ΕΘΝΙΚΟ ΚΑΙ ΚΑΠΟΔΙΣΤΡΙΑΚΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ -
ΙΑΤΡΙΚΗ ΣΧΟΛΗ
Θεραπευτική Κλινική

Αρρυθμίες

Χατζίδου Σοφία – Διευθύντρια ΕΣΥ

Θεραπευτικές Εξελίξεις, Αθήνα 2022

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy
(European Heart Journal 2021 – doi:10.1093/eurheartj/ehab364)

Changes in cardiac pacing and cardiac resynchronization therapy guideline recommendations since 2013 (1)

	2013	2021
	Class	
Cardiac pacing for bradycardia and conduction system disease		
In patients with syncope, cardiac pacing may be considered to reduce recurrent syncope when asymptomatic pause(s) >6 s due to sinus arrest are documented.	IIa	IIb
Cardiac resynchronization therapy		
Patients who have received a conventional pacemaker or an ICD and who subsequently develop symptomatic HF with LVEF ≤35% despite OMT and who have a significant[a] proportion of RV pacing should be considered for upgrade to CRT.	I	IIa

CRT = cardiac resynchronization therapy; HF = heart failure ; ICD = implantable cardioverter-defibrillator; LVEF = left ventricular ejection fraction; OMT = optimal medical therapy; RV = right ventricular. [a]A limit of 20% RV pacing for considering interventions for pacing-induced HF is supported by observational data. However, there are no data to support that any percentage of RV pacing can be considered as defining a true limit below which RV pacing is safe and beyond which RV pacing is harmful.

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy
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Changes in cardiac pacing and cardiac resynchronization therapy guideline recommendations since 2013 (2)

	2013	2021
	Class	
Cardiac resynchronization therapy (continued)		
CRT rather than RV pacing is recommended for patients with HFrEF (<40%) regardless of NYHA class who have an indication for ventricular pacing and high-degree AVB in order to reduce morbidity. This includes patients with AF.	IIa	I
CRT should be considered for symptomatic patients with HF in SR with LVEF ≤35%, a QRS duration of 130–149 ms, and LBBB QRS morphology despite OMT, to improve symptoms and reduce morbidity and mortality.	I	IIa

AF = atrial fibrillation; AVB = atrioventricular block; CRT = cardiac resynchronization therapy; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; LBBB = left bundle branch block; LVEF = left ventricular ejection fraction; NYHA = New York Heart Association; OMT = optimal medical therapy; RV = right ventricular; SR = sinus rhythm

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy
(European Heart Journal 2021 – doi:10.1093/eurheartj/ehab364)

Changes in cardiac pacing and cardiac resynchronization therapy guideline recommendations since 2013 (3)

	2013	2021
	Class	
Cardiac resynchronization therapy (continued)		
In patients with symptomatic AF and uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration), CRT is recommended in patients with HFrEF.	IIa	I
Specific indications for pacing		
In patients with congenital heart disease, pacing may be considered for persistent postoperative bifascicular block associated with transient complete AVB.	IIa	IIb

AF = atrial fibrillation; AVB = atrioventricular block; AVJ = atrioventricular junction; CRT = cardiac resynchronization therapy; HFrEF = heart failure with reduced ejection fraction

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy
(European Heart Journal 2021 – doi:10.1093/eurheartj/ehab364)

Changes in cardiac pacing and cardiac resynchronization therapy guideline recommendations since 2013 (4)

	2013	2021
	Class	
Management considerations		
In patients with MRI-conditional pacemaker systems[b], MRI can be performed safely following manufacturer instructions.	IIa	I
In patients with non–MRI-conditional pacemaker systems, MRI should be considered if no alternative imaging mode is available and if no epicardial leads, abandoned or damaged leads, or lead adaptors/extenders are present.	IIb	IIa

MRI = magnetic resonance imaging
[b]Combination of MRI conditional generator and lead(s) from the same manufacturer.

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy
(European Heart Journal 2021 – doi:10.1093/eurheartj/ehab364)

Κολπική Μαρμαρυγή

DECAAF II trial

Marruche NF et al. J Cardiovasc Electrophysiol . 2021 Apr;32(4):916-924.

