Léčba komorových extrasystol u asymptomatických pacientů

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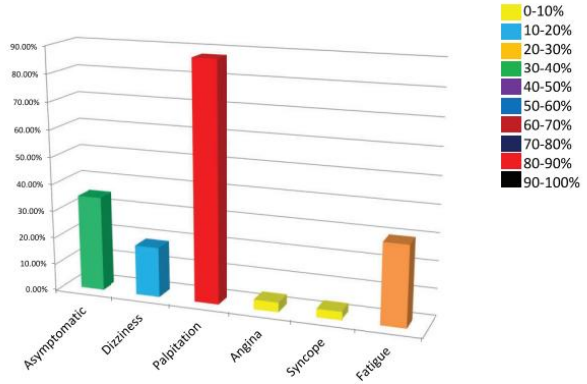
Symptomy u KES

ESC European Society of Cardiology
Europace (2022) 00, 1–9
doi:10.1093/europace/euab307

EHRA SURVEY

Contemporary clinical management of monomorphic idiopathic premature ventricular contractions: results of the European Heart Rhythm Association Survey

Antonio Sorgente [1]*, Michal M. Farkowski[2], Konstantinos Iliodromitis[3], José M. Guerra[4], Kristine Jubele[5,6], Julian K.R. Chun[7], Carlo de Asmundis[1], and Serge Boveda[1,8,9,10]



1. Boveda et al., Europace 2022

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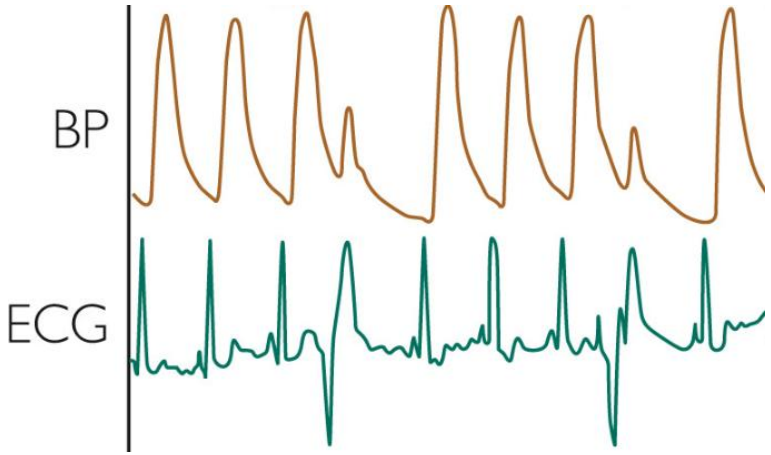
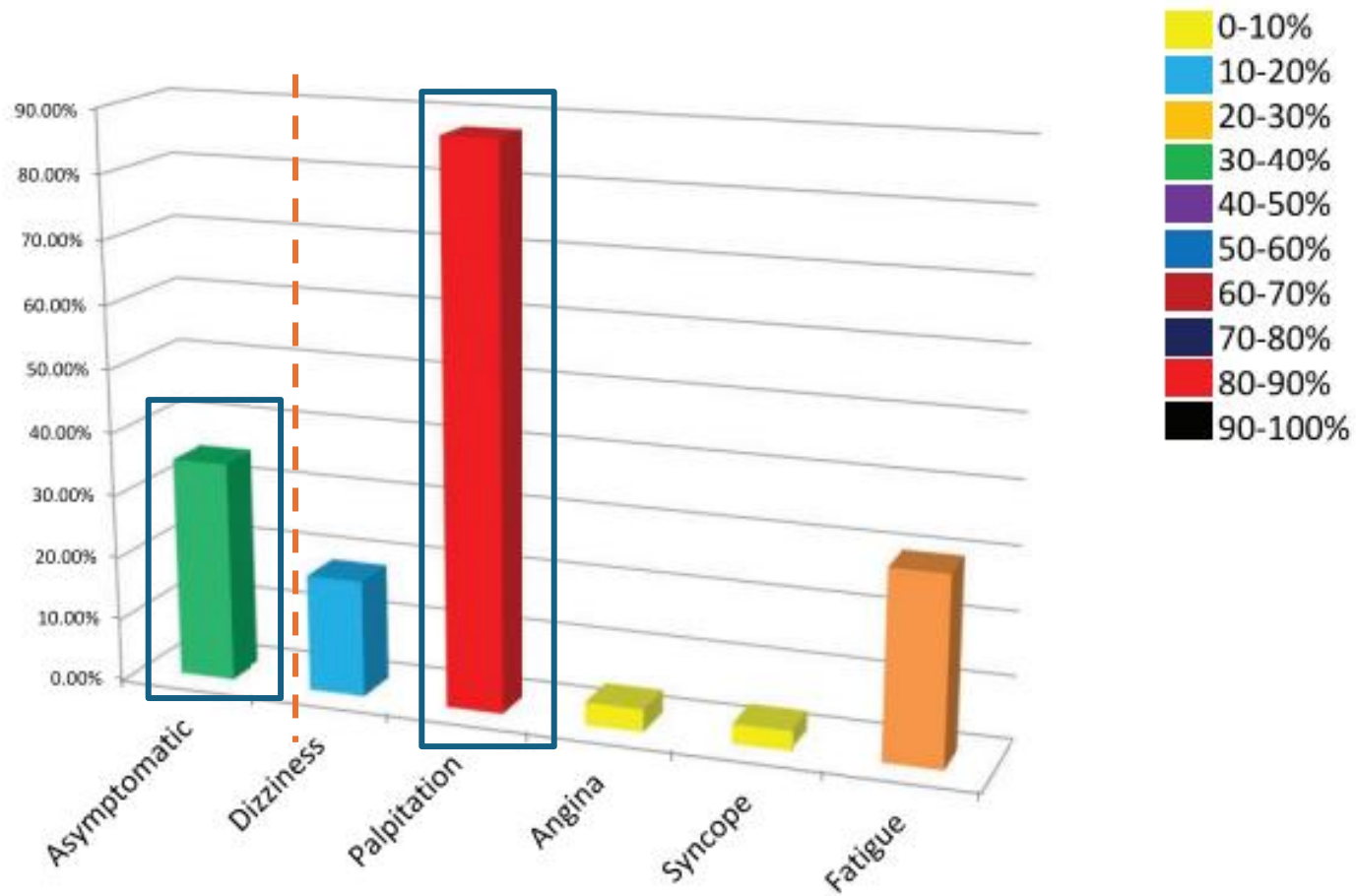
Post-Extrasystolic Potentiation, Oscar Langendoff 1885





1. Boveda et al., Europace 2022

Guidelines

European Heart Journal (2022) 43, 3997–4126
https://doi.org/10.1093/eurheartj/ehac262

