Azərbaycan Kardiologiya Cəmiyyəti

ATRIAL FIBRIULLATION : CAUSE, CONSEQUENCE AND CURE OF HEART FAILURE

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BAKU HEALTH CENTER

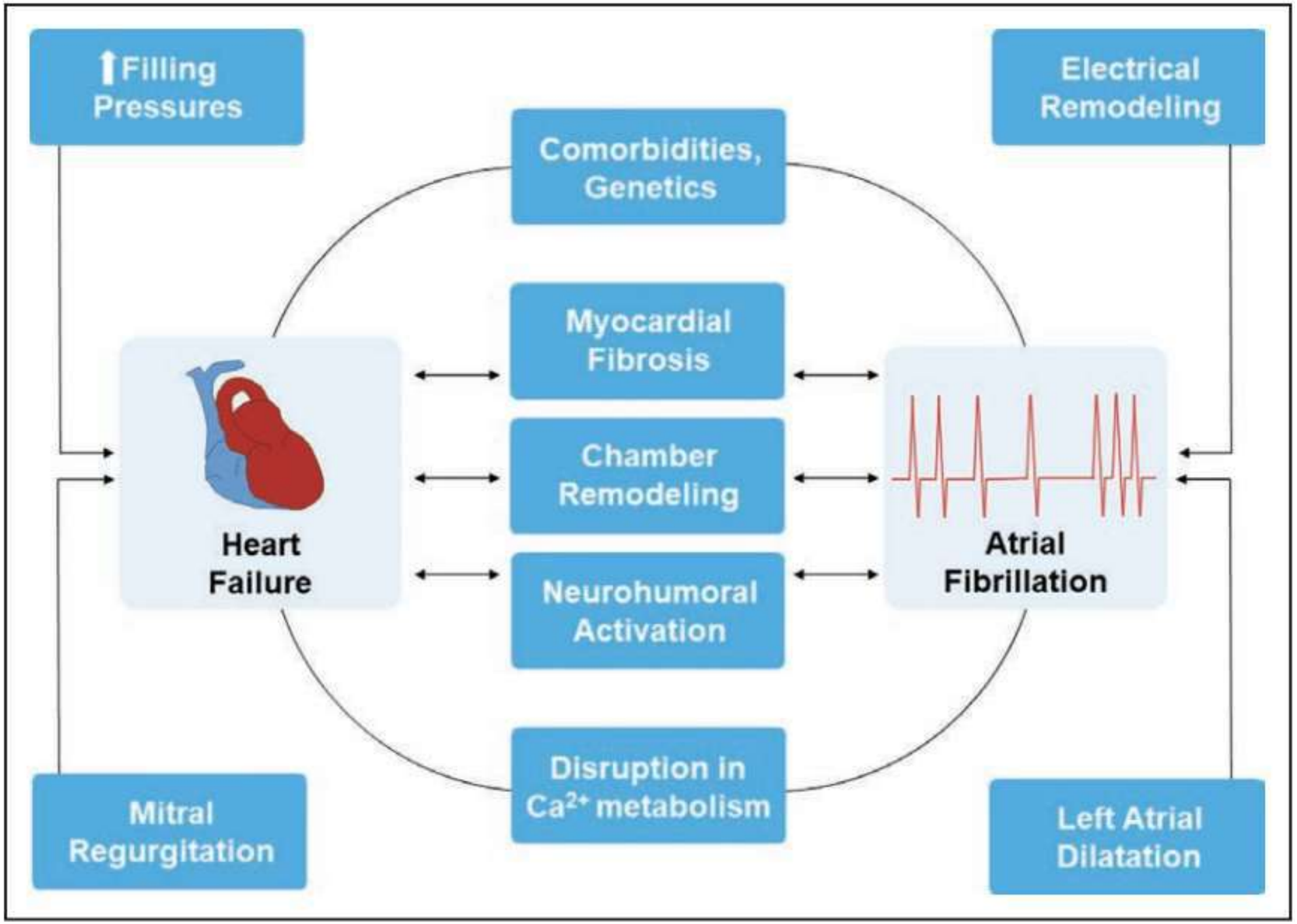
HEART FAILURE & ATRIAL FIBRILLATION

- Both conditions are closely related.
- 40% of patients with heart failure have AF
- 40 % of patinst with AF have heart failure
- Meta-analysis data of >50 000 patients have demonstrated that in patients with heart failure, AF is associated with 40% higher odds of death among patients included in randomized trials and 14% higher odds of death in patients in observational studies.

HEART FAILURE & ATRIAL FIBRILLATION

- 25-39% of patients with HFrEF have AF.
- 49.8% of patients with HFpEF have AF.
- Both conditions increase mortality of eachother by 2-4 fold.
- NYHA II - %10 have AF
- NYHA IV- %50 have AF
- Only 1/3 of patients with HF have indication for CRT.

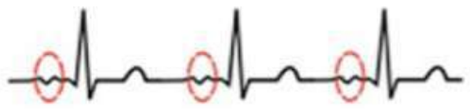
COMMON MECHANISM OF HF&AF



AF PATIENT

Rapid rate

Irregular rhythm



Ineffective atrial contraction

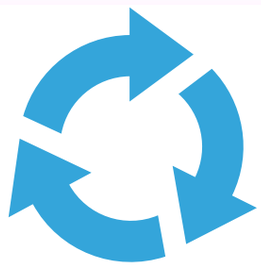
CLINICAL GUIDELINE

Rate control

- Beta-blockers, digoxin, etc
- 'Ablate and pace'

Rhythm control

- AADs
- Catheter ablation



MITRAL REGURGITATION + DECREASED LV FUNCTION

WHAT WE HAVE TODAY?

1. GMDT
2. CATHETER ABLATION
3. SURGICAL ABLATION
4. HYBRID ABLATION
5. AVJ ABLATION + CRT OR LBBB PACING OR LOT-CRT

DO NOT FORGET TO THINK ABOUT AIC (ARRHYTHMIA INDUCED CARDİOMYOPATHY).

SHOULD WE FIRST ABLATE?

ESC European Society of Cardiology

European Heart Journal (2021) **00**, 1–12
doi:10.1093/eurheartj/ehab593

FASTTRACK CLINICAL RESEARCH
Arrhythmias

Systematic, early rhythm control strategy for atrial fibrillation in patients with or without symptoms: the EAST-AFNET 4 trial

2020 European Society of Cardiology/European Association of Cardio-Thoracic Surgery AF guidelines[33] also support CA as first-line therapy for patients with HFrEF with the following recommendations:

- To reverse LV dysfunction in patients with AF when tachycardia-induced cardiomyopathy is highly probable, independently of their symptom status (Class I; Level of Evidence B)
- Should be considered in selected patients with AF and HFrEF to improve survival and to reduce HF hospitalization (Class IIa; Level of Evidence B)

EAST – AFNET 4 trial population
2789 patients with atrial fibrillation diagnosed within a year prior to randomization
and cardiovascular conditions approximating a CHA_2DS_2VASc score of ≥ 2
2633 with known AF-related symptoms (EHRA score) at baseline
randomized to Early Rhythm Control or Usual Care

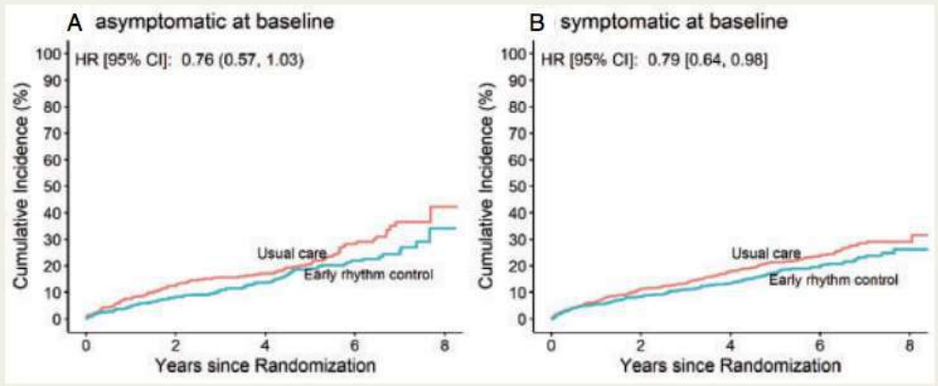
Early Rhythm Control in all patients (n=1305/2633)		Usual Care, including symptom-directed rhythm control therapy (n=1328/2633)	
Asymptomatic at baseline (n=395)	**Symptomatic** at baseline (n=910)	**Asymptomatic** at baseline (n=406)	**Symptomatic** at baseline (n=922)

No difference in treatment pattern between asymptomatic and symptomatic patients.
Excellent symptom control in both randomized groups at two years.