DECAAF II trial

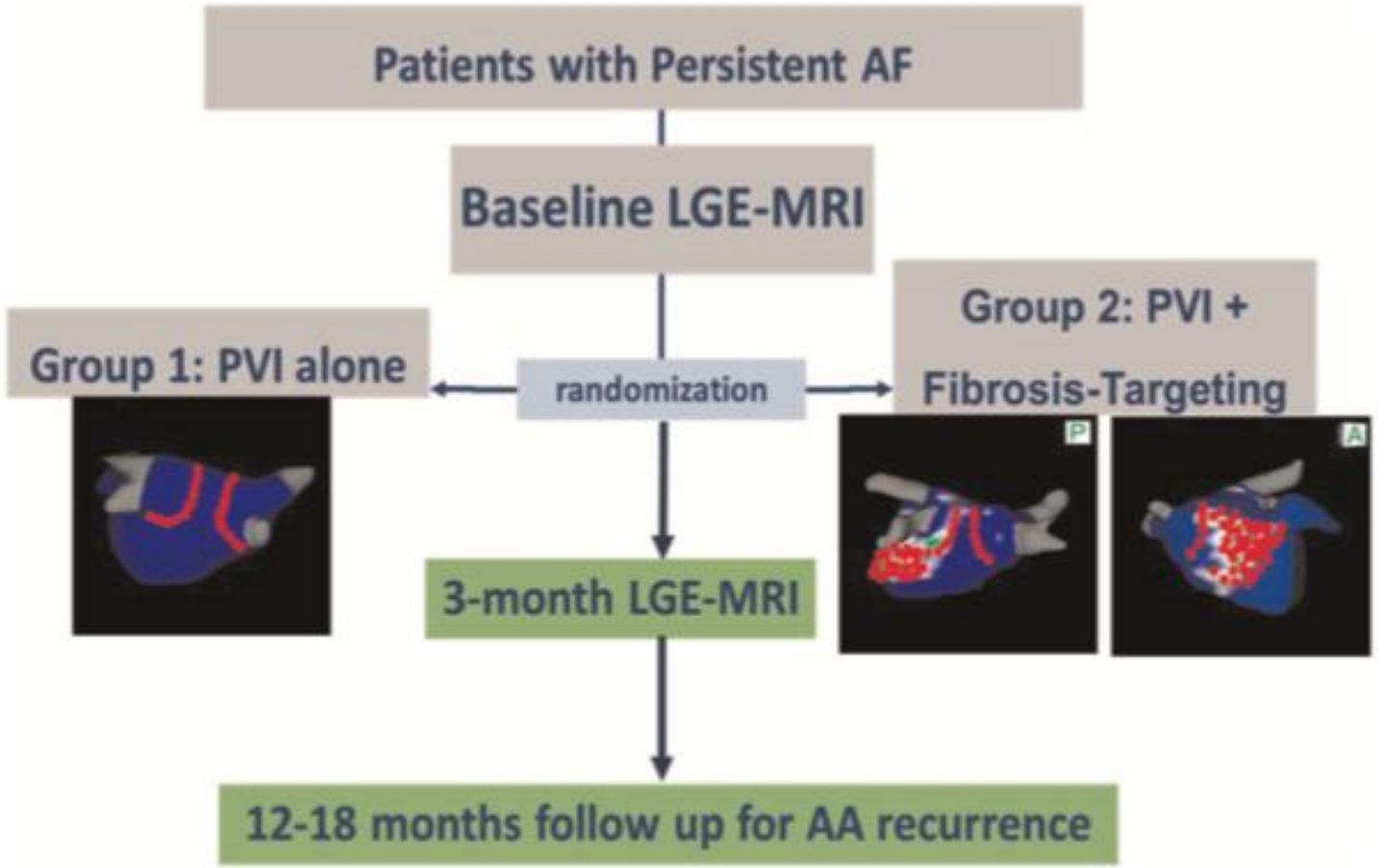


FIGURE 1 Study flow chart for the DECAAF II trial. AA, atrial arrhythmias; AF, atrial fibrillation; LGE-MRI, Late Gadolinium Enhancement Magnetic Resonance Image; PVI, pulmonary vein isolation

Marruche NF et al. J Cardiovasc Electrophysiol . 2021 Apr;32(4):916-924.