ESC GUIDELINES

2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

AHA/ACC/HRS GUIDELINE

2017 AHA/ACC/HRS Guideline for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

2019 HRS/EHRA/APHRS/LAHRS expert consensus statement on catheter ablation of ventricular arrhythmias

1. Zeppenfeld et al., EHJ, 2022
2. Cronin et al., HR, 2019
3. Al-Khatib et al., Circ 2017

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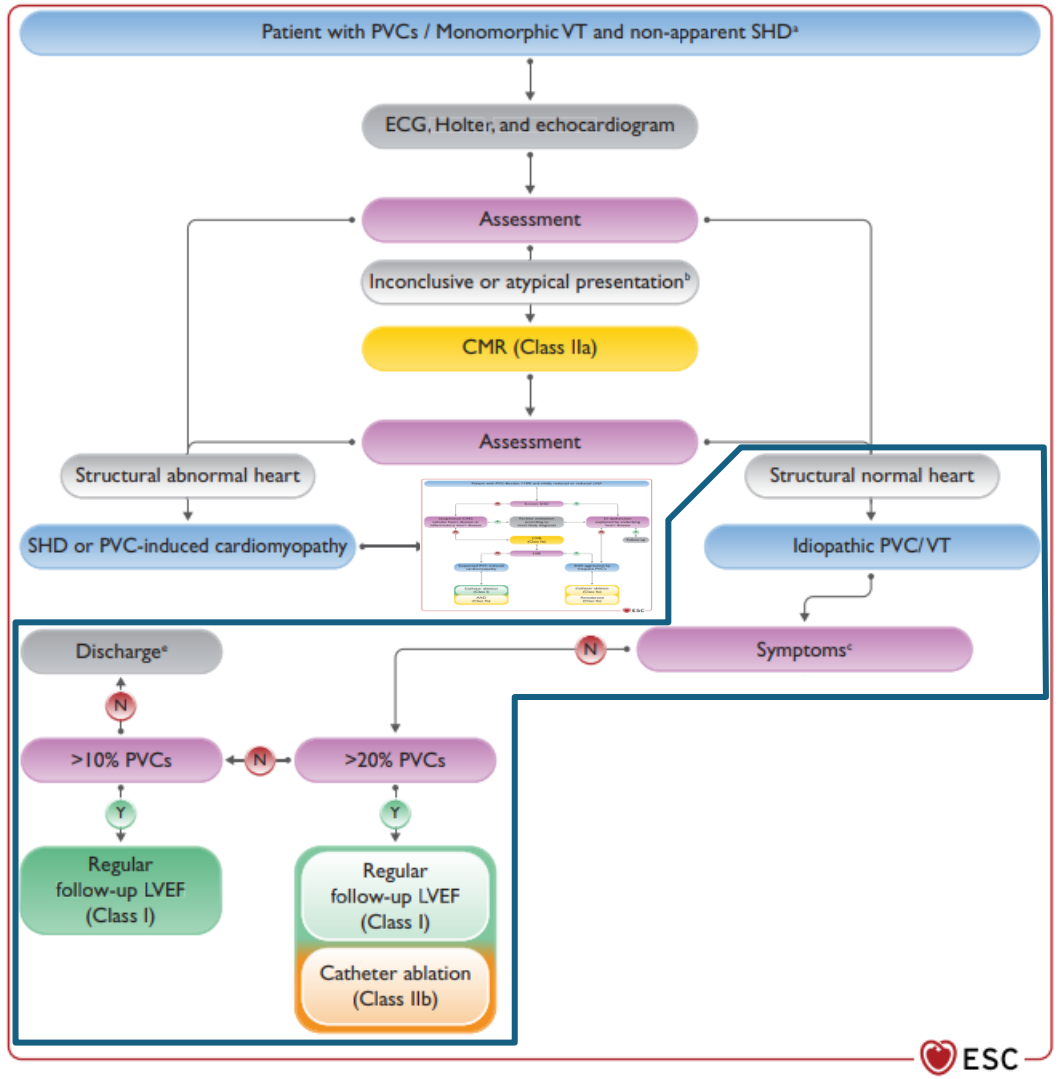

1. Zeppenfeld et al., ESC GL 2022

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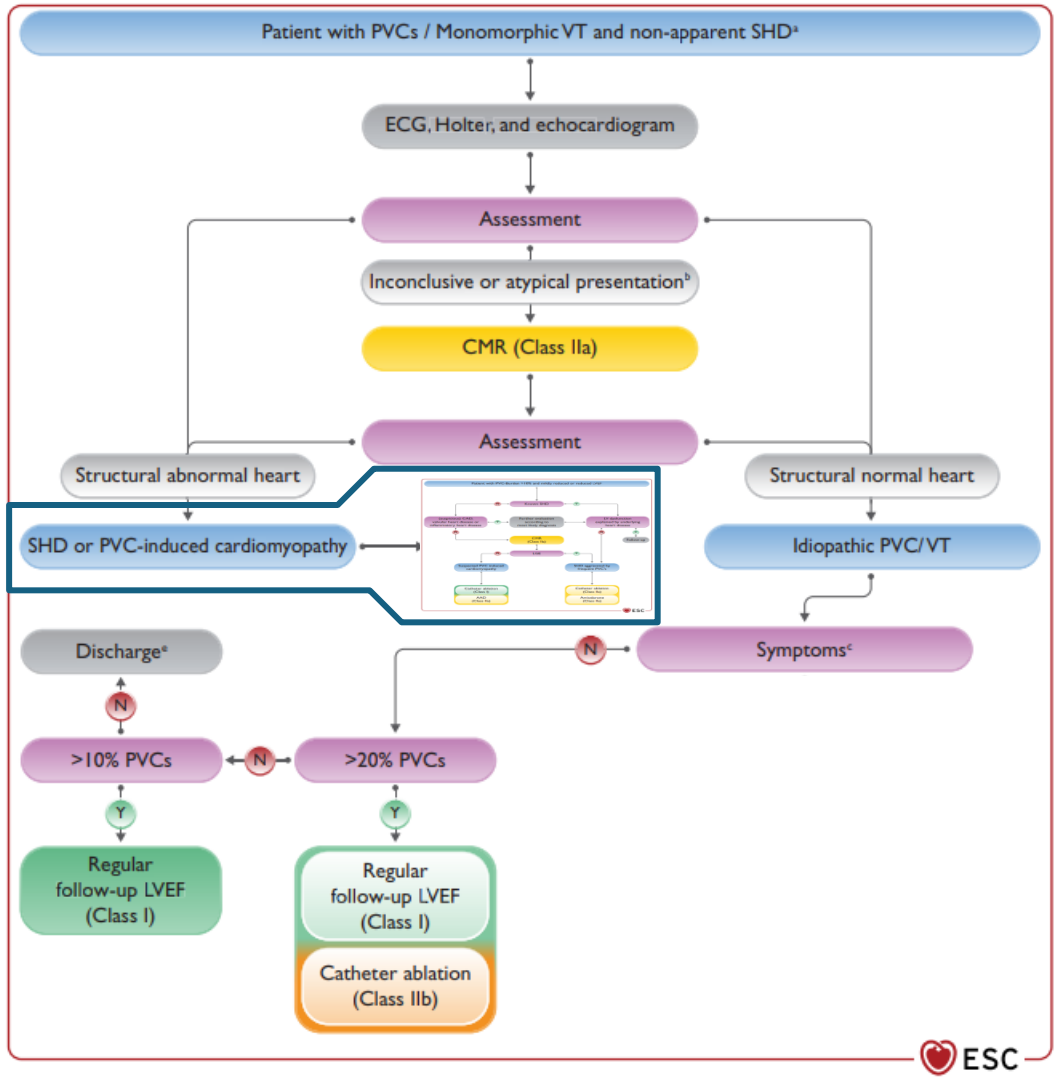

1. Zeppenfeld et al., ESC GL 2022

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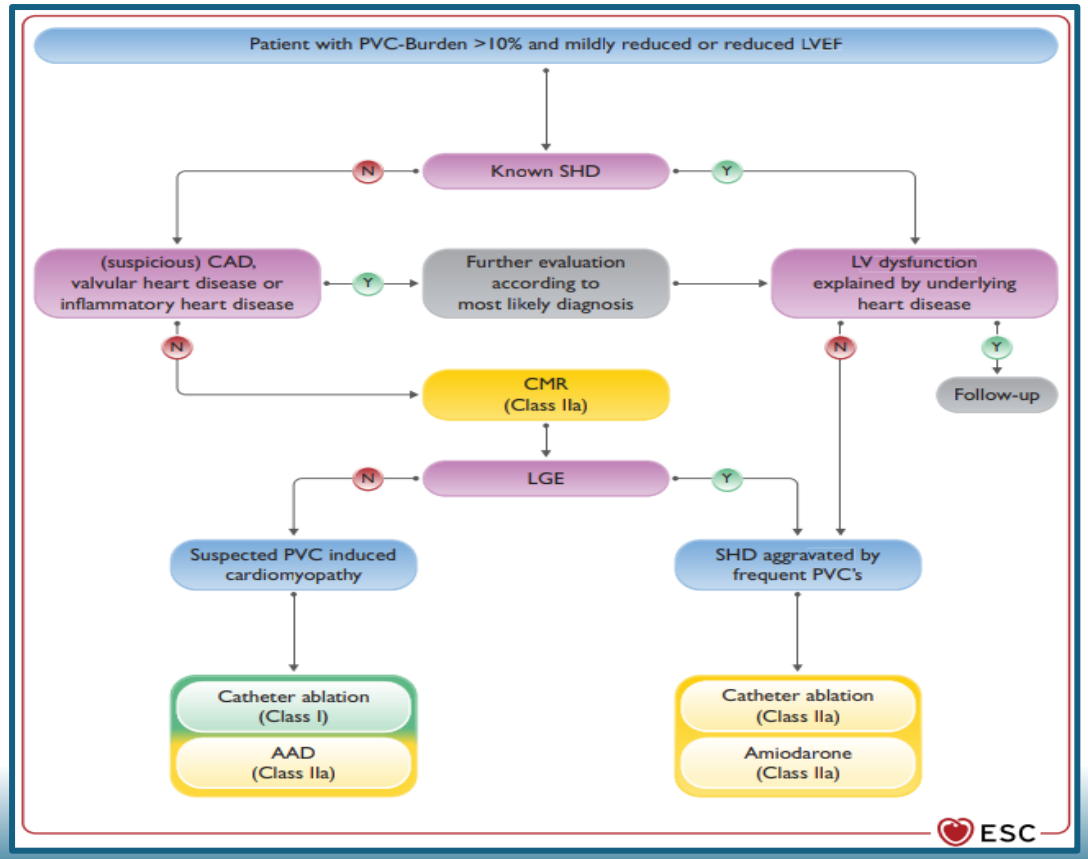