Ca. 1/4 treated with AF ablation and 3/4 treated with antiarrhythmic drugs at 2 years

Ca. 8% treated with AF ablation and 9% treated with antiarrhythmic drugs at 2 years

Similar reduction of cardiovascular death, stroke, or hospitalisation for heart failure or acute coronary syndrome in symptomatic and asymptomatic patients



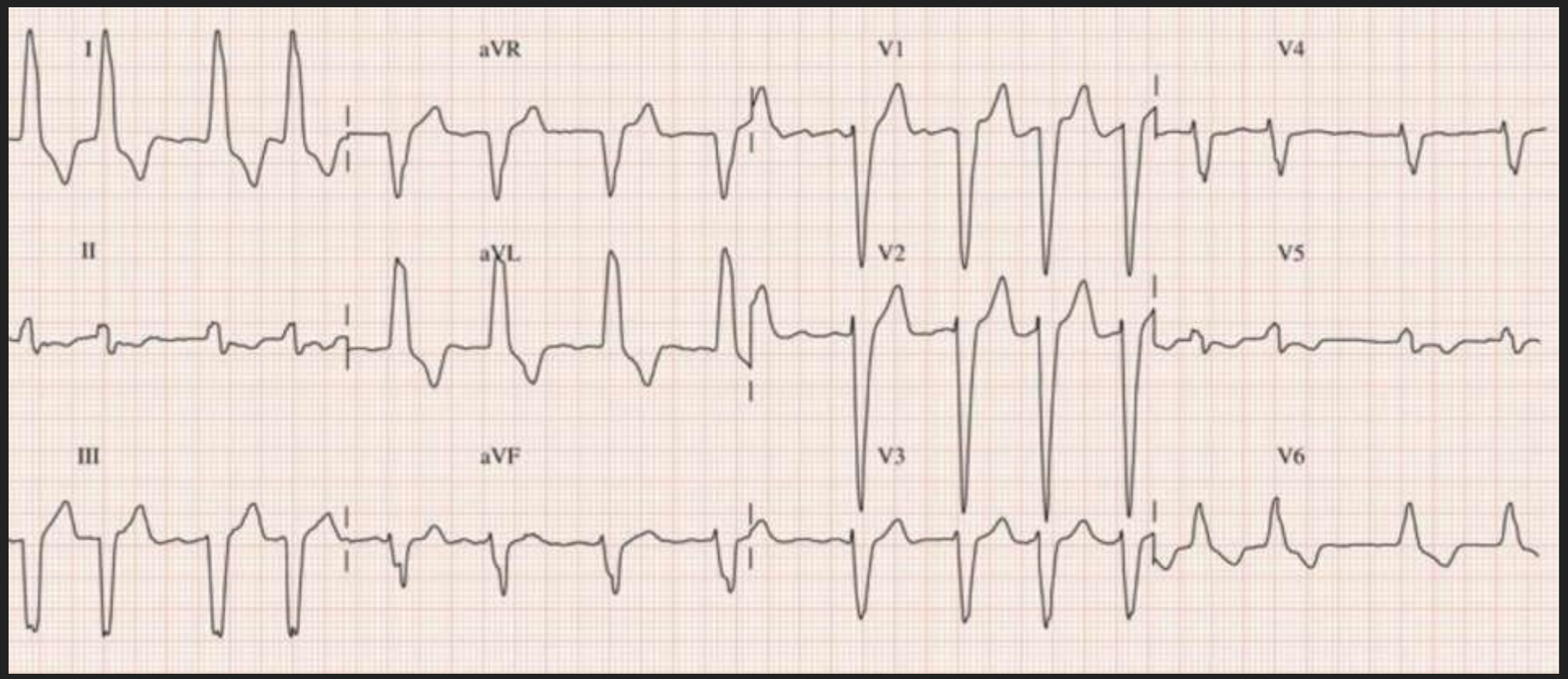
Our findings support the systematic, early initiation of rhythm control therapy in asymptomatic patients with atrial fibrillation and concomitant cardiovascular conditions.

WHAT IS THE PRICE?

Stroke	3.9% (n=1)[10]; 0.3% (n=3)[61]
Pericardial effusion/ tamponade	3.9% (n=1, needed pericardiocentesis)[10]; 0.98% (n=1)[8]; 1.7% (n=3, 1 needed pericardiocentesis)[9]; 0.8% (n=8)[61]; 1.5% (n=1)[59]
Groin hematoma or groin bleeding needing transfusion	1.96% (n=2)[8]; 3% (n=1, needed transfusion)[11]; 1.7% (n=3, needed transfusion)[9]; 2.3% (n=23)[61]; 2.9% (n=2)[59]
Atrioesophageal fistula	1.5% (n=1)[59]
Postprocedure pneumonia	3% (n=1)[11]; 1.7% (n=3)[9]
Other	Cardiogenic shock (1.5%, n=1), pleural effusion (1.5%, n=1), damage of ICD system (1.5%, n=1), suspected pericarditis (1.5%, n=1)[59]

1. GROUP - WIDE QRS
2. GROUP - NARROW QRS

WHICH ONE MAKES YOU MORE HAPPY IN A PATIENT WITH HF?



Patient with heart failure, atrial fibrillation and electrical dyssynchrony

- Guideline-directed medical therapy
- Stroke Prevention
- Lifestyle Modification

Consider early AF ablation in patients with suspected tachyarrhythmia-induced cardiomyopathy

Assess for CRT:

Class IIa indication for patients with AF, LVEF ≤35% on GDMT if the patient meets CRT criteria and a strategy to ensure near 100% biventricular pacing is in place[14,15]

Reassess Post CRT

- CRT response
- Rate control and HF medications (further up-titration post CRT)
- Biventricular pacing percentage
- AF burden
- Symptoms related to AF
- CRT programming (rate response, algorithms to optimize CRT delivery)

Suboptimal biventricular pacing?
(Caution with overestimation on conventional device counters)