DECAAF II trial

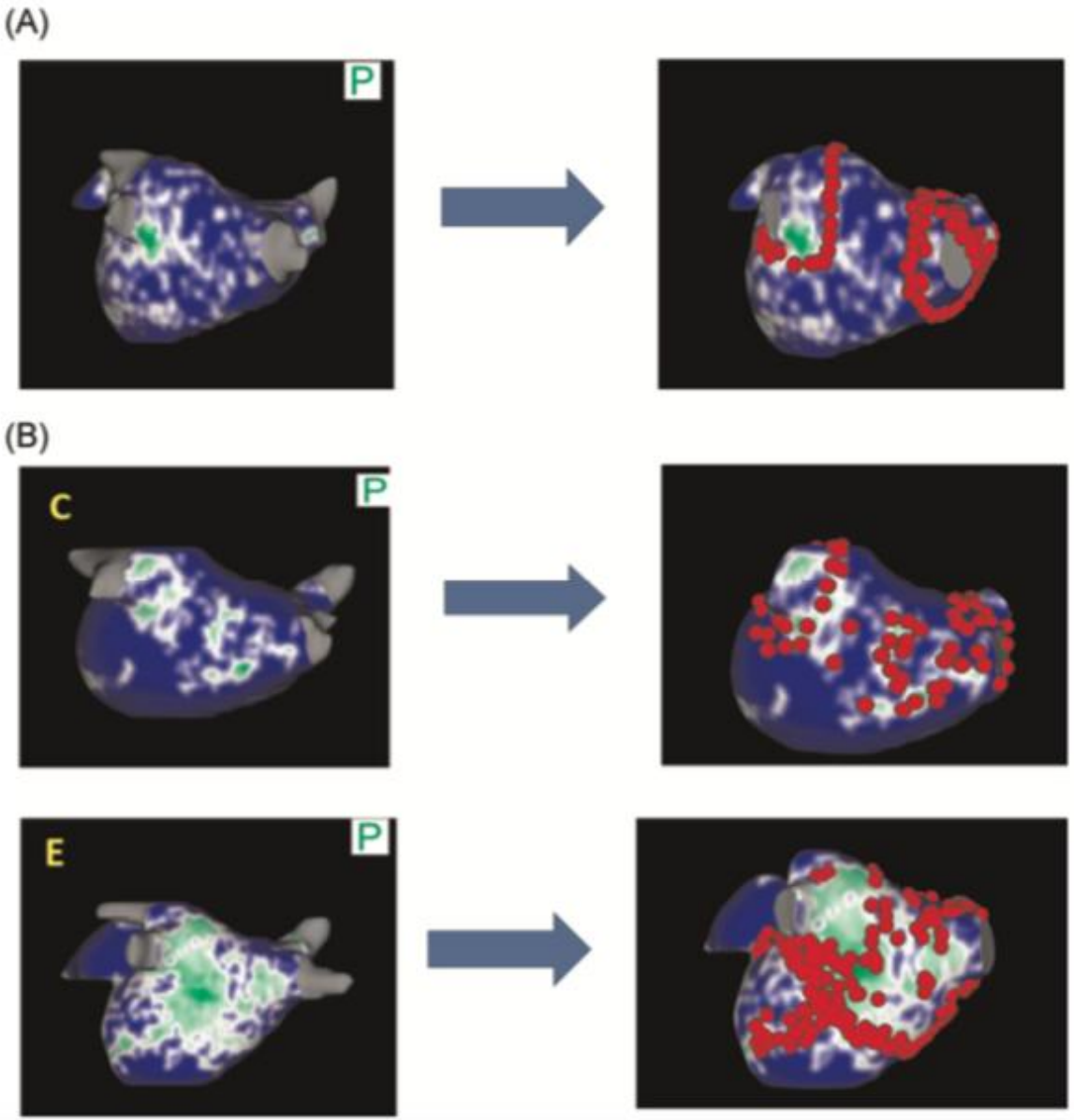


FIGURE 2 (A) Example of PVI ablation (Group 1). Red dots indicate catheter placement during procedure. (B) Example of fibrosis-guided ablation (covered **C** and encircled **E**). Red dots indicate catheter placement during procedure

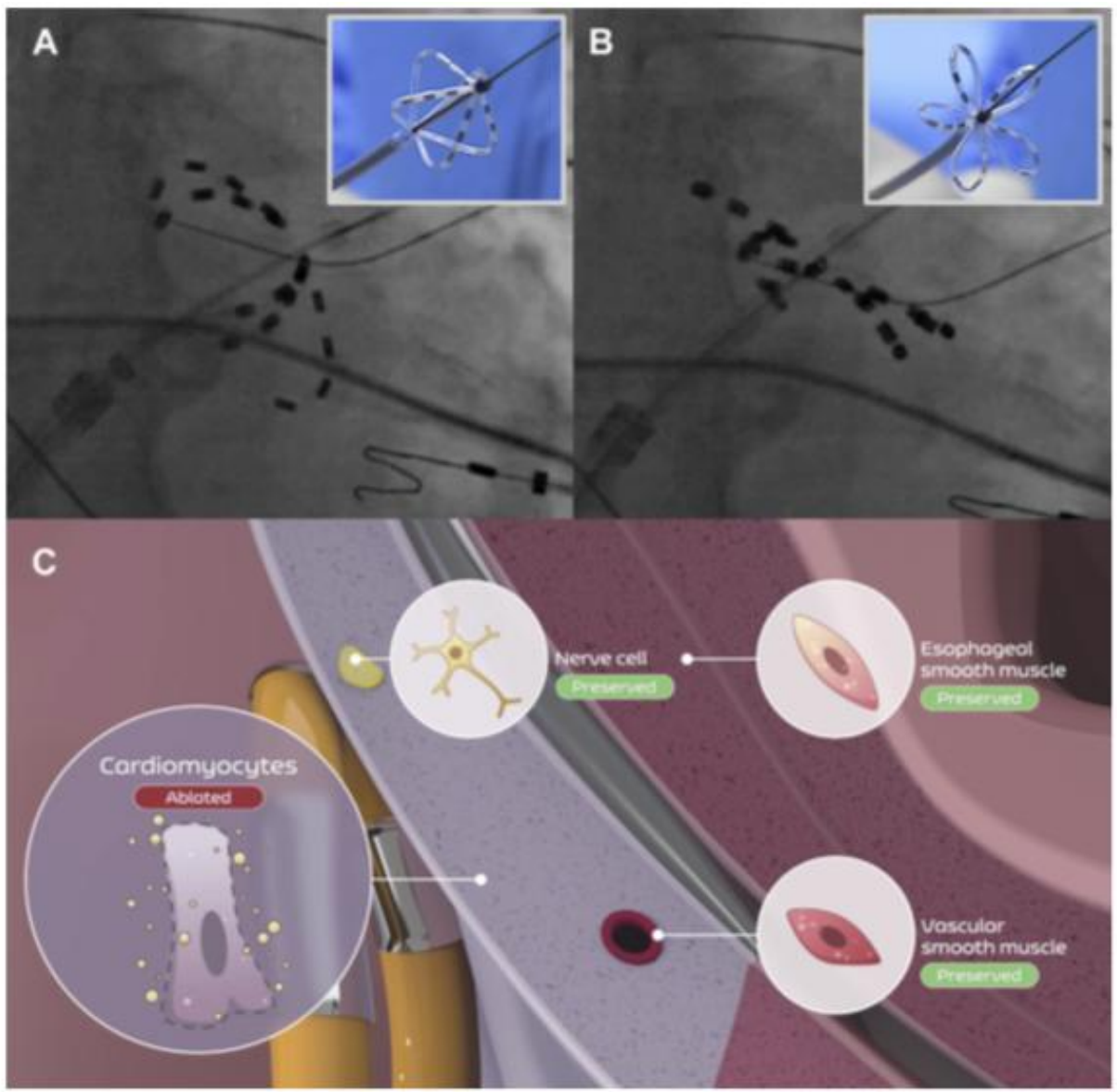
Marruche NF et al. J Cardiovasc Electrophysiol . 2021 Apr;32(4):916-924.

Pulsed Field Ablation of Paroxysmal Atrial Fibrillation

1-Year Outcomes of IMPULSE, PEFCAT, and PEFCAT II

Vivek Y. Reddy, MD,[a,b] Srinivas R. Dukkipati, MD,[b] Petr Neuzil, MD, PhD,[a] Ante Anic, MD,[c] Jan Petru, MD,[a] Moritoshi Funasako, MD,[a] Hubert Cochet, MD, PhD,[b] Kentaro Minami, MD,[a] Toni Breskovic, MD, PhD,[c] Ivan Sikiric, MD,[c] Lucie Sediva, MD,[a] Milan Chovanec, MD,[a] Jacob Koruth, MD,[b] Pierre Jais, MD[d]

Reddy VY et al. JACC Clin Electrophysiol . 2021 May;7(5):614-627.