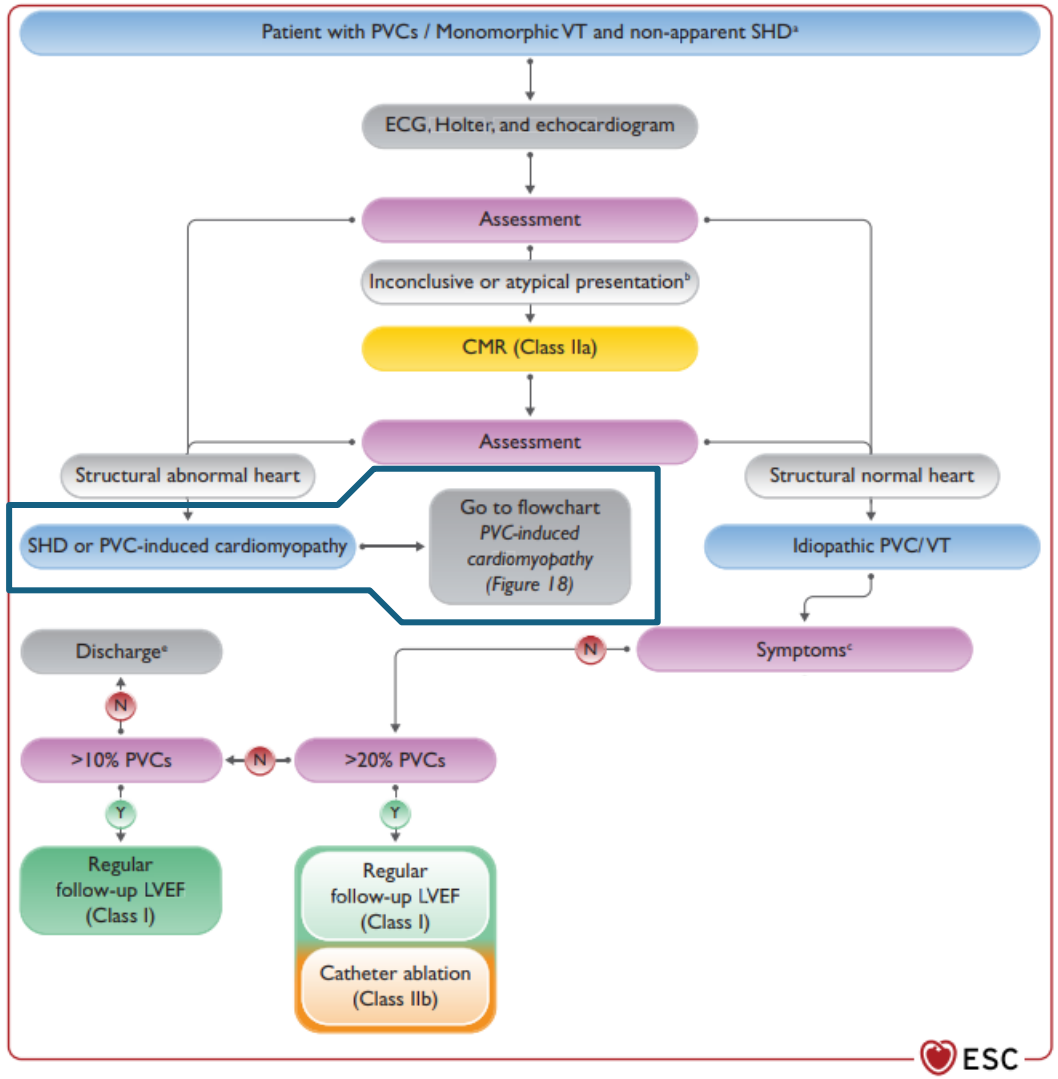

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ESC GUIDELINES

2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death

2019 HRS/EHRA/APHRS/LAHRS statement on [illegible] arrhythmias

COR	LOE	Recommenda
I	B-NR	1. For patients suppression ventricular f frequent PV and predom for whom antiarrhythmic medications are ineffective, not tolerated, or not the patient's preference, catheter ablation is useful.[S9-1,S9-2]
IIa	B-NR	2. In patients with PVC-induced cardiomyopathy, pharmacological treatment (eg, beta blocker, amiodarone) is reasonable to reduce recurrent arrhythmias and improve symptoms and LV function.[S9-3,S9-4]

AHA/ACC/HRS GUIDELINE

2017 AHA/ACC/HRS Guideline for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

Recommendations for catheter ablation of PVCs in patients with or without LV dysfunction

COR	LOE	Recommendations	References
I	B-NR	1. In patients with cardiomyopathy suspected to be caused by frequent and predominately monomorphic PVCs and for whom AADs are ineffective, not tolerated, or not preferred for long-term therapy, catheter ablation is recommended.	S4.3.1–S4.3.10
IIa	B-NR	2. In patients with SHD in whom frequent PVCs are suspected to be contributing to a cardiomyopathy and for whom AADs are ineffective, not tolerated, or not preferred for long-term therapy, catheter ablation can be useful.	S4.3.3,S4.3.11,S4.3.12
IIa	B-NR	3. In patients with focally triggered VF refractory to AADs and triggered by a similar PVC, catheter ablation can be useful.	S4.3.13–S4.3.17
IIa	C-LD	4. In nonresponders to cardiac resynchronization therapy (CRT) with very frequent unifocal PVCs limiting optimal biventricular pacing despite pharmacological therapy, ca	S4.3.18

Frequent PVCs (usually >15% of the total number of beats) may produce a reversible form of LV dysfunction.[S9-5–S9-18] However, it is sometimes difficult to ascertain whether the PVCs caused LV dysfunction or whether progressive LV dysfunction caused frequent PVCs. LV dysfunction has been associated with greater PVC burden (>10% and usually >20%), NSVT, a retrograde P-wave after the PVCs, and interpolated PVCs.[S9-6,S9-15] In a prospective study of catheter ablation for PVC-induced cardiomyopathy, ablation was completely successful in 80% of patients.[S9-19] LV function normalized within 6 months in 82% of the 22 patients who had depressed ventricular dysfunction at baseline. Thus, frequent PVCs may be a reversible cause of LV dysfunction that can be effectively treated with catheter ablation. It is often difficult to determine if apparent LV dysfunction reflects impaired LV function or inability to accurately assess LV function due to the frequent ectopic activity. In patients who have a high density of PVCs with normal ventricular function, optimal treatment and surveillance for prevention and detection of decline in ventricular function have not been established.