YES

NO

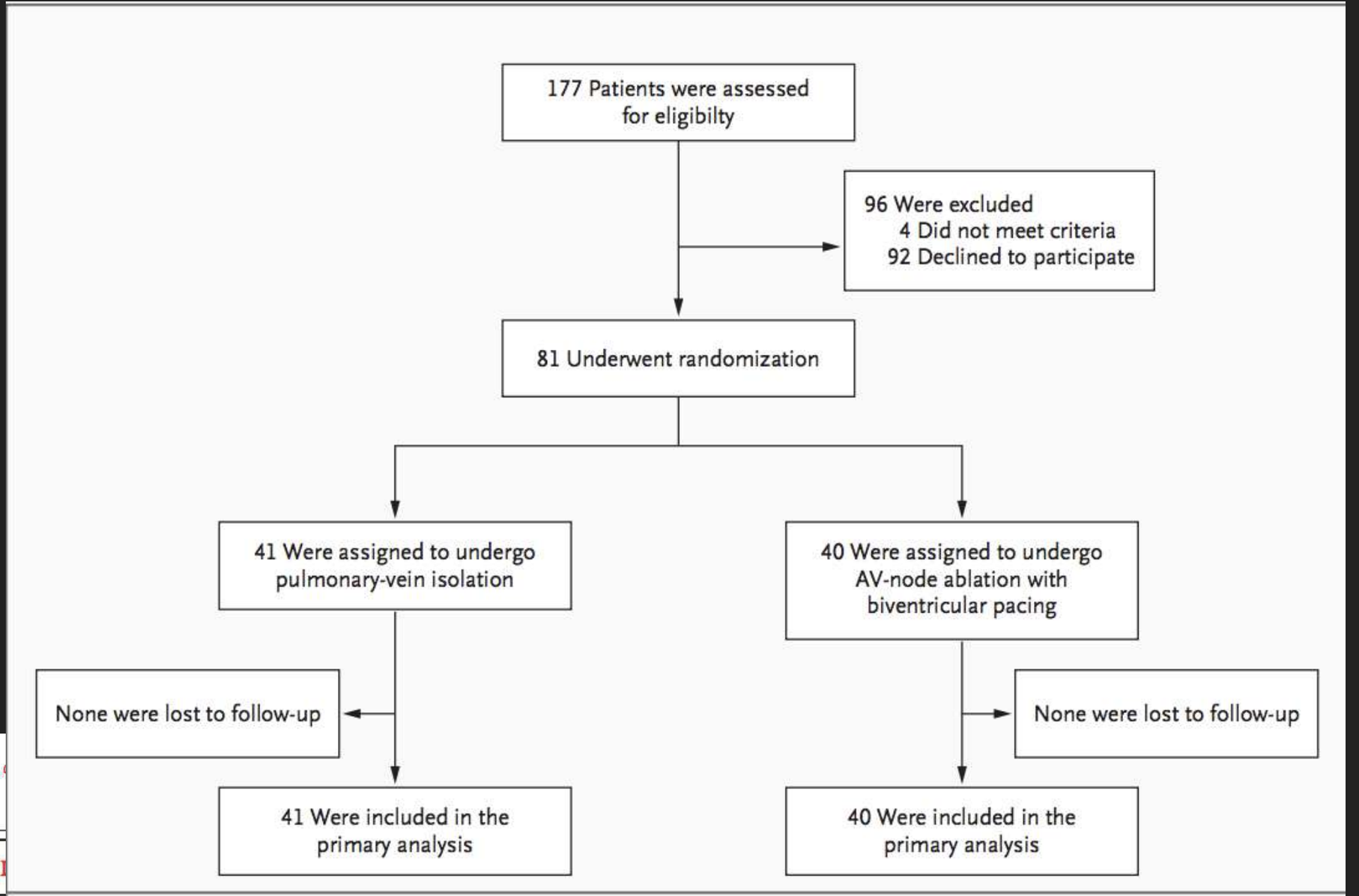
MONITOR
Consider AF ablation or AAD in patients with symptomatic paroxysmal or persistent AF

Rhythm control (AF ablation / AAD) vs Rate control (AV node ablation)

Consider procedural risk and likelihood of success of AF ablation
(Patient age / co-morbidities, AF burden, AF duration, LA remodeling)

The NEW ENGLAND JOURNAL

ORIGINAL ARTICL



Pulmonary-Vein Isolation for Atrial Fibrillation in Patients with Heart Failure

Mohammed N. Khan, M.D., Pierre Jaïs, M.D., Jennifer Cummings, M.D., Luigi Di Biase, M.D., Prashanthan Sanders, M.D., David O. Martin, M.D., Josef Kautzner, M.D., Steven Hao, M.D., Sakis Themistoclakis, M.D., Raffaele Fanelli, M.D., Domenico Potenza, M.D., Raimondo Massaro, M.D., Oussama Wazni, M.D., Robert Schweikert, M.D., Walid Saliba, M.D., Paul Wang, M.D., Amin Al-Ahmad, M.D., Salwa Beheiry, M.D., Pietro Santarelli, M.D., Randall C. Starling, M.D., Antonio Dello Russo, M.D., Gemma Pelargonio, M.D., Johannes Brachmann, M.D., Volker Schibgilla, M.D., Aldo Bonso, M.D., Michela Casella, M.D., Antonio Raviele, M.D., Michel Haïssaguerre, M.D., and Andrea Natale, M.D., for the PABA-CHF Investigators*

Table 1. Baseline Characteristics of the Patients.*

Characteristic	Pulmonary-Vein Isolation (N=41)	AV-Node Ablation with Biventricular Pacing (N=40)
Age (yr)	60±8	61±8
Male sex (%)	95	88
Coronary artery disease (%)	73	68
Type of atrial fibrillation (%)		
Paroxysmal	49	54
Persistent or long-standing persistent	51	46
Duration of atrial fibrillation (yr)	4.0±2.4	3.9±2.8
Ejection fraction (%)	27±8	29±7
Left atrial internal diameter (cm)	4.9±0.5	4.7±0.6
Heart rate (beats/min)	80±12	82±11
Duration of QRS interval (msec)	92±9	90±10
Distance on 6-minute walk test (m)	269±54	281±44
MLWHF score†	89±12	89±11

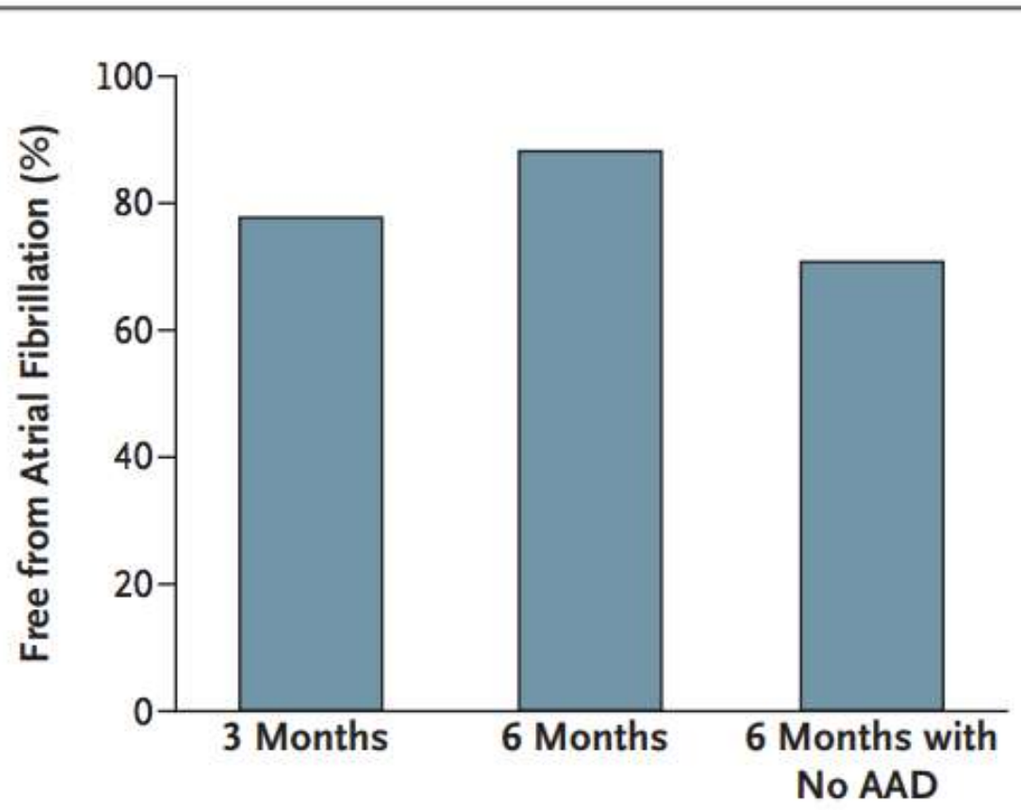
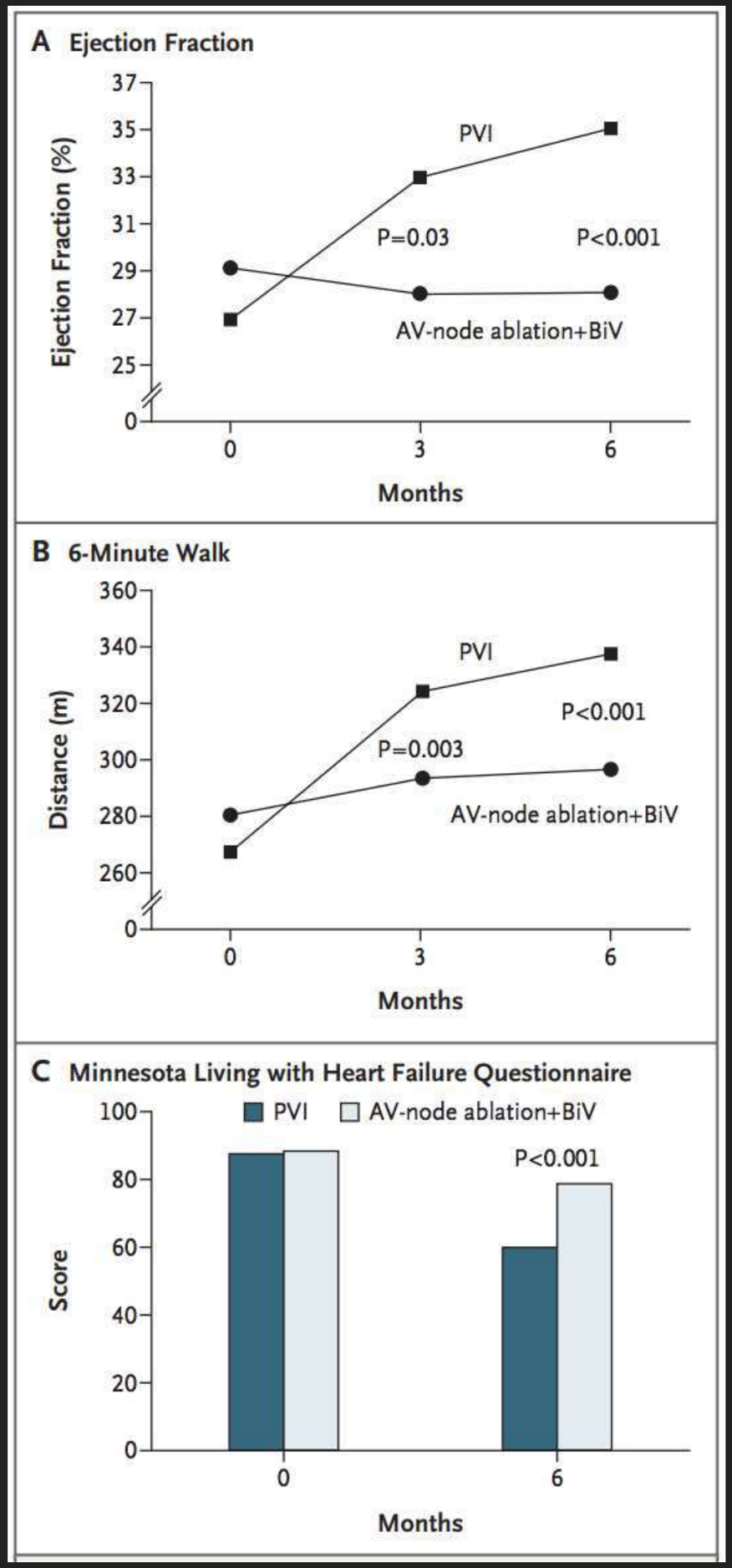


