contraction (Ard).

Right ventricular function was estimated by measuring tricuspid annular plane peak systolic excursion (TAPSE, in mm) and pulmonary arterial systolic pressure (PASP) was calculated using the peak velocity of tricuspid regurgitation (TR) and the maximum diameter of the inferior vena cava (IVC baseline) and respiratory variation (Ratio IVC inspiration / IVC baseline) measured 3 cm before merger with the right atrium.

1. Caballero L, Kou S, Dulgheru R, et al. Echocardiographic reference ranges for normal cardiac Doppler data: results from the NORRE Study. *European heart journal cardiovascular Imaging* 2015; **16**(9): 1031-41.
2. Paulus WJ, Tschope C, Sanderson JE, et al. How to diagnose diastolic heart failure: a consensus statement on the diagnosis of heart failure with normal left ventricular ejection fraction by the Heart Failure and Echocardiography Associations of the European Society of Cardiology. *European heart journal* 2007; **28**(20): 2539-50.