1. Zeppenfeld et al., EHJ, 2022
2. Cronin et al., HR, 2019
3. Al-Khatib et al., Circ 2017

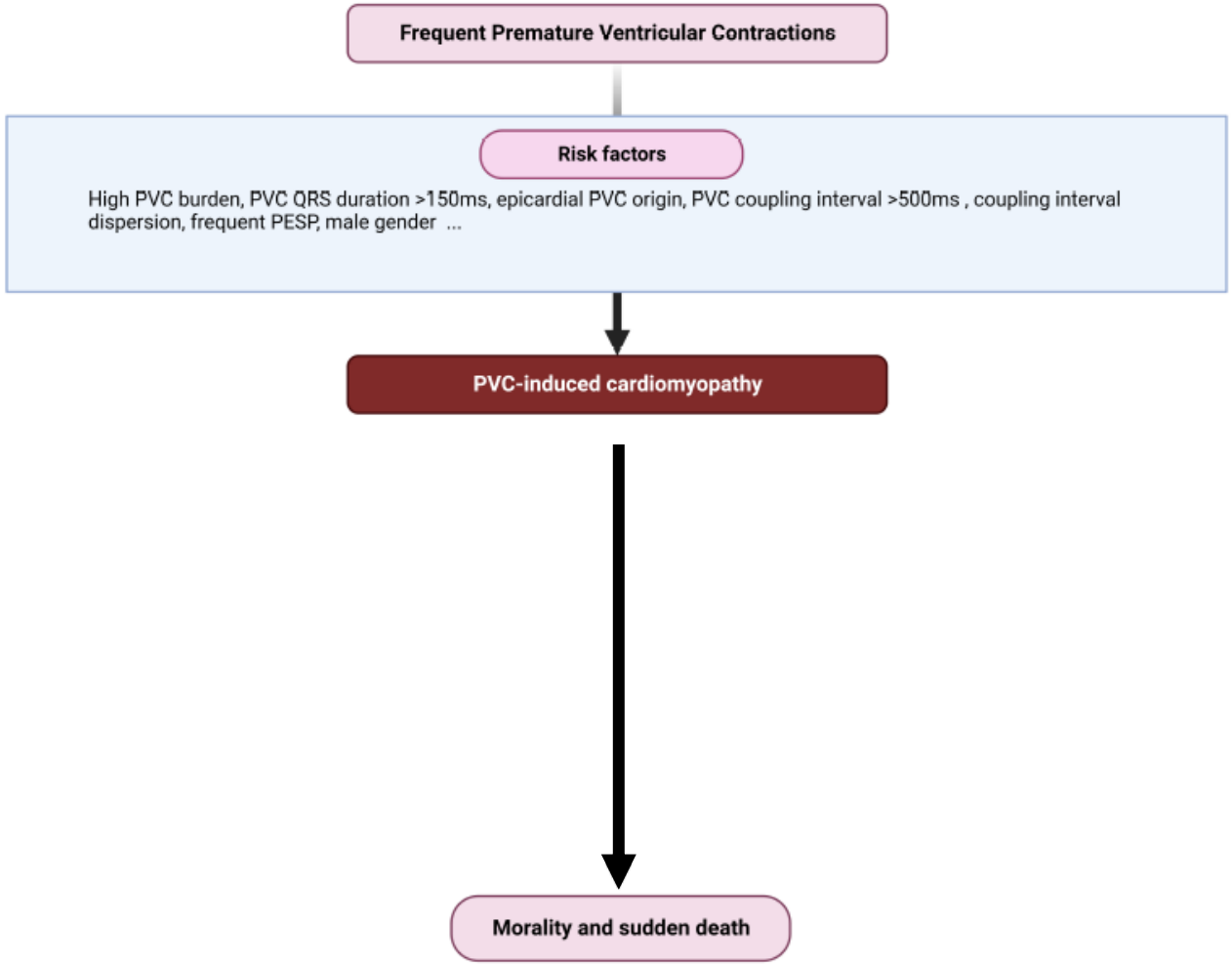
Klíčové parametry

1. **KES idukovaná kardiomyopatie**

2. **Četnost komorové ektopie**

KES indukovaná kardiomyopatie

≠ tachykardií indukovaná KMP



1. Xiaoyu et al., Rev. Cardiovasc. Med., 2023
2. Jiang et al., HR, 2017
3. Smith et al., HR, 2010

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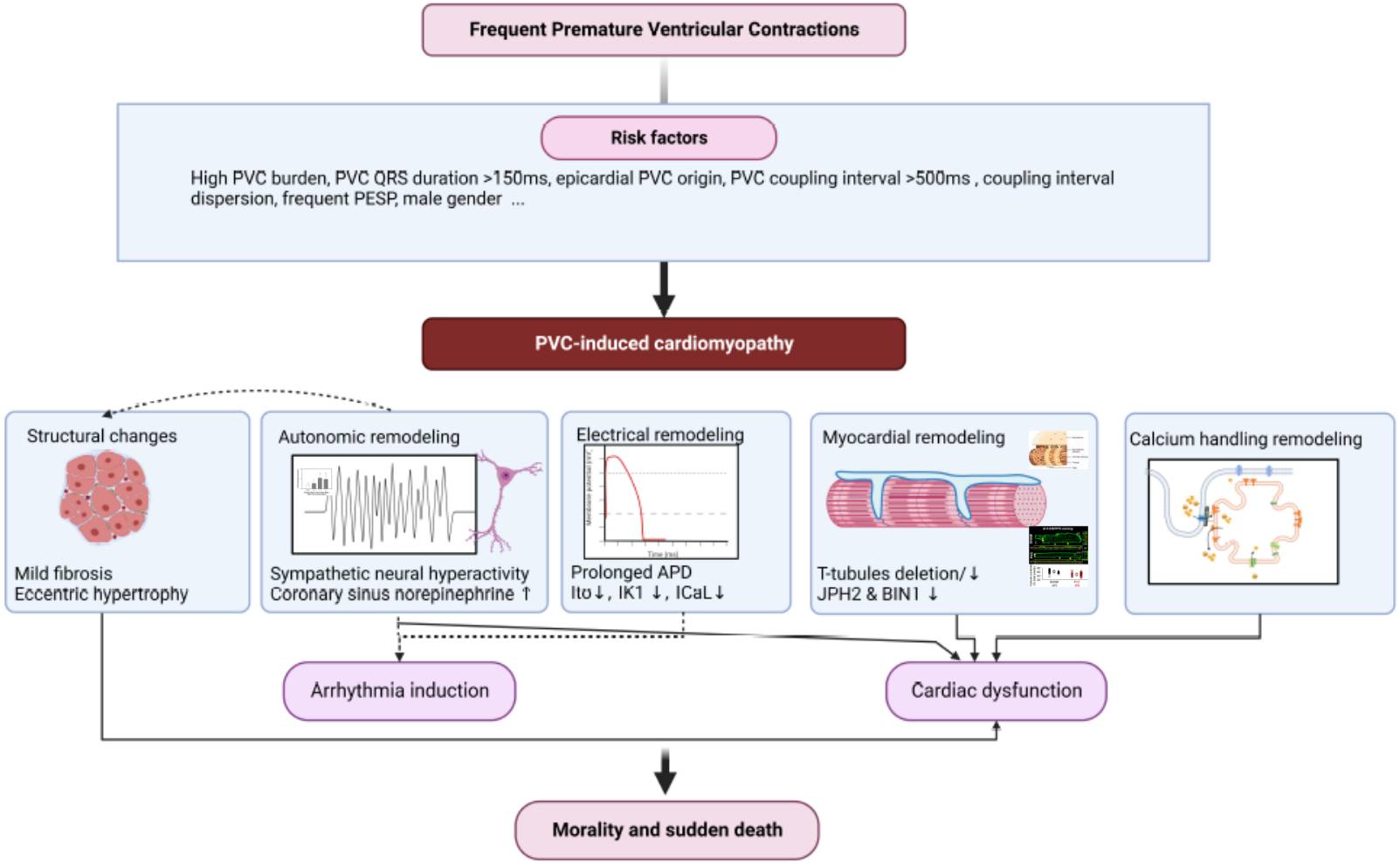

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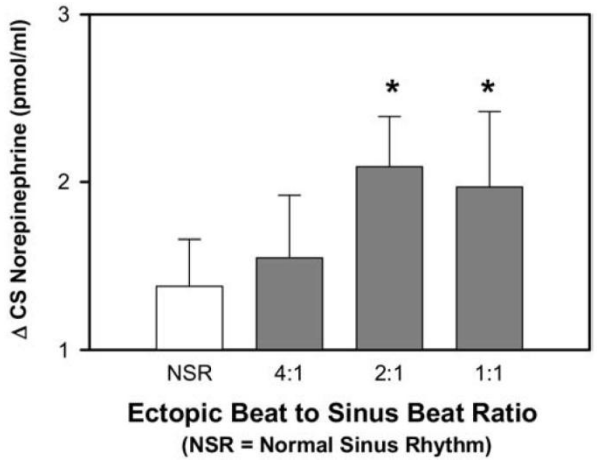