Figure 2. Freedom from Atrial Fibrillation in Patients Undergoing Pulmonary-Vein Isolation with or without Antiarrhythmic Drugs (AAD).



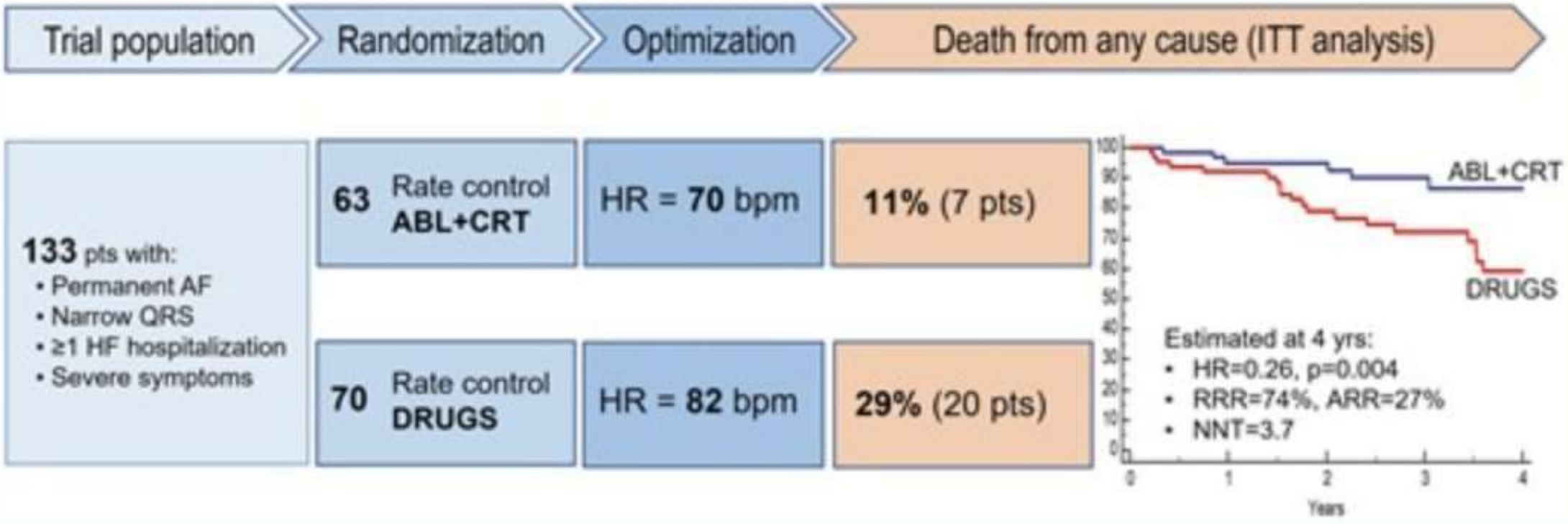
EDITOR'S CHOICE

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

Michele Brignole ✉, Francesco Pentimalli, Pietro Palmisano, Maurizio Landolina, Fabio Quartieri, Eraldo Occhetta, Leonardo Calò, Giuseppe Mascia, Lluis Mont, Kevin Vernooy ... Show more

Author Notes

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



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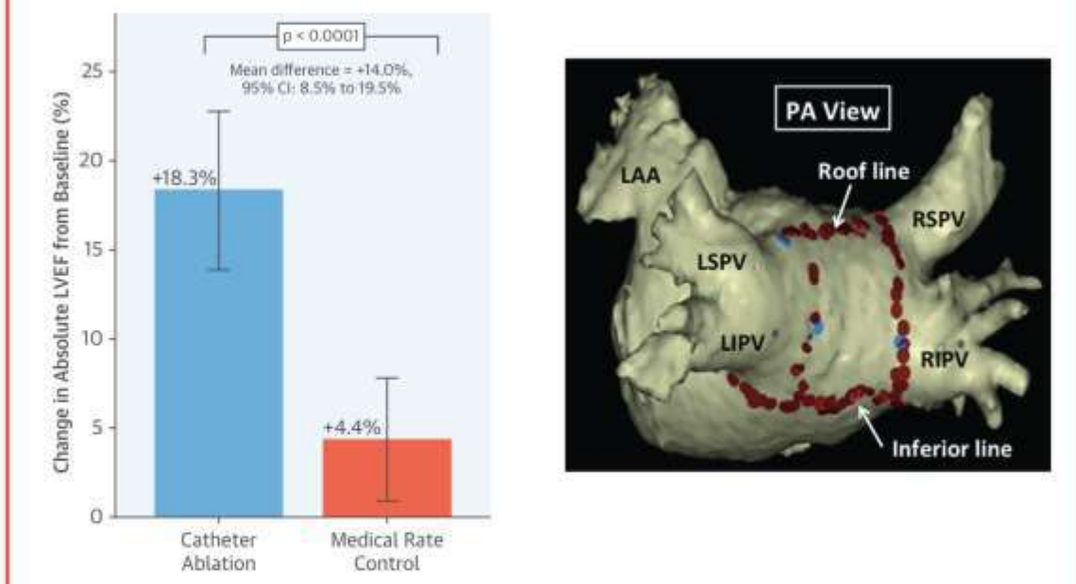
http://dx.doi.org/10.1016/j.jacc.2017.08.041

ORIGINAL INVESTIGATIONS

Catheter Ablation Versus Medical Rate Control in Atrial Fibrillation and Systolic Dysfunction

