

Table S1: Comparison of echocardiography findings from individuals with *PACSI*-NDD

| Variables | PACSI (n = 7) | Control (n = 7) | p value |
|-------------------------|-------------------------|------------------------|----------------|
| Gender (f/m) | 3/7 | 3/7 | |
| Age (y) | 15.49 (3.41 - 33.73) | 14 (2.70 - 25)) | 0.7104 |
| Weight (kg) | 52.20 (11.95 - 67.30) | 45.20 (15 - 67) | 0.9709 |
| Height (cm) | 151.50 (87.37 - 171.25) | 155 (95 - 176) | 0.6807 |
| SBP (mmHg) | 105.50 (75 - 119) | 109 (94 - 118) | 0.7115 |
| DBP (mmHg) | 63.50 (48.50 - 78.25) | 64 (56 - 67) | 0.7016 |
| HR (bpm) | 87 (72.75 - 103.50) | 75 (60 - 89) | 0.2745 |
| IVSd (mm) | 8.00 (5.67 - 8.70) | 7.48 (6.40 - 8.20) | 0.7401 |
| LVIDd (mm) | 46.00 (31.55 - 48.85) | 40.50 (34 - 50.40) | 0.9615 |
| LVIDs (mm) | 27.20 (20.27 - 30.95) | 26.20 (18 - 31.20) | 0.8275 |
| PWd (mm) | 6.10 (5 - 8) | 7.60 (5.44 - 8.50) | 0.7815 |
| LVM (g/m ²) | 107 (35.47 - 115.25) | 81 (47 - 168) | 0.9417 |
| RVD (mm) | 23 (19.38 - 27.75) | 18 (15 - 23) | 0.0787 |
| LVEF (%) | 67.10 (61.95 - 70.65) | 68 (63 - 69) | 0.7104 |
| LVFS (%) | 36.80 (32.85 - 38.62) | 41 (38 - 43) | 0.0565 |
| TAPSE (mm) | 15.90 (15 - 23.20) | 23 (17.5 - 26) | 0.2535 |
| E wave (m/s) | 0.94 (0.71 - 1.10) | 0.90 (0.90 - 1.12) | 0.3817 |
| A wave (m/s) | 0.51 (0.39 - 0.80) | 0.42 (0.40 - 0.51) | 0.2471 |
| E/A | 1.26 (0.89 - 2.37) | 2.20 (1.90 - 2.20) | 0.1632 |
| TDI "s" wave (cm/s) | 12.60 (11.12 - 15.70) | 10 (9 - 10.5) | 0.0233 |
| TDI "e" wave (cm/s) | 14.70 (12.80 - 17.25) | 16 (15 - 16) | 0.6451 |
| TDI "a" wave (cm/s) | 8.40 (4.21 - 8.95) | 6 (5.5 - 8) | 0.2442 |
| E/e' | 5.86 (4.53 - 6.95) | 6.58 (5.62 - 7.50) | 0.5117 |
| GLS-LV (%) | 23.55 (28.32 - 18.62) | 9.67 (20.52 - 19.07) | 0.3176 |
| Strain rate (1/s) | 2.38 (2.96 - 1.43) | 1.69 (1.96 - 1.40) | 0.2086 |
| Velocity (cm/s) | 4.67 (3.03 - 5.30) | 3.26 (1.96 - 3.30) | 0.049 |

IVSd interventricular septum thickness at end-diastole, *LVIDd* left ventricular internal dimension at end-diastole, *LVIDs* left ventricular internal dimension at end-systole, *PWD* posterior wall at diastole, *LVM* left ventricular mass in grams, *RVD* right ventricular diameter, *LVEF* left ventricular ejection fraction, *LVFS* left ventricular fractional shortening, *TAPSE* tricuspid annular plane systolic excursion, *TDI* lateral mitral tissue Doppler imaging, *GLS-LV* global longitudinal strain for left ventricular function GLS-LV and Strain rate are expressed in absolute values. Values are expressed as median and interquartile range. Groups were compared by Mann–Whitney U test; statistically significant results are highlighted in bold.

Table S2: Congenital heart defects described in individuals with *PACSI*-NDD: systematic review of published cases.

| Ref | Type | # Individuals PACS1 | Cardiac evaluation | # Individuals with HD | HD description | ASD | VSD | PDA | PFO | BAV | PAD | SV | CAF | AAD | MVP |
|-----------|------|---------------------|--------------------|-----------------------|----------------|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|
| [1] | CR | 2 | yes | 0 | - | - | - | - | - | - | - | - | - | - | - |
| [25] | CR | 1 | yes | 1 | yes | 1 | 1 | 1 | 0 | 0 | 0 | 0 | - | 0 | - |
| [2] | CS | 19 | yes | 8 | na | - | - | - | - | - | - | - | - | - | - |
| [8] | CS | 8 | yes | 4 | yes | 2 | 3 | 1 | 1 | 0 | 1 | 0 | - | 0 | - |
| [26] | CR | 1 | na | - | - | - | - | - | - | - | - | - | - | - | - |
| [27] | CR | 1 | yes | 1 | yes | 0 | 0 | 1 | 1 | 1 | 0 | 0 | - | 0 | - |
| [28] | CR | 2 | yes | 1 | yes | 0 | 1 | 0 | 0 | 0 | 0 | 0 | - | 0 | - |
| [29] | CR | 1 | yes | 0 | - | - | - | - | - | - | - | - | - | - | - |
| [30] | CR | 1 | yes | 1 | na | - | - | - | - | - | - | - | - | - | - |
| [3] | CS | 16 | yes | 5 | na | - | - | - | - | - | - | - | - | - | - |
| [31] | CR | 1 | yes | 1 | yes | 0 | 0 | 0 | 1 | 0 | 0 | 0 | - | 0 | - |
| [5] | CS | 35 | yes | 12 | yes | 4 | 4 | 3 | 0 | 0 | 0 | 1 | - | 0 | - |
| [4] | CS | 7 | na | - | - | - | - | - | - | - | - | - | - | - | - |
| [32] | CR | 1 | yes | 0 | - | - | - | - | - | - | - | - | - | - | - |
| [33] | CR | 1 | yes | 1 | yes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | - |
| Our study | CS | 11 | yes | 7 | yes | 1 | 1 | 2 | 2 | 0 | 0 | 0 | - | 3 | 1 |
| TOTAL | | 108 | 100 | 42 | 28 | 8 | 10 | 8 | 5 | 1 | 1 | 1 | 1 | 3 | 1 |

na no available in the study, *CR* case report, *CS* cases study. Grey shade highlights cases studies. *CHD* congenital heart defects (HP:0001627), *ASD* atrial septal defect (HP:0001631), *VSD* ventricular septal defect (HP:0001629), *PDA* patent ductus arteriosus (HP:0001643), *PFO* patent foramen ovale (HP:0001655), *BAV* bicuspid aortic valve (HP:0001647), *PAD* pulmonary artery dilatation (HP:0004927), *SV* single ventricle (HP:0001750), *CAF* coronary artery fistula (HP:0011641), *AAD* ascending aortic dilatation (HP:0004942), *MVP* mitral valve prolapse (HP:0001364).