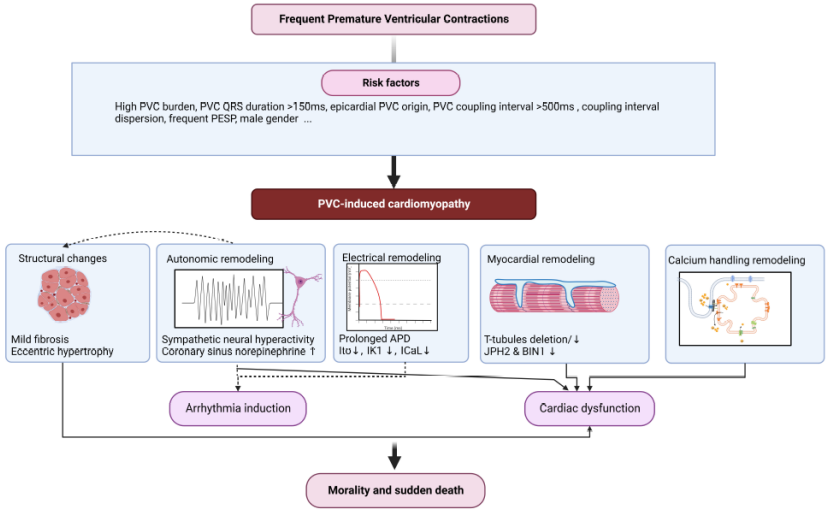

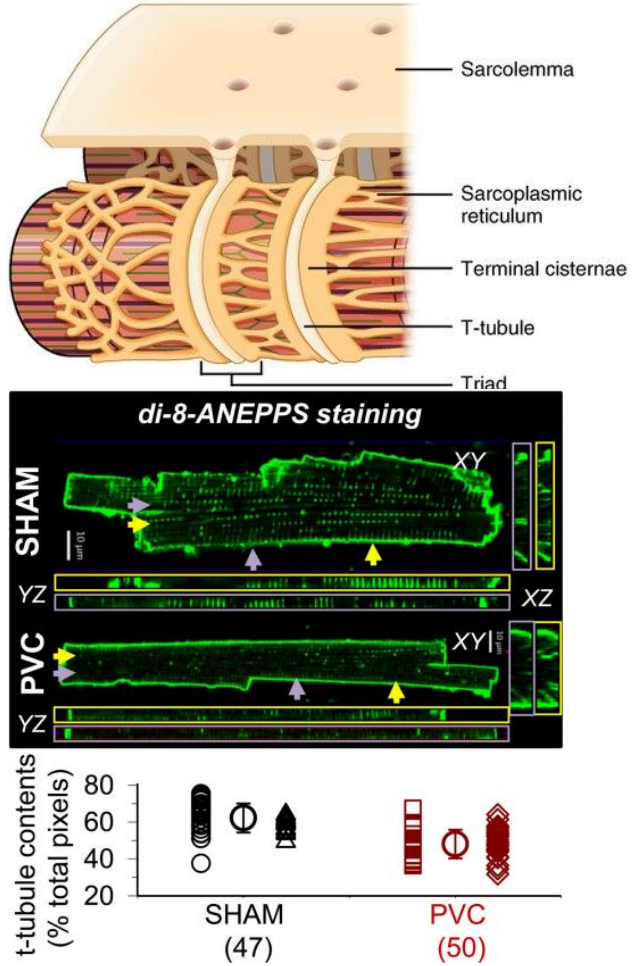

1. Xiaoyu et al., Rev. Cardiovasc. Med., 2023
2. Jiang et al., HR, 2017
3. Smith et al., HR, 2010

KES indukovaná kardiomyopatie

Prognóza

Při strukturálním onemocnění srdce horší prognóza v souvislosti s frekventními KES

Konfliktní data u nemocných bez dysfunkce LKS

N = 1134
Quartiles:
1. 0%–0.002%
2. 0.002%–0.011%
3. 0.011%–0.123%
4. 0.123%–17.7%

Variable	Unadjusted	95% CI	p Value	Adjusted*	95% CI	p Value
			Mortality			
Quartile 1		Reference			Reference	
Quartile 2	OR: 1.25	1.01 to 1.55	0.04	HR 1.01	0.81 to 1.26	0.95
Quartile 3	OR: 1.38	1.12 to 1.71	0.003	HR 1.12	0.90 to 1.40	0.29
Quartile 4	OR: 1.60	1.30 to 1.98	<0.001	HR 1.31	1.06 to 1.63	0.01
Test of Trend			<0.001			0.007

Adjusted for age, sex, race, BMI, and history of hypertension, diabetes, coronary artery disease, beta-blocker use, Holter-based atrial fibrillation, and number of Holter-based ventricular tachycardia episodes

1. Dukes et al., JACC, 2016

KES indukovaná kardiomyopatie

ALE:

U většiny pacientů s frekventními KES se nerozvine systolická dysfunkce LKS

- Proto nepanuje jasná shoda na preventivní ablaci KES u asymptomatických jedinců

Prediktory ???

KES indukovaná kardiomyopatie

Prediktory

	Del Carpio Munoz F *et al.*	Ghannam *et al.*	Kawamura *et al.*	Bas *et al.*	Yokokawa *et al.*	Sadron Blaye-Felice *et al.*	Voskoboinik *et al.*	Olgun *et al.*	Billet *et al.*	Limpitikul *et al.*
Number of patients	17	120	51	43	113	96	39	21	17	29
PVC burden	29.3%	22%	19%	>24%	19%	26%	>20%	30%	NS	NS
PVC QRS duration	>140 ms	>150 ms	NS	>150 ms	>150 ms	NS	>160 ms	-	NS	NS
Sinus QRS duration	-	-	-	-	-	Long sinus QRS duration*	-	-	-	-
PVC origin	RV PVCs	NS	NS	NS	Epicardial PVCs	Epicardial PVCs	NS	-	NS	-
Coupling interval	-	-	Longer CI	-	-	Long CI	>500 ms	-	-	NS
CI-dispersion	-	-	115 ms (maximum-CI–minimum-CI)	-	-	-	-	-	-	+
Interpolation	-	-	-	More frequent	-	+	-	+	NS	-
PESP	-	-	-	-	-	-	-	-	High PESP	-
Male sex	NS	+	NS	+	+	+	+	NS	NS	NS

1. Shen et al., Rev Cardiovasc Med, 2023

KES indukovaná kardiomyopatie

Prediktory

	Del Carpio Munoz F *et al.*	Ghannam *et al.*	Kawamura *et al.*	Bas *et al.*	Yokokawa *et al.*	Sadron Blaye-Felice *et al.*	Voskoboinik *et al.*	Olgun *et al.*	Billet *et al.*	Limpitikul *et al.*
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PVC burden	29.3%	22%	19%	>24%	19%	26%	>20%	30%		
PVC QRS duration	>140 ms	>150 ms		>150 ms	>150 ms		>160 ms			
Sinus QRS duration						Long sinus QRS duration*				
PVC origin	RV PVCs				Epicardial PVCs	Epicardial PVCs				
Coup[illegible]						Long CI	>500 ms			
CI-d										+
Inter				ient		+		+		
PESP									High PESP	
Male sex		+		+	+	+	+			

1. Shen et al., Rev Cardiovasc Med, 2023

Četnost komorové ektopie

Vliv trvání symptomů na riziko vzniku kardiomyopatie

N = 241, observační, kardiomyopatie u 76

Clinical characteristics	Adjusted odds ratio	95% confidence interval	*P* value
Asymptomatic status	13.1	4.1–37.8	<.001
Duration of palpitations (mo)			
<30	1.0	—	—
30–60	4.0	1.1–14.4	.03
>60	20.1	6.3–64.1	<.001
PVC burden in asymptomatic patients*	2.1	1.2–3.6	.007