(A) The ablation catheter is delivered over the wire and contains 5 splines, each containing 4 electrodes. Ablative energy is delivered from all electrodes. On fluoroscopy, the catheter is at the left superior pulmonary vein in basket configuration. **(B)** The catheter can also be deployed in a flower petal configuration. **(C)** Cardiomyocytes have some of the lowest pulsed field ablation thresholds required to induce necrosis. Accordingly, cardiomyocytes may be preferentially ablated, allowing sparing of neighboring tissue such as nerves, vessels, and esophagus.

Reddy VY et al. JACC Clin Electrophysiol . 2021 May;7(5):614-627.

APAF-CRT trial

Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.

ESC European Society of Cardiology

European Heart Journal (2021) **42**, 4731–4739
doi:10.1093/eurheartj/ehab569

FASTTRACK CLINICAL RESEARCH
Arrhythmias

AV junction ablation and cardiac resynchronization for patients with permanent atrial fibrillation and narrow QRS: the APAF-CRT mortality trial

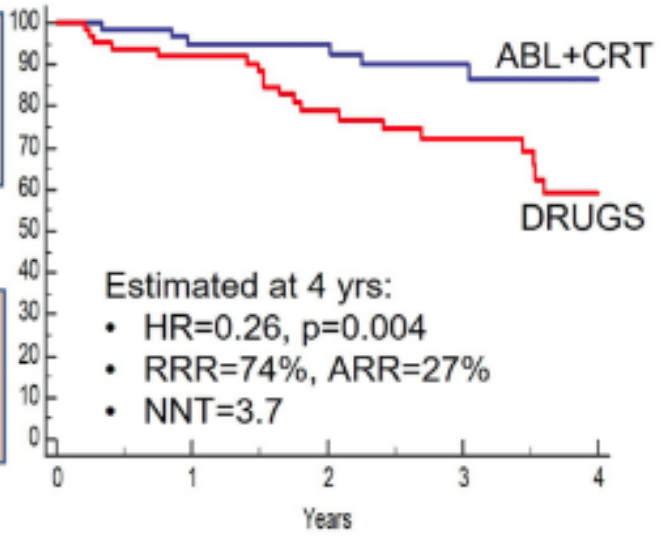
Michele Brignole [1,2]*, Francesco Pentimalli [3], Pietro Palmisano [4], Maurizio Landolina[5], Fabio Quartieri[6], Eraldo Occhetta[7], Leonardo Calò [8], Giuseppe Mascia [9], Lluis Mont[10], Kevin Vernooy [11], Vincent van Dijk[12], Cor Allaart[13], Laurent Fauchier [14], Maurizio Gasparini [15], Gianfranco Parati [2,16], Davide Soranna[17], Michiel Rienstra [18], and Isabelle C. Van Gelder[18]; for the APAF-CRT Trial Investigators†

Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.