The CAMERA-MRI Study

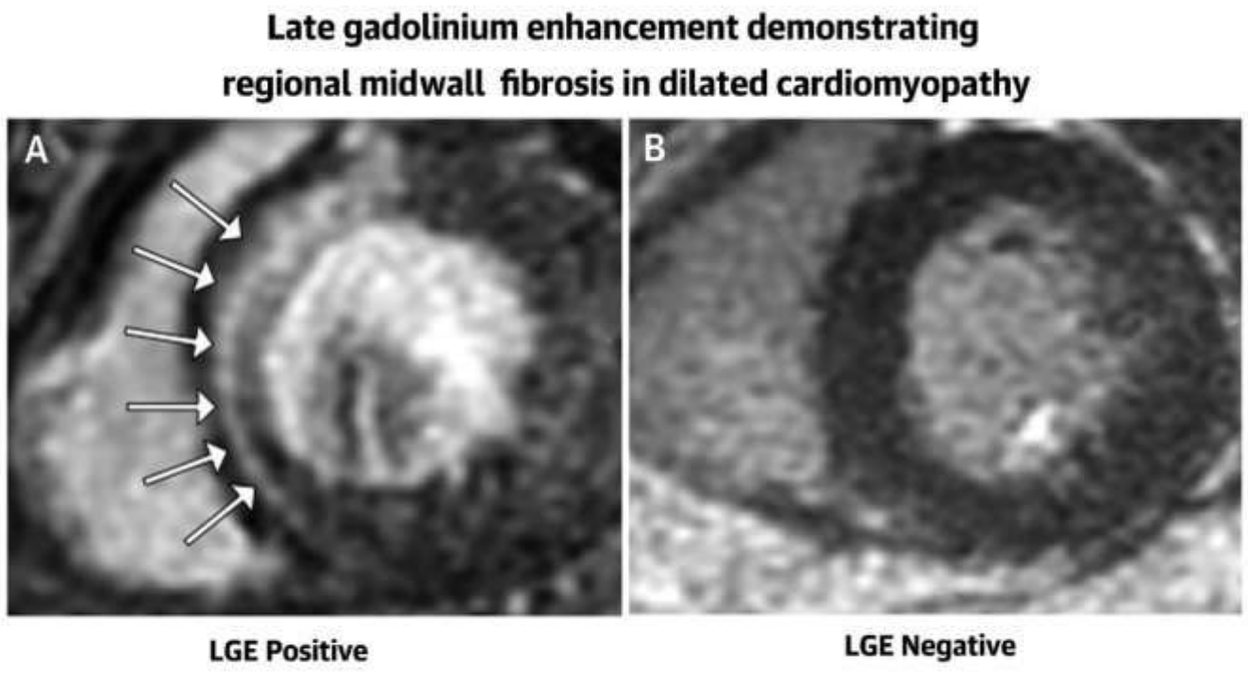
CENTRAL ILLUSTRATION Change in Absolute LVEF From Baseline According to Treatment Arm



Prabhu, S. et al. J Am Coll Cardiol. 2017;70(16):1949-61.

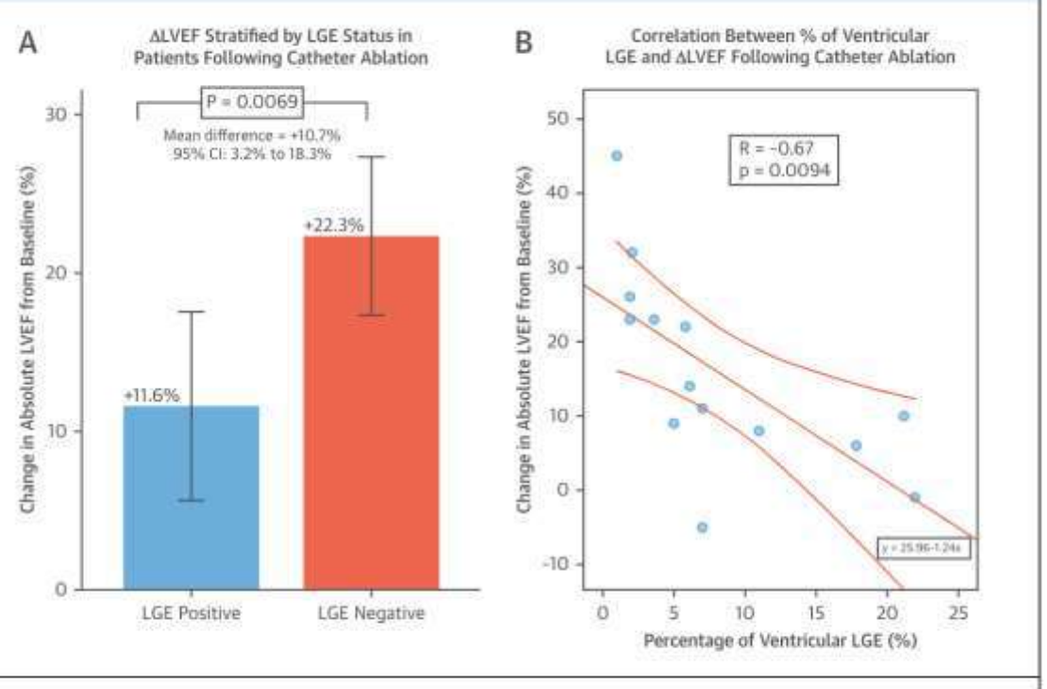
(A) Graph illustrating the primary endpoint: left ventricular ejection fraction (LVEF) change from baseline in catheter ablation versus the medical rate control group on an intention-to-treat analysis. **Bars** represent 95% confidence intervals (CI). **(B)** An integrated computed tomography image depicting a typical ablation strategy used in this study. Posterior wall or "box isolation" involves the addition of a roof line and inferior line between the superior and inferior aspects of the wide encirclement ring to achieve electrical isolation of the posterior wall. LAA = left atrial appendage; LIPV = left inferior pulmonary vein; LSPV = left superior pulmonary vein; PA = posterior/anterior; RIPV = right superior pulmonary vein; RSPV = right superior pulmonary vein.

FIGURE 2 MRI-Detected Midwall Ventricular Fibrosis in Idiopathic Cardiomyopathy



An example of midwall fibrosis as detected by the presence of late gadolinium enhancement (LGE) on CMR. **Panel A** shows a short-axis view demonstrating midwall fibrosis highlighted in **white** along the inter-ventricular septum **(arrows)**. **Panel B** shows a patient with no detectable LGE. Abbreviations as in Figure 1.

FIGURE 3 LGE and Change in Absolute LVEF



(A) Graph illustrating the LVEF change from baseline in those patients undergoing catheter ablation stratified according to the presence or absence of LGE on CMR. **Bars** represent 95% confidence intervals (CI). **(B)** Correlation between the percentage of ventricular LGE and percent change in LVEF from baseline as determined by CMR. Abbreviations as in Figures 1 and 2.

IS AF PROARRHYTHMIC ITSELF?