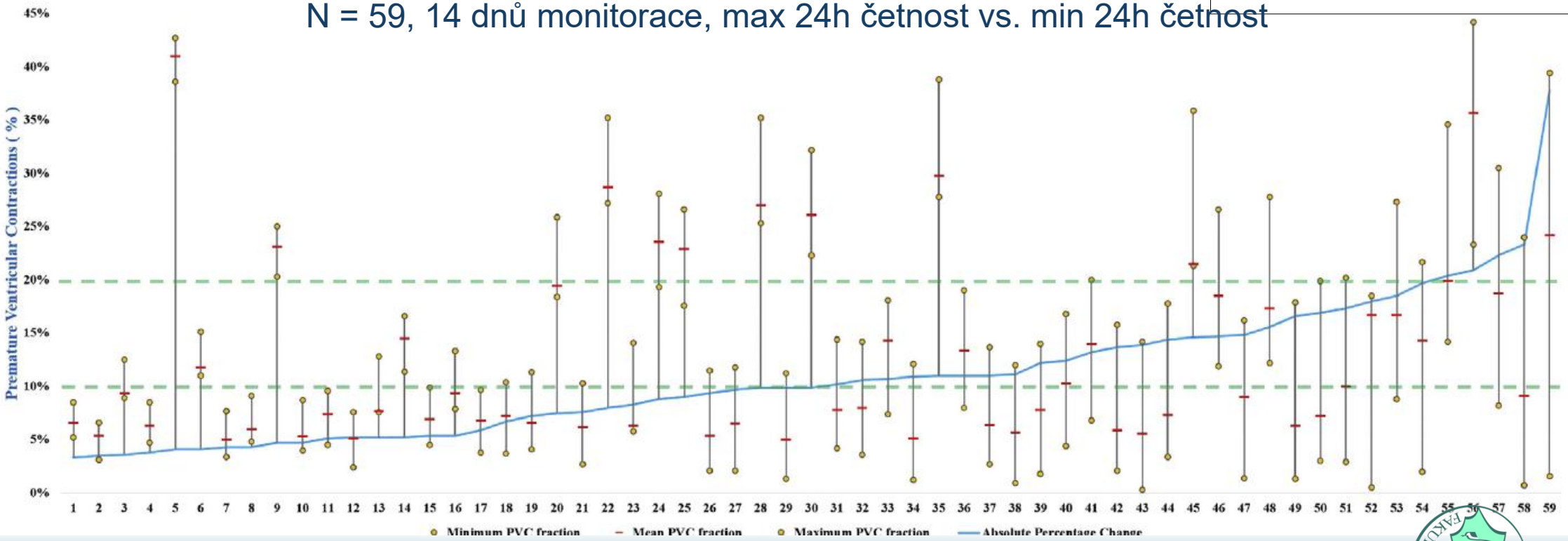
PVC, premature ventricular complex.
*PVC burden centered at the average value of 19% and divided by 10, and so a 1-unit increase corresponds to a 10% increase in PVC burden.

1. Yokokawa et al., HR, 2012

Četnost komorové ektopie

Interindividuální variabilita četnosti ektopie

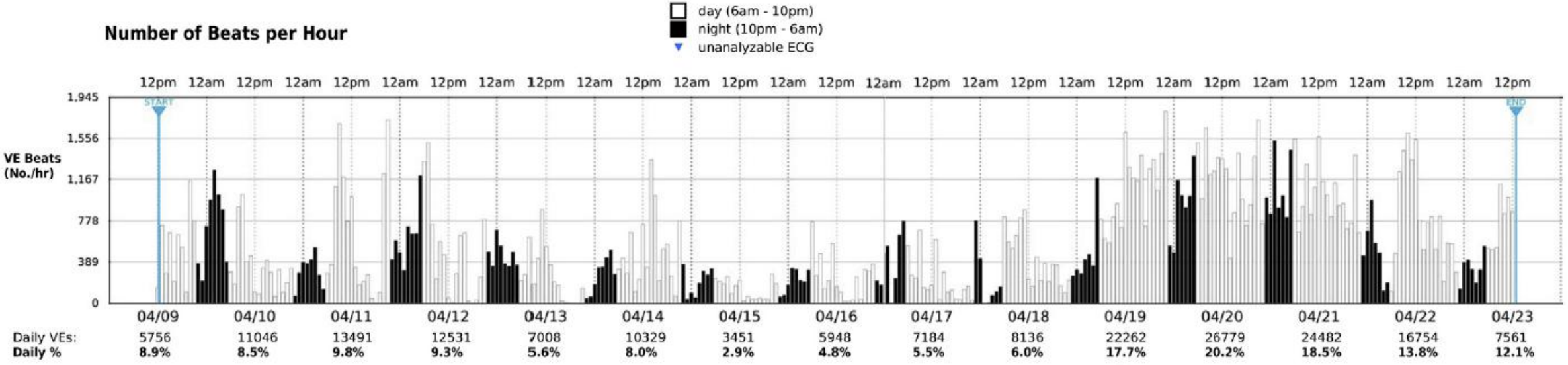
N = 59, 14 dnů monitorace, max 24h četnost vs. min 24h četnost