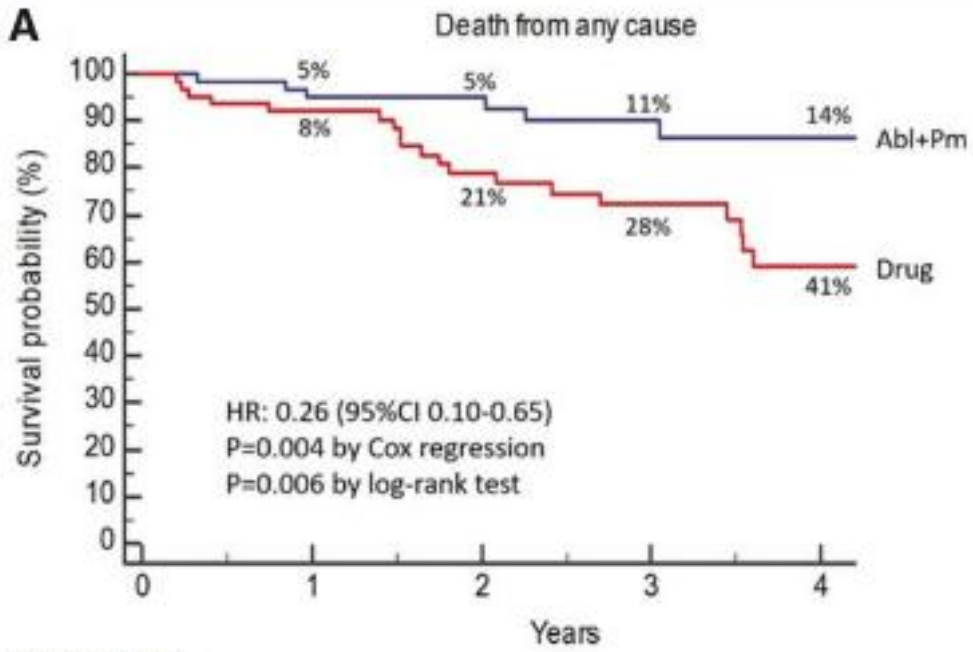
Graphical Abstract

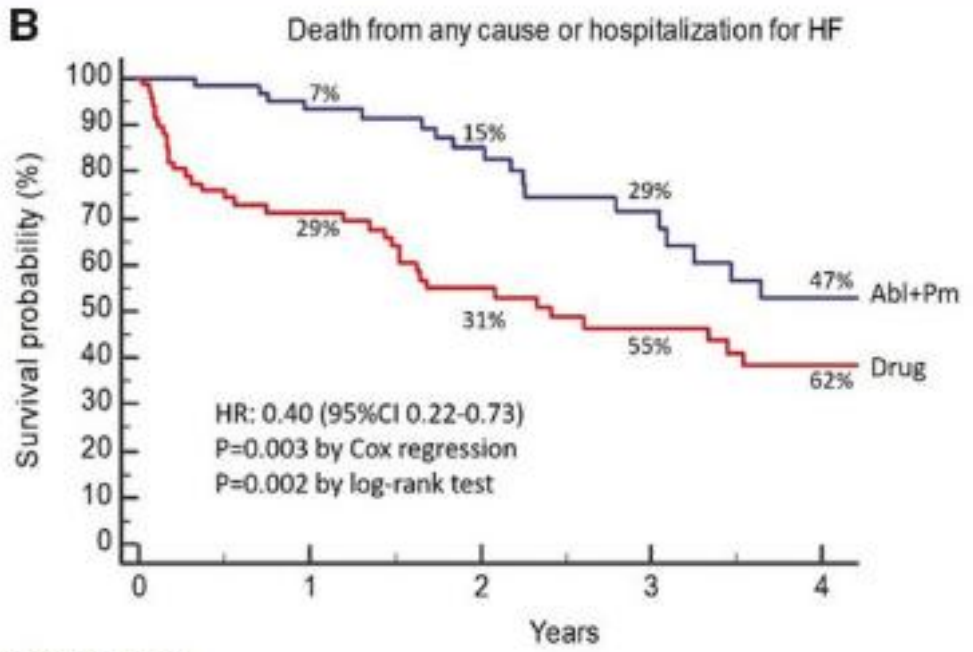
AV junction ablation and cardiac resynchronization for patients with permanent atrial fibrillation and narrow QRS: The APAF-CRT Mortality Trial. ***Brignole M et al.***

Trial population	Randomization	Optimization	Death from any cause (ITT analysis)
133 pts with: • Permanent AF • Narrow QRS • ≥1 HF hospitalization • Severe symptoms	**63** Rate control **ABL+CRT**	HR = **70** bpm	**11%** (7 pts)
	70 Rate control **DRUGS**	HR = **82** bpm	**29%** (20 pts)



Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.





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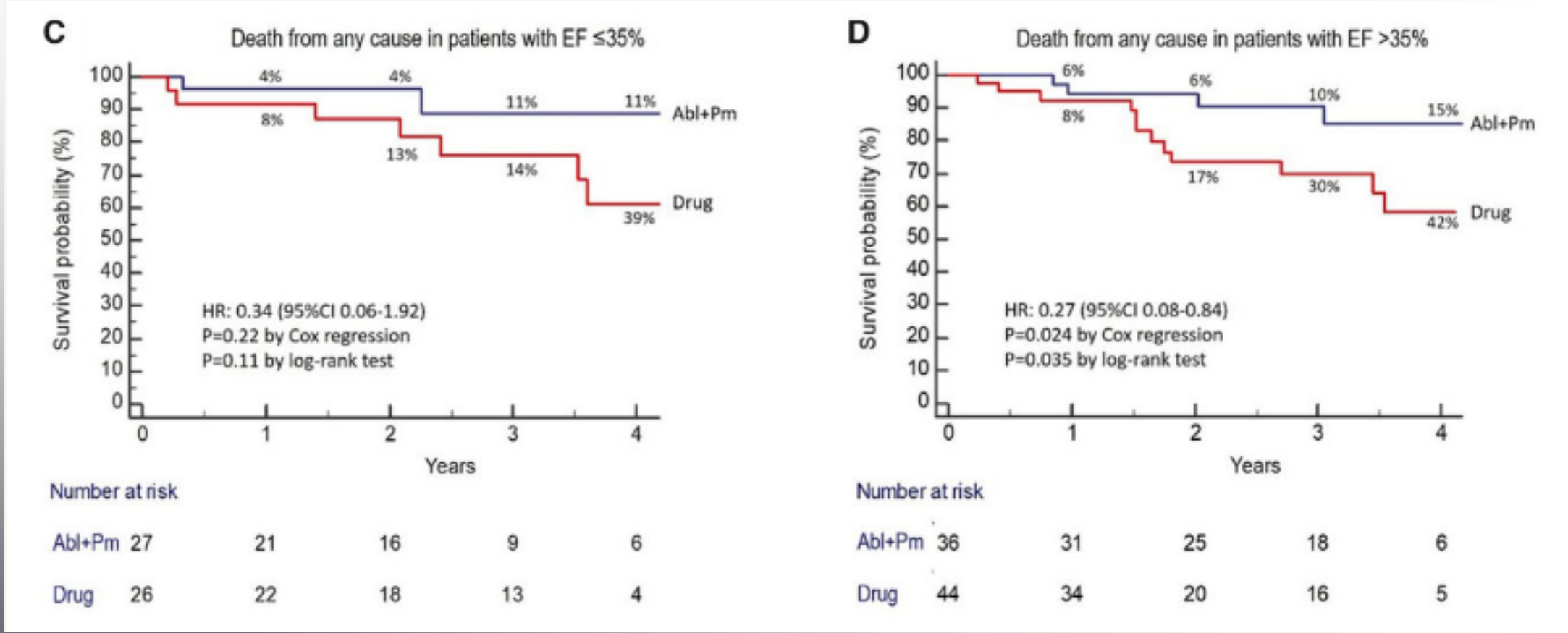

Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.

Υπερκοιλιακές Ταχυκαρδίες

Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation

DOI: 10.1111/pace.14322

PACE WILEY

ELECTROPHYSIOLOGY

Wenckebach cycle length: A novel predictor for AV block in AVNRT patients treated with ablation

Sofia Chatzidou MD[1] | Christos Kontogiannis MD[1] | Georgios Georgiopoulos MD[1,2] | Marinos Kosmopoulos MD[3] | Konstantinos Pateras PhD[4] | Michael Spartalis MD[3] | Kimon Stamatelopoulos MD[1] | Stelios Rokas MD[1]

S. Chatzidou et al. Pacing Clin. Electrophysiology 2021:44:1497-1503

Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation

- We retrospectively assessed a large series of patients in our clinic who have undergone RFCA for AVNRT the last 20 years

↓

- To identify electrophysiology indices , indicating propensity to AV block during RFCA of the slow pathway for the treatment of AVNRT