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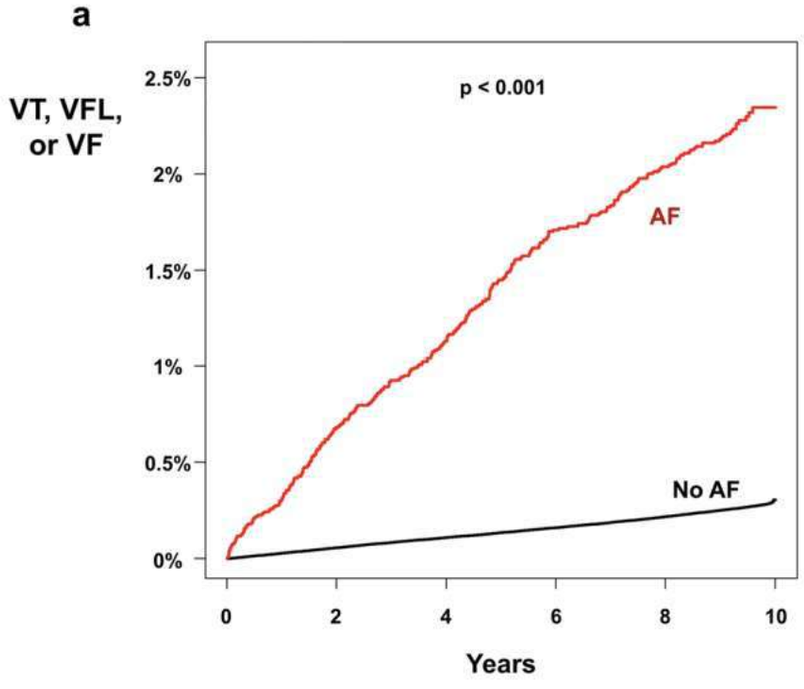
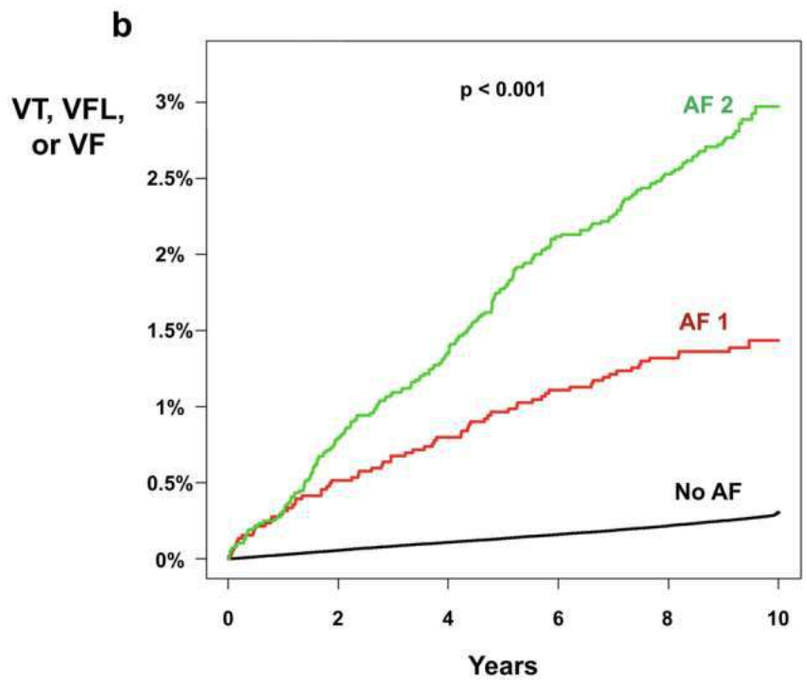
Atrial fibrillation is associated with increased risk of lethal ventricular arrhythmias





Circulation: Arrhythmia and Electrophysiology
Volume 7, Issue 6, December 2014; Pages 1033-1039
https://doi.org/10.1161/CIRCEP.114.002094

ORIGINAL ARTICLE

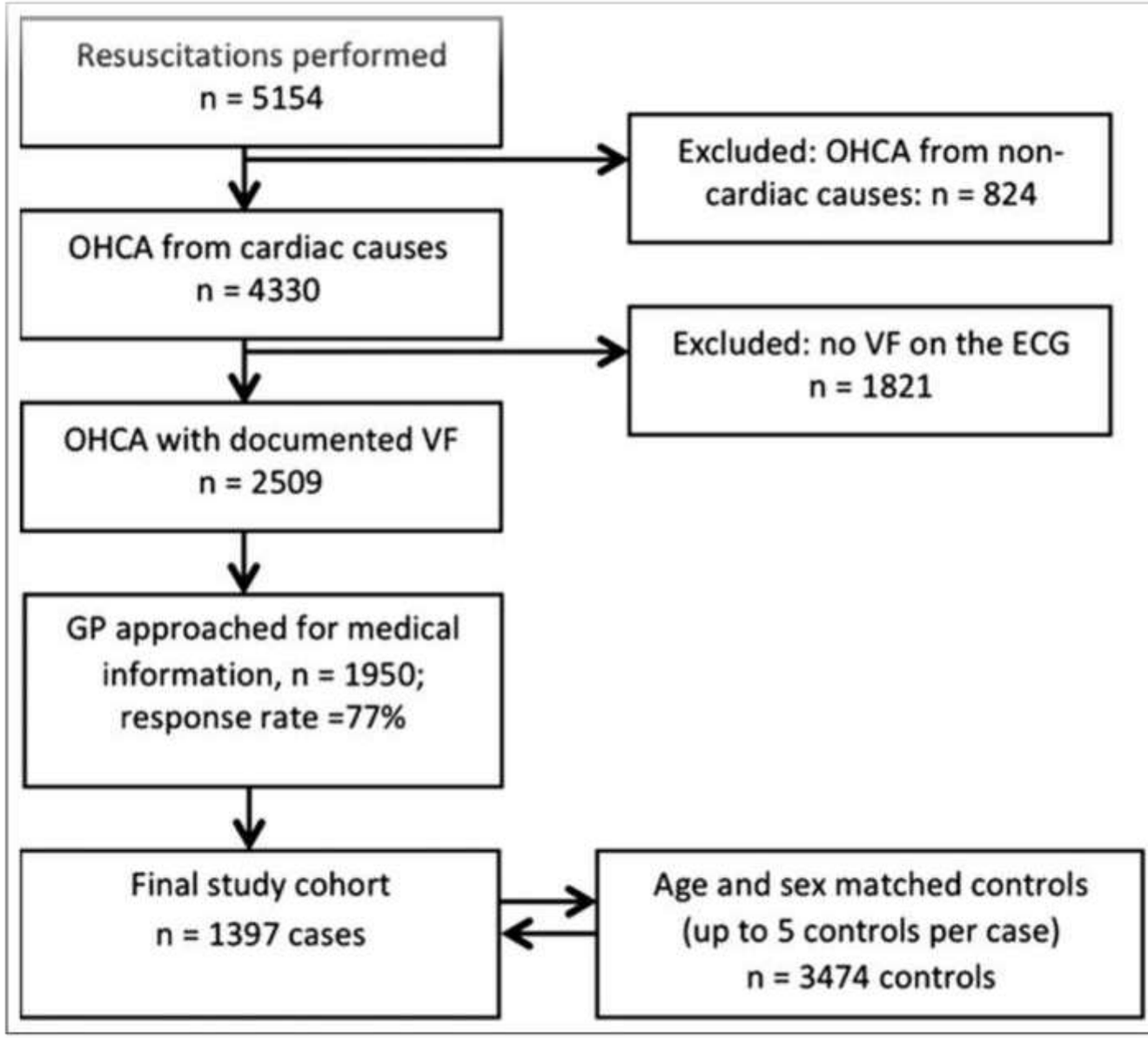
Atrial Fibrillation Is an Independent Risk Factor for Ventricular Fibrillation

A Large-Scale Population-Based Case-Control Study

Abdennasser Bardai, MD, Marieke T. Blom, MA, Daniel A. van Hoeijen, MSc, Hanneke W.M. van Deutekom, PhD, Henk J. Brouwer, MSc, and Hanno L. Tan, MD, PhD

Table 2. Atrial Fibrillation (AF) and Risk for Ventricular Fibrillation Stratified to Sex and Age (Table view)

Characteristic	Cases (n=1397)	Controls (n=3474)	OR* (95% CI)	OR† (95% CI)	OR‡ (95% CI)
No AF	1182 (84.6)	3384 (97.4)	1.0 (reference)	1.0 (reference)	1.0 (reference)
AF	215 (15.4)	90 (2.6)	5.4 (4.1–7.2)	3.0 (2.1–4.4)	3.1 (2.1–4.5)
Stratification by sex					
Male§	150 (14.0)	55 (2.5)	4.3 (3.1–6.1)	2.5 (1.6–3.9)	2.6 (1.7–4.2)
Female§	65 (20.0)	35 (2.7)	8.5 (5.1–14.2)	4.7 (2.4–8.9)	4.5 (2.3–8.6)
Interaction					0.57 (0.3–1.3), *P*=0.17
Stratification by age, y					
45–64‖	52 (8.9)	16 (1.0)	8.2 (4.5–15.0)	5.6 (2.5–12.2)	5.1 (2.2–12.0)
65–84‖	131 (21.4)	59 (5.3)	4.3 (3.1–6.1)	2.0 (1.3–3.1)	2.1 (1.3–3.2)
>85‖	30 (36.1)	15 (8.9)	6.5 (2.9–14.6)	8.3 (2.6–26.2)	8.5 (2.7–27.1)
Interaction					1.0 (0.5–1.9), *P*=1.0



Association Between AF and VF Is Not Explained by AMI

Association Between AF and VF Is Not Explained by Concomitant Diseases

Association Between AF and VF Is Not Explained by Concomitant Use of Antiarrhythmic or QT-Prolonging Drugs

Circulation
Volume 145, Issue 23, 7 June 2022; Pages 1693-1704
https://doi.org/10.1161/CIRCULATIONAHA.121.057095

ORIGINAL RESEARCH ARTICLE

Randomized Ablation-Based Rhythm-Control Versus Rate-Control Trial in Patients With Heart Failure and Atrial Fibrillation: Results from the RAFT-AF trial

- The trial, terminated early because of apparent futility, demonstrated no difference in all-cause mortality and heart failure events in the ablation-based rhythm-control group compared with rate control.