1. Mullins et al., HR, 2019

Četnost komorové ektopie

Intraindividuální variabilita četnosti ektopie



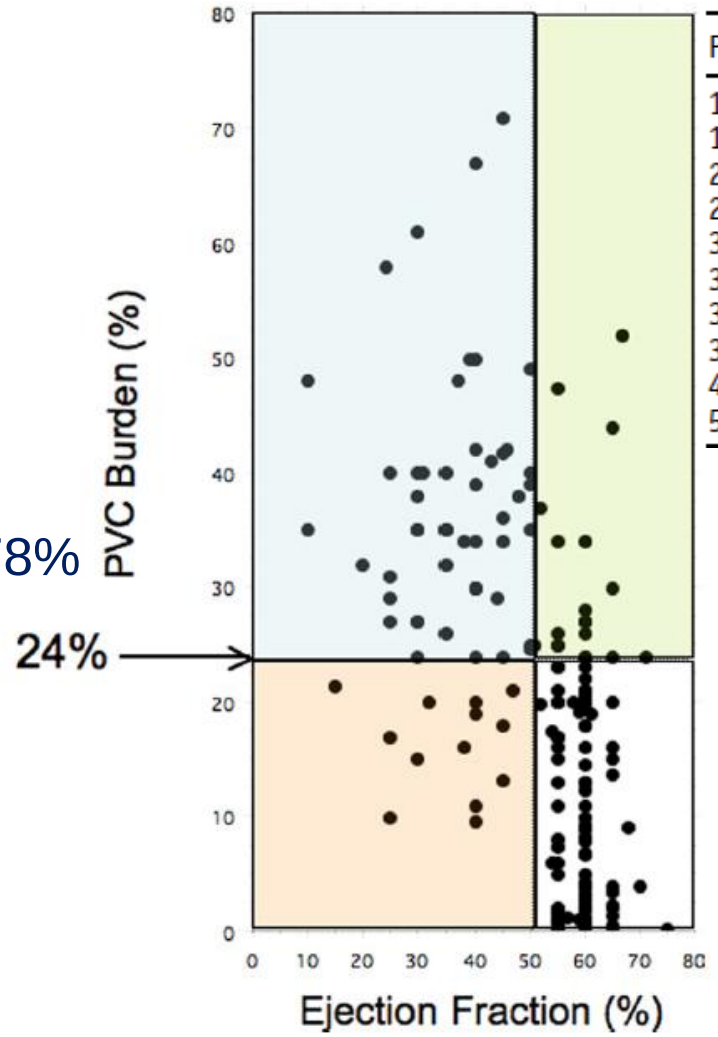
1. Mullins et al., HR, 2019

Četnost komorové ektopie

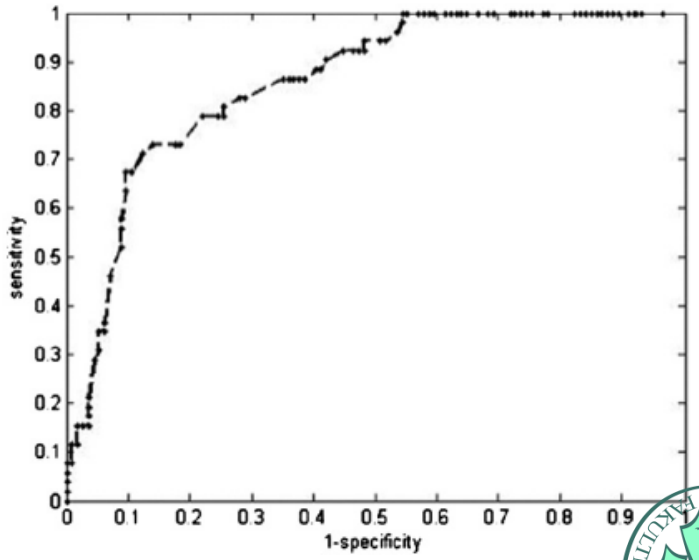
N = 174

Retrospektivní analýza

senzitivita/specificita 79%/78%
AU ROC curve 0,89



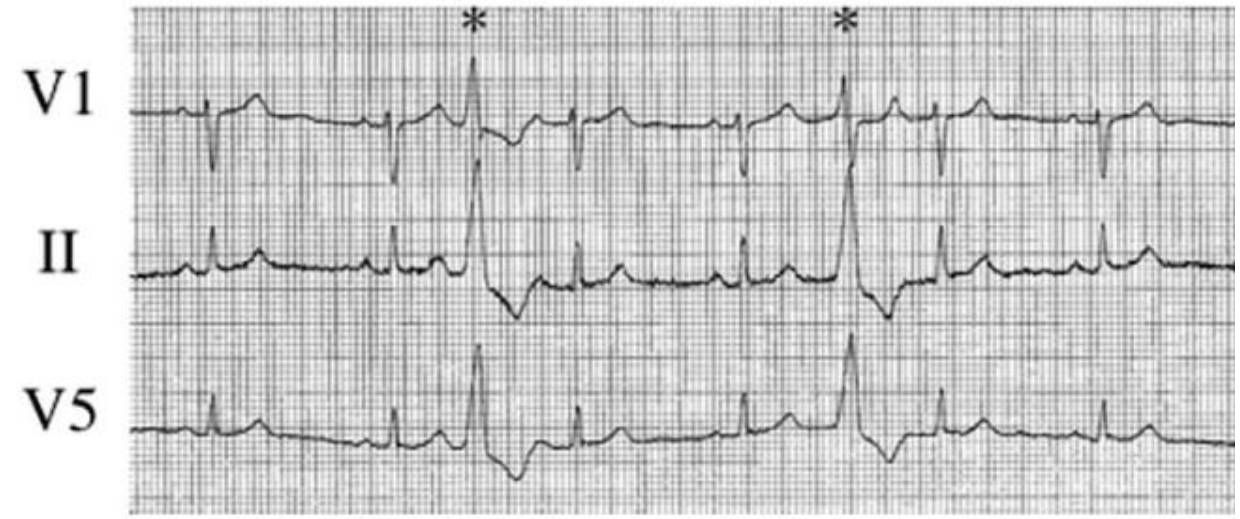
PVC burden (%)	Sensitivity (%)	Specificity (%)
10	100	46
16	90	58
21	80	75
27	70	88
30	60	91
34	50	91
35	40	94
39	30	95
41	20	96
50	10	99



1. Baman et al., HR, 2010

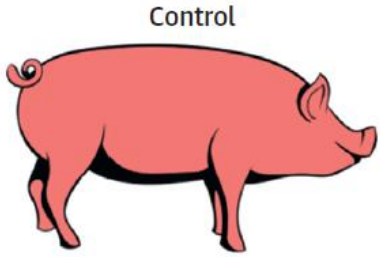
Interpolace

	Patients with CMP	Patients without CMP	*P* value
Patients (n)	21	30	
Age (yrs)	50 ± 15	47 ± 16	.5
Gender (M/F)	14/7	18/12	.8
Ejection fraction (%)	37 ± 10	59 ± 7	<.0001
PVC burden (%)	30 ± 11	14 ± 15	.0001
Interpolation, n (%)	14 (67)	6 (20)	.001
Interpolation burden (%)	21 ± 30	4 ± 13	.008
Interpolation at 5 AM (%)	25 ± 36	3 ± 15	.005
Interpolation at 11 AM (%)	20 ± 35	3 ± 13	.01
Interpolation at 17 PM (%)	21 ± 38	6 ± 19	.06
Interpolation at 23 PM (%)	26 ± 38	5 ± 18	.01
Mean heart rate	75 ± 7	75 ± 10	.8
Beta-blocker therapy, n (%)	16 (76)	16 (53)	.09
Calcium channel blocker, n (%)	6 (29)	3 (10)	.13
AA therapy, n (%)	20 (95)	17 (57)	.003
ACE inhibitors, n (%)	7 (33)	0 (0)	.001