S. Chatzidou et al. Pacing Clin. Electrophysiology 2021:44:1497-1503

Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation

TABLE 1 Descriptive characteristics of our study's population according to the incidence of AV block

Parameter		AV block		
		No (n = 769)	Yes (n = 15)	*p*
Age, years		58.5±12.4	67.7±8.98	.001
Gender, female		419 (54.5%)	9 (60%)	.871
ERP-fast, ms		310 (290-320)	320 (290-320)	.536
AH interval, ms		110 (90-120)	120 (90-130)	.049
Wenckebach CL, ms		353 (333-400)	400 (375-462)	<.001
Tachycardia CL, ms		353 (324-375)	387 (333-414)	.01
Number of RF applications, counts		6 (5-6)	5 (3-7)	.270
Anatomical position, n(%)				
	Postero-septal	425 (55.27)	9 (60)	
	Middle-septal	252 (32.77)	4 (26.67)	
	Antero-septal	92 (11.96)	2 (13.33)	.882

p-value is derived from independent samples *t* test or nonparametric Kruskal-Wallis test for continuous variables and the chi-squared test for nominal variables.
Continuous variables are presented as mean±SD or median (25th to 75th percentile).
ERP-fast corresponds to the effective refractory period of the fast pathway.
Tachycardia CL corresponds to the rate of the atrioventricular nodal reentry tachycardia.
Abbreviations: AV, atrioventricular; ERP, effective refractory period; AH, atrium His; CL, cycle length; SD, standard deviation

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Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation

TABLE 2 Logistic (univariable and multivariable) and Firth logistic regression analysis for independent predictors of AV block incidence after AVNRT ablation

	Univariablelogistic regression		Multivariablelogistic regression		Firthlogistic regression	
Parameter	OR(95% CI)	*p*	OR(95% CI)	*p*	OR(95% CI)	*p*
Age, years	1.07(1.02-1.13)	.005	1.05(0.995-1.11)	.073	1.05(0.993-1.11)	.090
Gender, female	0.798(0.281-2.26)	.672	0.860(0.295-2.51)	.783	0.893(0.321-2.48)	.828
ERP-fast, ms	1.01(0.982-1.03)	.537	0.982(0.952-1.01)	.235	0.981(0.952-1.01)	.207
AH interval, ms	1.03(1.00-1.07)	.049	1.03(0.994-1.07)	.104	1.03(0.993-1.07)	.116
Wenckebach CL, ms	*1.13(1.06-1.21)	<.001	*1.10(1.02-1.19)	.017	*1.10(1.02-1.19)	.014
tachycardia CL, ms	1.017(1.01-1.03)	.004	1.01(0.991-1.02)	.372	1.01(0.991-1.02)	.371

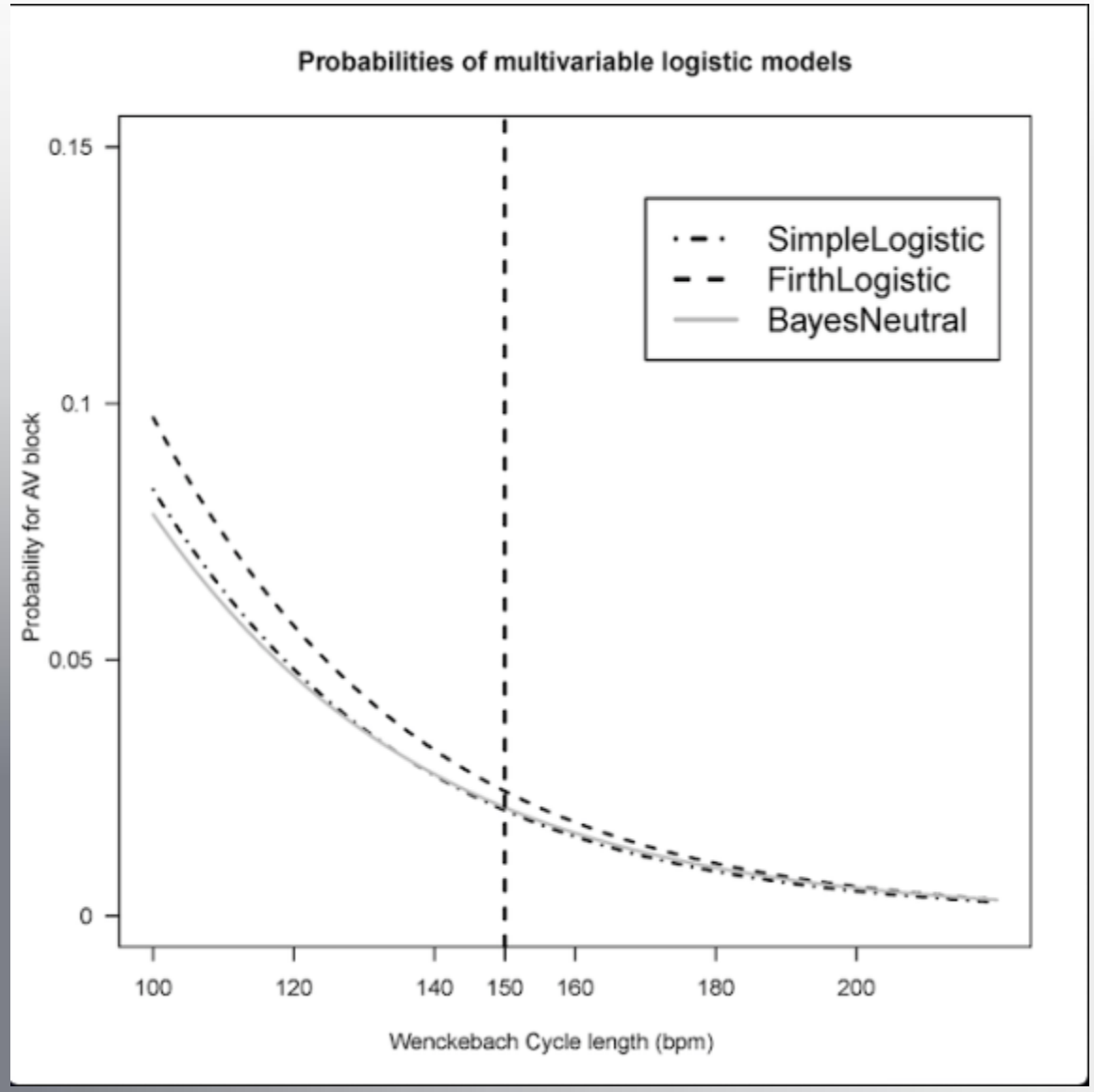
ERP-fast corresponds to the effective refractory period of the fast pathway tachycardia CL corresponds to the cycle length of the atrioventricular nodal reentry tachycardia.

