Supplementary material

Gaczoł M, Olszanecka A, Bednarek A, et al. Selected echocardiographic and blood pressure parameters including ventricular-arterial coupling in predicting atrial fibrillation recurrence after pulmonary vein isolation: preliminary study. Pol Heart J. 2024.

Statistical analysis

Nominal variables are described by number of observations and frequency while continuous variables by mean standard deviation (SD) or median (quartile 1; quartile 3 – Q1- Q3), depending on distribution. Distribution normality was assessed with Shapiro-Wilk test as well as based on skewness and kurtosis values. Significance of variation in time was assessed with paired t test, Wilcoxon test or McNemar test, as appropriate. Student's t-distribution test was used to compare groups with and without arrhythmia recurrence. Logistic regression analysis was used to identify significant predictors of therapy failure. In regression analysis, unadjusted and adjusted univariable models were created. Covariates forced into adjusted models were: sex, age, BMI and history of hypertension and hypercholesterolemia. Multicollinearity between independent variables and covariates was verified with VIFs (variance inflation factors). After this step no high intercorrelation was identified in particular models i.e. no VIFs exceeded level of 10 2 (VIFs achieved ranged from 1.03 to 2.04). A P-value less than 0.05 was considered to be statistically significant.

Table S1. Clinical characteristics of 49 patients

Characteristic of patients	Baseline	Follow-up	*P*
Age, years	57.9 (8.7)		
Women	13 (26.5%)		
BMI, kg/m^2	29.1 (4.3)	28.7 (3.6)	0.13
Physically active	26 (53%)	37 (75.5%)	0.008
Smoking	6 (12.2%)		
Alcohol	18 (36.7%)		
AF time, years	5.7 (4.8)		
EHRA symptom scale			
I	6 (12.2%)	37 (75.5%)	0.001
IIa	9 (18.4%)	5 (10.2%)	
IIb	23 (46.9%)	7 (14.3%)	
III	9 (18.4%)	0	
IV	2 (4.1%)	0	
Drugs			
Antiarrhythmics	43 (87.7%)	33 (67.3%)	0.004
Anticoagulants	43 (87.7%)	38 (77.6%)	0.06
Statins	26 (53.1%)		
ACEI/ARB	30 (61.2%)		
Comorbidities			
Arterial Hypertension	31 (63.3%)		
Hypercholesterolemia	28 (57.1%)		
Diabetes type 2	3 (6.1%)		
Laboratory tests			
Creatinine, µmol/l	81.9 (14.2)		
Total cholesterol, mmol/l	4.3 (1.0)		
TSH, uIU/ml	1.7 (1.2)		
CRP, mg/l	2.9 (1.0-4.7)		
NT-proBNP, pg/ml	148 (71.0-271.0)	108.0 (53.0-171.0)	0.047
MMP3, ng/ml	14.14 (7.76)		
MMP9, ng/ml	43.93 (34.1-80.9)		
Peripheral and central BP			
SBP, mmHg	121.7 (13.5)	121.1 (12.2)	0.79
DBP, mmHg	65.5 (8.6)	66.8 (7.8)	0.36

Heart rate, beats/minute	63.1 (11.3)	65.2 (9.0)	0.45
PP, mmHg	56.1 (11.4)	54.3 (10.1)	0.25
MAP, mmHg	83.5 (8.6)	85.6 (8.5)	0.51

Data are presented as number (%) or mean (SD) or median and interquartile range (Q1-Q3)
ACEI - angiotensin-converting enzyme inhibitors, AF – atrial fibrillation, ARB - angiotensin receptor blockers, BMI – body mass index, BP – blood pressure, CRP – C-reactive protein, DBP – diastolic blood pressure, EHRA - European Heart Rhythm Association, MAP – mean arterial pressure, MMP3 – matrix metalloproteinase 3, MMP9 -matrix metalloproteinase 9; NT-proBNP - N-terminal prohormone of brain natriuretic peptide, PP – pulse pressure, SBP – systolic blood pressure, TSH - thyroid stimulating hormone

Table S2. Hemodynamic parameters in 49 studied patients.