WHAT ARE THE CLINICAL IMPLICATIONS?

- This study warrants additional investigation for ablation-based rhythm control for the treatment of atrial fibrillation and heart failure, which may reduce mortality and heart failure events.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Catheter Ablation in End-Stage Heart Failure with Atrial Fibrillation

Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Ablation Group (N=97)	Medical-Therapy Group (N=97)
Age — yr	62±12	65±10
Male sex — no. (%)	85 (88)	72 (74)
Body-mass index†	28±4	28±5
NYHA functional class — no. (%)‡		
II	33 (34)	28 (29)
III	52 (54)	54 (56)
IV	12 (12)	15 (15)
Left ventricular ejection fraction — %	29±6	25±6
Type of atrial fibrillation — no. (%)		
Paroxysmal	28 (29)	31 (32)
Persistent	54 (56)	54 (56)
Long-standing persistent: duration of >1 yr	15 (15)	12 (12)
Duration of atrial fibrillation — yr	4±5	3±4
History of cardioversion — no. (%)	64 (66)	62 (64)
Heart rate — beats/min	80±21	82±20
Cause of heart failure — no. (%)		
Ischemic	37 (38)	39 (40)
Nonischemic	60 (62)	58 (60)
Left atrial diameter — mm	49±6	48±8
Diabetes mellitus — no. (%)	25 (26)	31 (32)
Implantable cardiac device — no. (%)		
ICD	57 (59)	52 (54)
CRT-D	35 (36)	38 (39)
Rhythm monitor	3 (3)	4 (4)
Pacemaker	2 (2)	3 (3)
N-terminal pro-BNP level		
No. of patients evaluated (%)	46 (47)	52 (54)
Value — pg/ml	3852±3261	4461±5191
6-Min walk test		
Test performed — no. (%)	26 (27)	24 (25)
Distance — m	308±69	299±66
Test not feasible — no. (%)	71 (73)	73 (75)
Medications — no. (%)		
Amiodarone	44 (45)	46 (47)
Beta-blocker	93 (96)	91 (94)
Diuretic	71 (73)	76 (78)
ACE inhibitor or ARB	31 (32)	40 (41)
MRA	45 (46)	53 (55)
Sacubitril–valsartan	66 (68)	57 (59)
SGLT2 inhibitor	23 (24)	24 (25)

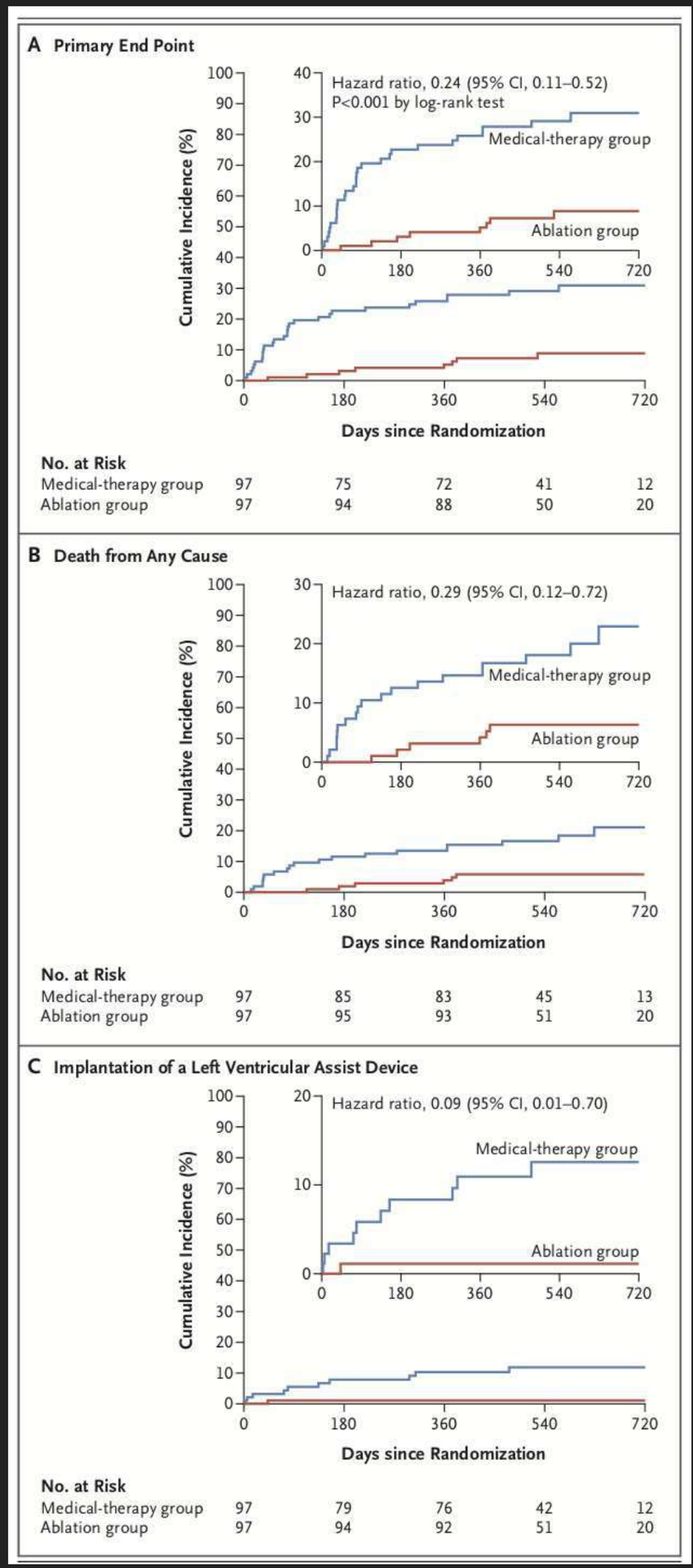


Table 2. Primary and Secondary End Points.

End Point	Ablation Group (N=97)	Medical-Therapy Group (N=97)	Hazard Ratio (95% CI)*	P Value†
	no. (%)			
Primary end point‡	8 (8)	29 (30)	0.24 (0.11 to 0.52)	<0.001
Secondary end points				
Death from any cause	6 (6)	19 (20)	0.29 (0.12 to 0.72)	
Cardiovascular	5 (5)	18 (19)	0.25 (0.09 to 0.68)	
Cerebrovascular	0	1 (1)		
Cancer	1 (1)	0		
Death after nonfatal primary end point	0	5 (5)		
Implantation of left ventricular assist device	1 (1)	10 (10)	0.09 (0.01 to 0.70)	
Urgent heart transplantation	1 (1)	6 (6)	0.15 (0.02 to 1.25)	

Catheter Ablation for Atrial Fibrillation in Heart Failure — An Option to Defer Transplantation?