* OR for 10ms longer Wenckebach cycle length of the fast pathway at conduction shift to the slow pathway.

Abbreviations: AV, atrio-ventricular; ERP, effective refractory period; AH, atrium His; CL, cycle length; OR, odds ratio; CI, confidence intervals

S. Chatzidou et al. Pacing Clin. Electrophysiology 2021:44:1497-1503

Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation



S. Chatzidou et al. Pacing Clin. Electrophysiology 2021:44:1497-1503

Wenckebach cycle length: a novel predictor for Avblock in AVNRT patients treated with ablation

Increased pre-procedural WCL was associated with a high risk for AV block after catheter ablation treatment for AVNRT.

These findings suggest that this readily available EPS-derived parameter may be a **novel marker of risk** for severe complications in these patients.

S. Chatzidou et al. Pacing Clin. Electrophysiology 2021:44:1497-1503

Κοιλιακές αρρυθμίες – αιφνίδιος καρδιακός θάνατος

EP CASE EXPRESS

doi:10.1093/europace/euab006

Cryoablation of stellate ganglion for the management of electrical storm: the first reported case

Sofia Chatzidou[1], Christos Kontogiannis [1]*, Konstantinos Tampakis[1], Eleni Episkopou[2], Ioannis Kanakakis[1], and Ioannis Paraskevaidis[1]

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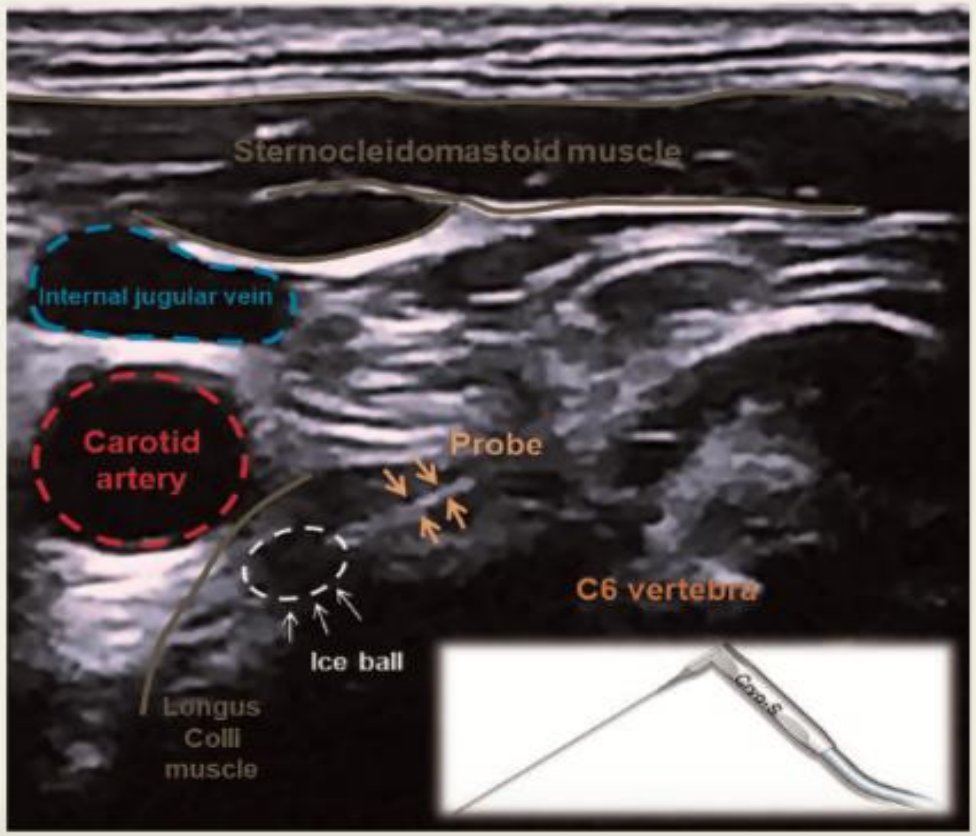
A 64-year-old man with ischaemic cardiomyopathy, cardiac resynchronization therapy with defibrillator and previous ventricular tachycardia (VT) ablation presented due to electrical storm (ES) and recurrent discharges from the device. He was under mexiletine and carvedilol, as he discontinued amiodarone due to thyrotoxicosis.

Intravenous esmolol and xylocaine, reprogramming of the device and general anaesthesia mildly reduced VT episodes and shocks. Left stellate ganglion blockade (LSGB) with continuous infusion of 0.2% ropivacaine terminated ES without completely ending VT events (five episodes in following 7 days).