Parameters	**Baseline**	**Follow-up**	***P***
Echocardiographic data			
LVMI, g/m^2	98.4 (19.9)	96.1 (24.8)	0.57
LVEDV, ml	104.2 (25.1)	96.2 (23.3)	0.002
LVESV, ml	41.9 (14.1)	35.2 (11.1)	0.003
Ascending aorta diameter, mm	34.6 (3.8)		
LAVI, ml/m^2	41.0 (12.2)	37.6 (11.0)	0.012
RVID, mm	36.8 (3.3)	36.3 (4.2)	0.33
GLS, %	-19.0 (2.8)	-19.7 (2.3)	0.036
Arterial data			
PWV, m/s	9.1 (1.4)	9.0 (1.7)	0.18
VAC components			
Ea, mmHg/ml	1.77 (0.3)	1.95 (0.4)	0.020
Ees, mmHg/ml	2.77 (1.1)	3.2 (1.1)	0.002
Ea to Ees ratio	0.71 (0.2)	0.64 (0.2)	0.08
PWV to GLS ratio	-0.49 (0.1)	-0.48 (0.1)	0.55

Data are presented as mean (SD)
Ea – arterial elastance, Ees – left ventricular end systolic elastance, GLS – global longitudinal strain, LAVI – left atrium volume indexed to body surface area, LVEDV – left ventricle end diastolic volume, LVESV – left ventricle end systolic volume, LVMI – left ventricle mass indexed to body surface area, PWV - Pulse Wave Velocity, RVID – right ventricle internal diameter

Table S3. Univariable logistic regression for therapy failure

Independent variable	Non-adjusted models			Adjusted models		
	OR	**95% CI**	***P***	**OR**	**95% CI**	***P***
AF time, years	1.01	0.86 - 1.14	0.969	0.95*****	0.79 - 1.09	0.489
GLS, %	0.81	0.61 - 1.03	0.110	0.78*****	0.55 - 1.04	0.109
PWV, m/s	0.83	0.49 - 1.34	0.466	0.71******	0.32 - 1.42	0.354
PWV to GLS ratio	79.51	0.29 - 81.62	0.164	87.4******	0.18 - 45.18	0.161
Ea, mmHg/ml	1.71	0.39 - 7.62	0.463	2.22*****	0.34 - 17.46	0.408
Ees, mmHg/ml	1.19	0.65 - 2.17	0.555	0.93*****	0.44 - 1.89	0.831
Ea to Ees ratio	36.60	0.10 - 149.73	0.474	46.11*****	0.49 - 101.12	0.117
MMP3, ng/ml	1.01	0.91 - 1.09	0.984	1.03*****	0.93 - 1.14	0.561
MMP9, ng/ml	0.99	0.98 - 1.01	0.668	0.99*****	0.98 - 1.01	0.714
NT-proBNP, pg/ml	1.001	0.99 - 1.003	0.996	0.99*****	0.99 - 1.01	0.522
CRP, mg/l	1.14	1.004 - 1.36	0.073	1.11*****	0.95 - 1.33	0.225
LAVI, ml/m^2	1.06	1.004 - 1.13	**0.047**	1.07*****	1.004 - 1.14	**0.048**
LVEDV, ml	0.99	0.97 - 1.02	0.682	1.004*****	0.98 - 1.03	0.750
LVESV, ml	1.01	0.97 - 1.06	0.588	1.03*****	0.98 - 1.08	0.262

*Models adjusted for: sex, age, BMI, history of hypertension and hypercholesterolemia. **Models adjusted for: sex, age, history of hypertension and hypercholesterolemia, (BMI was not included due to correlation with independent variable)

VIFs for models ranging from 1.06 to 1.99.

OR – odds ratio, CI – confidence interval. Predictor variable in each model was therapy failure. AF – atrial fibrillation, Ea – arterial elastance, Ees – left ventricular end systolic elastance, GLS – global longitudinal strain, LAVI – left atrium volume indexed to body surface area, LVEDV – left ventricle end diastolic volume, LVESV – left ventricle end systolic volume, PWV – Pulse Wave Velocity, MMP3 – matrix metalloproteinase 3, MMP9 – matrix metalloproteinase 9; NT-proBNP – N-terminal prohormone of brain natriuretic peptide, CRP – C-reactive protein