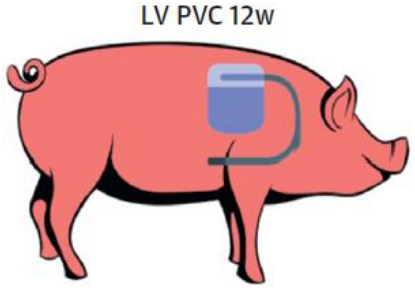


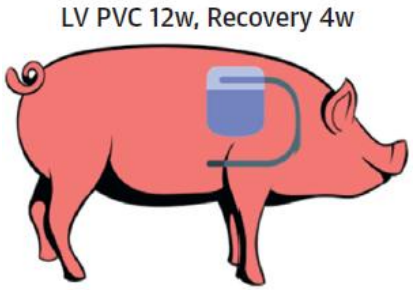
1. Olgun et al, HR, 2011

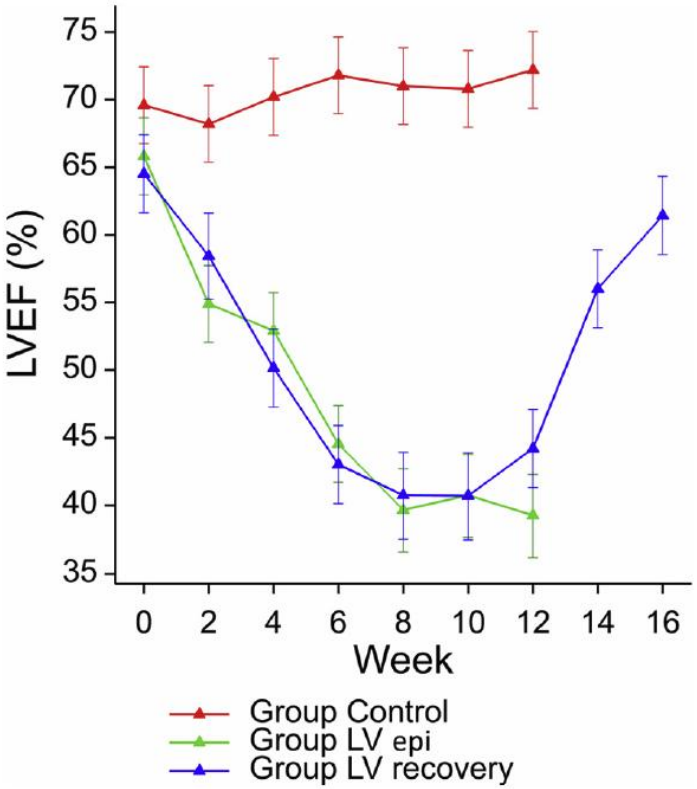
Reverzibilita dysfunkce levé komory

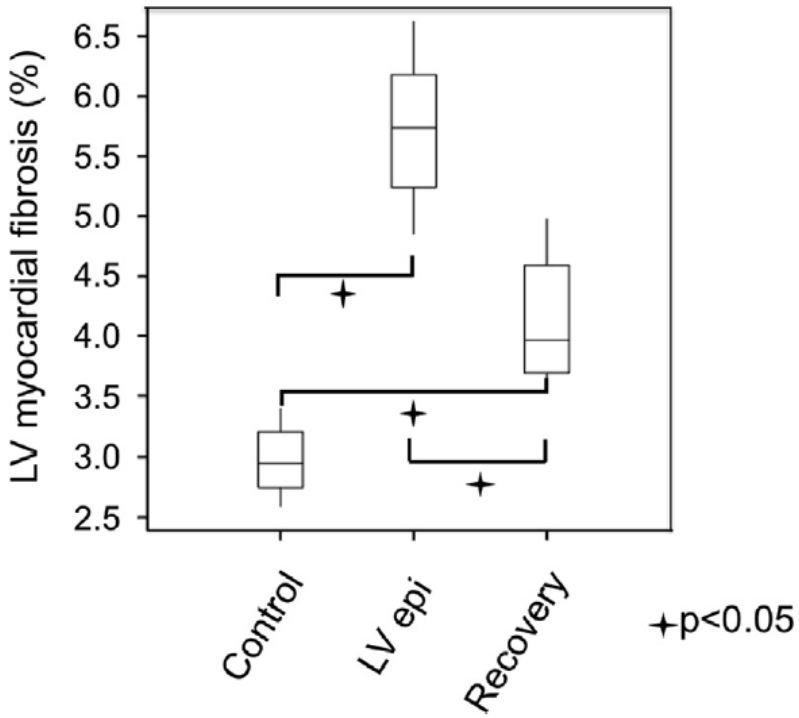


50% LV epikardiální stimulace



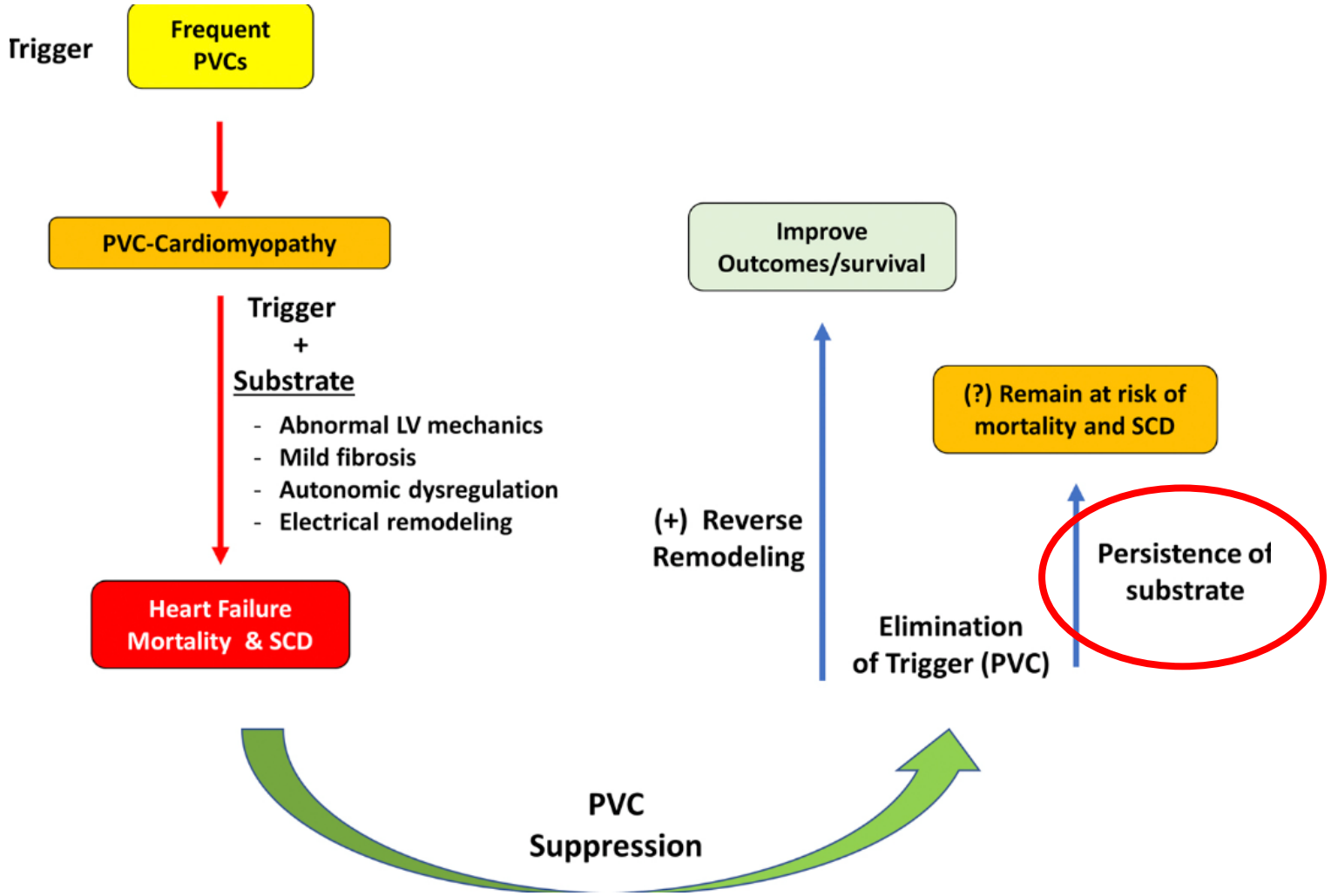






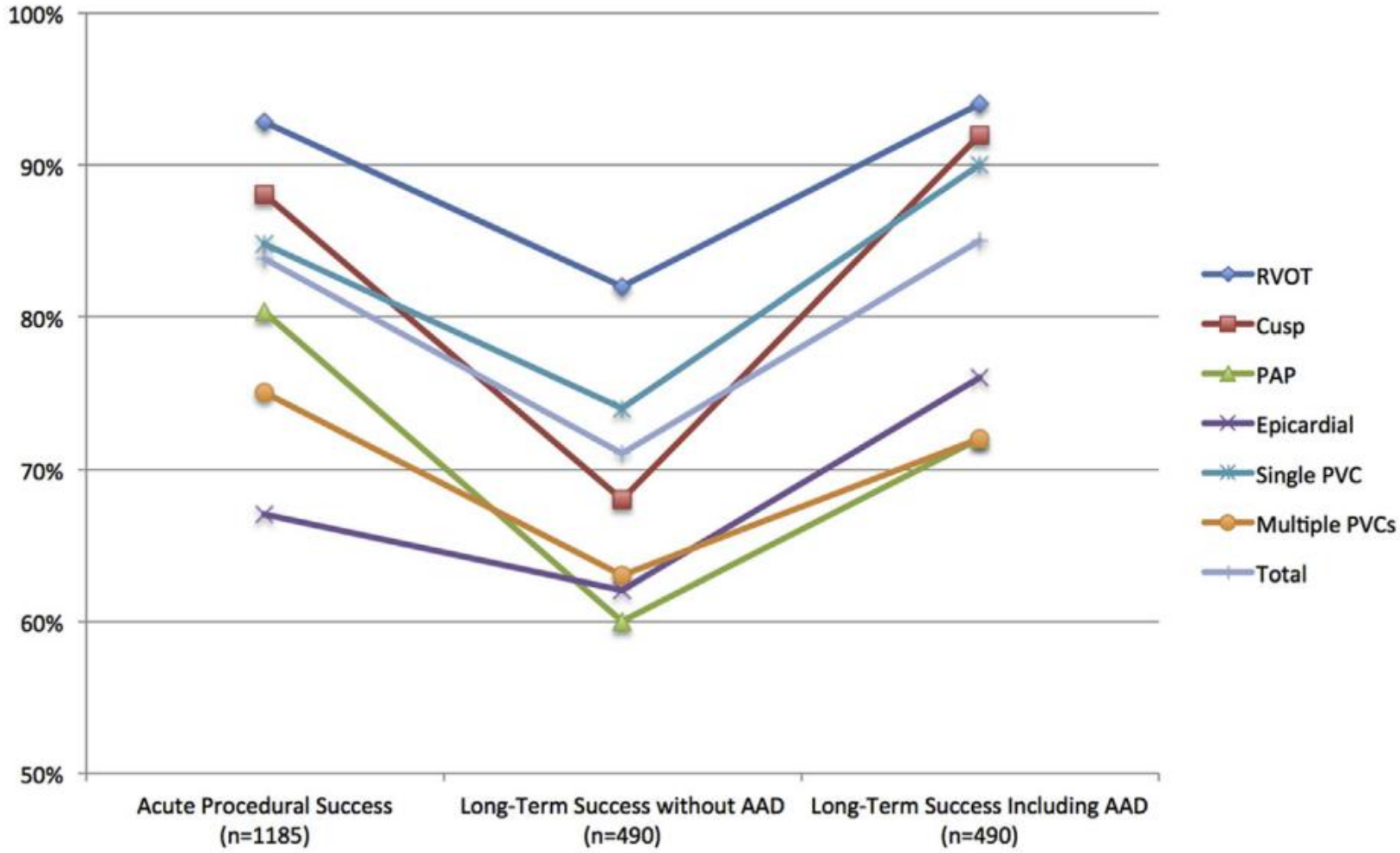
1. Walters et al, JACC EP, 2020

Reverzibilita dysfunkce levé komory



1. Huizar, Ellenbogen, JACC EP, 2020

Úspěšnost terapie



1. Latchamsetty et al., JACC, 2015

Kdy léčit KES u asymptomatických pacientů?

Při rozvoji kardiomyopatie

Při vysoké pravděpodobnosti jejího rozvoje

- četnost nad 24 % (opakovaná EKG Holterizace)
- delší trvání QRS
- interpolace
- mužské pohlaví
- vazebný interval nad 500ms

AI generated