

SUPPLEMENTARY MATERIAL

Direct comparison of whole heart quantifications between different retrospective and prospective gated 4D flow CMR acquisitions

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Supplementary Results: Timing of Systolic and Diastolic Transvalvular Flow

Flow through the aortic valve started at the beginning of the cycle and ended at $37\pm 5\%$ into the cardiac cycle ($353\pm 33\text{ms}$). Blood flow through the mitral valve started shortly thereafter, with early (E) diastolic flow lasting from $38\pm 4\%$ ($368\pm 46\text{ms}$) to $68\pm 6\%$ ($666\pm 88\text{ms}$) of the cardiac cycle. Typically, after a period of diastasis the late diastolic flow (A) occurred between 82 ± 7 ($811\pm 187\text{ms}$) and $96\pm 6\%$ ($934\pm 187\text{ms}$) of the cardiac cycle.

For the right heart, similar timepoints were observed with blood flow through the pulmonary valve lasting from the start of the cycle until $38\pm 5\%$ ($364\pm 30\text{ms}$), early diastolic flow through the tricuspid valve occurring between $38\pm 5\%$ (362 ± 40) and $70\pm 9\%$ ($678\pm 103\text{ms}$), and late diastolic flow between $81\pm 8\%$ ($804\pm 196\text{ms}$) and $95\pm 5\%$ ($926\pm 191\text{ms}$).

Supplementary Table 1: Participant Characteristics

	Controls (n=32)	Patients (n=6)
<i>Baseline</i>		
Sex (males)	17 (53%)	4 (66%)
Age, range (years)	27 [19-41]	70 [60-78]
Body Mass Index (kg/m ²)	23.1±2.9	27.0±3.5
<i>Left Ventricular Function</i>		
EDV (ml)	167±30	167±33
EDV index (ml/kg ²)	89±10	86±12
Ejection Fraction (%)	59±5	57±11
Mass index (g/kg ²)	53±9	52±7
Cardiac index (L/min/m ²)	3.3±0.7	3.3±0.7
<i>Right Ventricular Function</i>		
EDV (ml)	197±42	177±44
EDV index (ml/kg ²)	101±15	90±19
Ejection Fraction (%)	44±6	47±9

Frequency (percentage) or mean±SD are displayed of patient characteristics and functional analysis measured from standard cines. Full short-axis stacks of the right heart were only available in n=20 healthy controls. EDV: End-diastolic volume.