Considering the response to LSGB, cryoneurolysis (CRYO-S Painless, Metrum) of the left stellate ganglion (LSG) was attempted with ultrasound guidance to achieve long-term autonomic modulation (*Figure*). The needle was inserted at the C6 level to reach the prevertebral fascia on the top of Longus Colli muscle and one cryoapplication of 3 min was delivered (−78°C). No procedural complications were observed except transient Horner syndrome. Patient

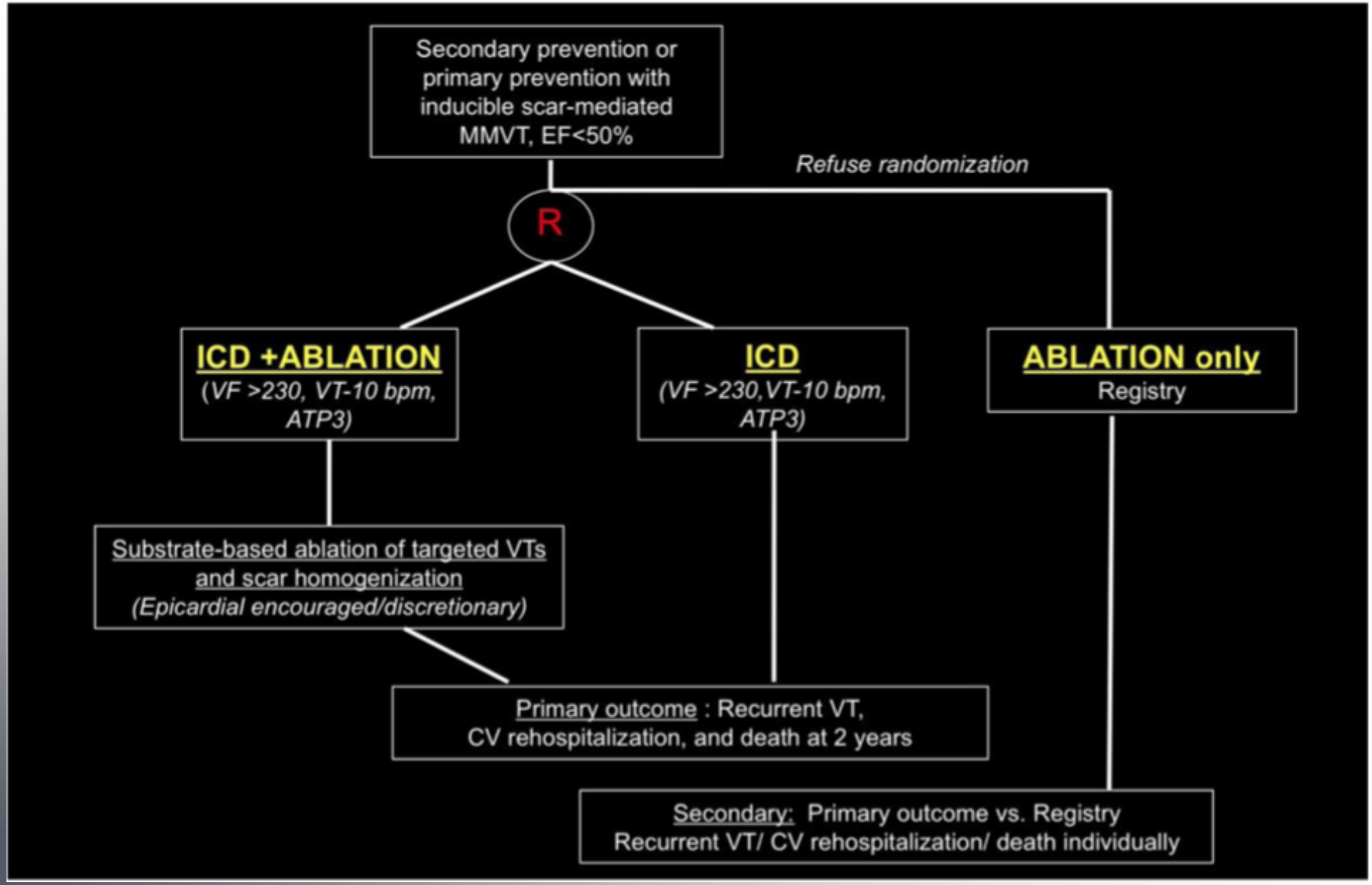


Chatzidou S et al. Europace. 2021 Jul 18;23(7):1105.

Pan-Asia United States PrEvention of Sudden Cardiac Death Catheter Ablation Trial (PAUSE-SCD): rationale and study design

Minglong Chen[1] · Shulin Wu[2] · Yan Yao[3] · Jian Jiang[4] · Chenyang Jiang[5] · Yumei Xue[2] · Xianzhang Zhan[2] · Hongde Hu[4] · Guosheng Fu[5] · Kai Gu[1] · Hailei Liu[1] · Ligang Ding[3] · Ruhong Jiang[5] · Fa-Po Chung[6] · Yenn-Jiang Lin[6] · Yuichi Hori[7] · Yuki Komatsu[8] · Akiko Ueda[9] · Kyoko Soejima[9] · Young Hoon Kim[10] · Akihiko Nogami[8] · Shiro Nakahara[7] · Shih-Ann Chen[6] · Roderick Tung[11] · on behalf of the PAUSE-SCD investigators

Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.



Brignole M,et alEur Heart J. 2021 Dec 7;42(46):4731-4739.

COVID-19 και αρρυθμίες

COVID-19 και αρρυθμίες

- Συχνές κολπικές αρρυθμίες που σχετίζονται με αυξημένη θνητότητα
- Απρόσφορη φλεβοκομβική ταχυκαρδία που πιθανόν να σχετίζεται με τη μείωση της δράσης του παρασυμπαθητικού συστήματος
- Μηχανισμοί που ενοχοποιούνται στην εμφάνιση αρρυθμιών:

➢ Υποξία από ΠΕ

➢Μυοκαρδίτιδα – ίνωση

➢Μυοκαρδιακή ισχαιμία

➢Ηλεκτρολυτικές διαταραχές

➢Ανεπιθύμητες δράσεις φαρμάκων (βραδυκαρδία, παράταση QT)

Ευχαριστώ