Supplemental Table 1
Comparisons of clinical characteristics and hemodynamic data between the patients with CI and the controls

Characteristic	CI	Controls	p value
Number	13	6	
Male/female	7/6	5/1	0.22
Age (years)	70.4 ± 8.9	55.5 ± 14.8	0.06
Height (cm)	160.3 ± 7.1	164.6 ± 10.0	0.30
Weight (kg)	58.5 ± 7.0	65.5 ± 11.7	0.12
Body mass index (kg/m^2)	22.8 ± 2.9	24.1 ± 2.9	0.40
Hypertension (%)	7 (53.8)	2 (33.3)	0.41
Diabetes (%)	2 (15.4)	2 (33.3)	0.37
Echocardiographic parameters			
LVEF (%)	67.8 ± 10.8	68.4 ± 7.6	0.90
LVEDVI (ml/m^2)	66.4 ± 11.7	65.5 ± 9.4	0.86
LVESVI (ml/m^2)	21.0 ± 5.4	20.6 ± 4.7	0.88
LAD (mm)	36.3 ± 5.4	33.7 ± 3.7	0.29
E (cm/sec)	59.1 ± 17.6	60.7 ± 8.3	0.84
e' mean (cm/sec)	8.0 ± 1.8	8.9 ± 1.5	0.30
E/e' mean	7.6 ± 2.4	7.0 ± 1.6	0.60
Laboratory data			
BNP (pg/mL)	26.6 [IQR, 10.1–96.4]	12.0 [IQR, 7.9–19.4]	0.11
Serum creatinine (mg/dL)	0.69 ± 0.17	0.70 ± 0.19	0.88

eGFR (mL/min/1.73 m^2)	75.3 ± 13.1	87.0 ± 21.1	0.15
Norepinephrine (pg/mL)	596.9 ± 175.9	444.3 ± 148.4	0.08
Medication			
Loop diuretics (%)	1 (7.7)	1 (16.7)	0.55
ACEIs (%)	2 (15.4)	0 (0)	0.31
ARBs (%)	2 (15.4)	0 (0)	0.31
CCBs (%)	5 (38.5)	2 (33.3)	0.83
Statins (%)	1 (7.7)	0 (0)	0.49
β-blockers (%)	0	0	N/A

Data are expressed as mean ± standard deviation or number or frequency (%).

B-type natriuretic peptide (BNP) is represented by the median and interquartile range (IQR).

CI, chronotropic incompetence; LVEF, left ventricular ejection fraction; LVEDVI, left ventricular end-diastolic volume index; LVESVI, left ventricular end-systolic volume index; LAD, left atrium diameter; E, Early diastolic transmitral flow velocity; e', mitral annular velocity during early diastole; eGFR, estimated glomerular filtration rate; ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; CCB, calcium channel blocker.

Supplemental Table 2. The results of CPX

Rest	CI	Controls	P value
Heart rate (beats/min)	66.7 ± 13.8	67.8 ± 12.2	0.86
Systolic BP (mm Hg)	128.2 ± 13.8	129.8 ± 15.0	0.81
Diastolic BP (mm Hg)	68.7 ± 11.5	73.3 ± 8.7	0.40

Peak exercise			
Heart rate (beats/min)	116.9 ± 11.0	154.8 ± 14.4	<0.001
Systolic BP (mm Hg)	183.5 ± 23.3	203.2 ± 17.6	0.09
Diastolic BP (mm Hg)	86.5 ± 16.8	94.2 ± 19.7	0.39
Double product (beats/min∗mm Hg)	21800 ± 4200	31400 ± 4600	<0.001
Percent predicted heart rate (%)	80.7 ± 8.2	93.7 ± 5.1	0.003
Anaerobic threshold (mL/kg/min)	11.9 ± 2.9	14.9 ± 2.2	0.04
Peak VO_2 (mL/kg/min)	15.9 ± 3.7	23.5 ± 5.5	0.003
Percent predicted peak VO_2 (%)	74.5 ± 19.1	80.5 ± 18.0	0.52
VE/VCO_2 slope	34.6 ± 5.9	33.8 ± 5.4	0.79
Peak RER	1.23 ± 0.06	1.27 ± 0.07	0.21
Peak O_2 pulse (mL/beats)	7.8 ± 2.4	10.0 ± 2.5	0.08
Exercise time (min)	5.4 ± 2.3	8.1 ± 1.2	0.02
Peak work (watt)	85.4 ± 30.1	131.8 ± 37.2	0.01
Heart rate recovery (beats/min)	19.9 ± 14.6	18.3 ± 7.6	0.81

Data represent mean ± standard deviation.

CI, chronotropic incompetence; BP, blood pressure; VO_2, oxygen consumption, VE/VCO_2, minute ventilation/carbon dioxide production; RER, respiratory exchange rate.

Supplemental Table 3. Results of univariate regression analysis for the β-AR density.

Variable	r	*P*
Age (years)	-0.42	0.08
Height (cm)	0.21	0.39
Weight (kg)	0.09	0.73
Body mass index (kg/m^2)	-0.07	0.78
LVEF (%)	-0.29	0.23
e' mean (cm/sec)	0.37	0.12
E/e' mean	-0.14	0.56
Rest heart rate (beats/min)	-0.01	0.98
Rest systolic BP (mm Hg)	0.08	0.74
Rest diastolic BP (mm Hg)	0.001	0.99
Peak heart rate (beats/min)	0.54	0.02
Peak systolic BP (mm Hg)	0.47	0.05
Peak diastolic BP (mm Hg)	0.12	0.64
Log BNP (pg/mL)	-0.39	0.10
Norepinephrine (pg/mL)	-0.29	0.22
eGFR (mL/min/1.73m^2)	0.41	0.08

Abbreviations as in Supplement 1 and 2.