Author: Eldrin F. Lewis, M.D., M.P.H. Author Info & Affiliations

Published October 11, 2023 | N Engl J Med 2023;389:1429-1430 | DOI: 10.1056/NEJMe2309658

VOL. 389 NO. 15 |

Clinical Importance of B-Type Natriuretic Peptide Levels in Sinus Rhythm at 3 Months After Persistent Atrial Fibrillation Ablation

by Jumpei Saito * , Toshihiko Matsuda , Yui Koyanagi , Katsuya Yoshihiro , Yuma Gibo , Soichiro Usumoto , Wataru Igawa , Toshitaka Okabe , Naoei Isomura and Masahiko Ochiai

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Diseases **2025**, *13*(4), 126; **https://doi.org/10.3390/diseases13040126**

Submission received: 2 March 2025 / Revised: 17 April 2025 / Accepted: 21 April 2025 / Published: 21 April 2025

Table 2. BNP levels after AF ablation.

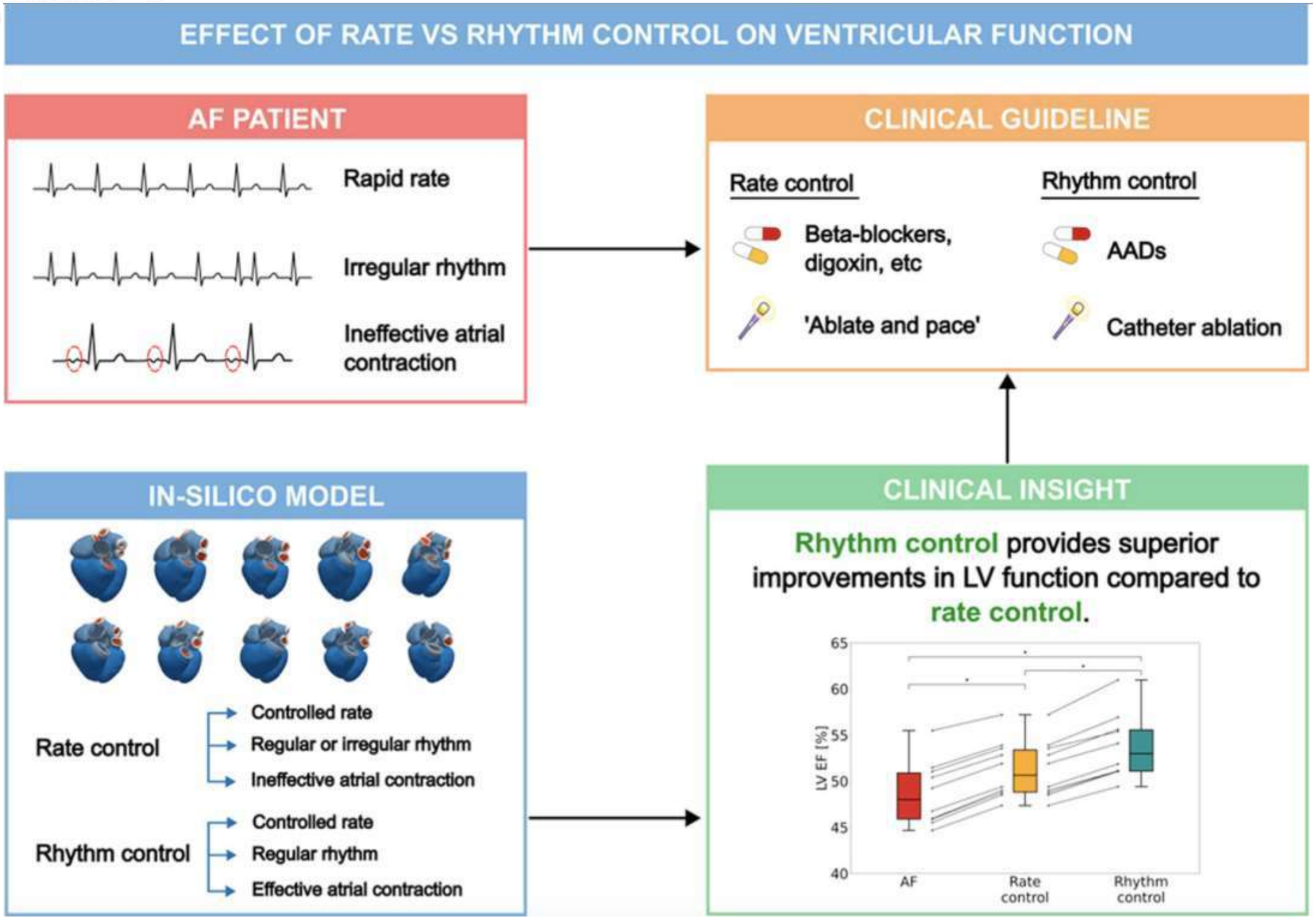
	Non Recurrence (n = 160)	Recurrence (n = 18)	*p*-Value
BNP at 1 month after ablation, pg/mL	35.7 (9.9, 107.2)	70.0 (19.4, 167.4)	$p = 0.22$
BNP at 3 months after ablation, pg/mL	22.5 (6.4, 70.1)	75.7 (26.0, 269.3)	$p < 0.001$
BNP changes from 1 month to 3 months after ablation, pg/mL	−11.1 (−53, 5.7)	17.8 (−58.3, 180.5)	$p < 0.001$

IN PRACTICE:

"We demonstrated that integrating pre-ablation and post-ablation BNP levels could be useful for stratifying the risk of both MACE and arrhythmic recurrence during long-term follow-up in patients with persistent AF," the authors of the study wrote.

Heart Rhythm O2
Available online 9 May 2025
In Press, Journal Pre-proof What's this?

Rhythm control benefits left ventricular function compared to rate control in patients with atrial fibrillation – a computational study



Heart Rhythm O2
Available online 22 March 2025
In Press, Corrected Proof What's this?

Association between quality of life and redo procedures after pulmonary vein isolation in atrial fibrillation patients: Data from the Netherlands Heart Registration

Quality of Life and redo PVI in atrial fibrillation patients

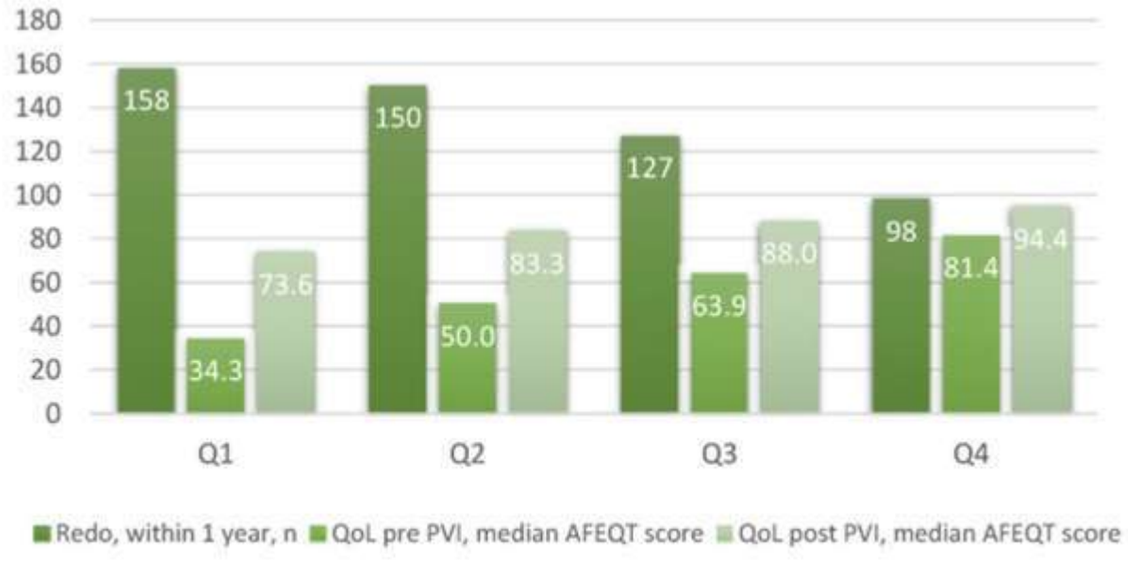
First-time PVI (2018-2021)
N=3,336

AFEQT questionnaire:
baseline and 1-year follow-up

Redo PVI:
16.0% within one year

Redo patients: improved from 53.9 to 71.3
No-redo patients: improved from 57.4 to 88.0 (*p <.001*)

QoL in quartiles and redo PVI



Key findings

- **Lower QoL and redo PVI:**
  Lower baseline QoL scores (AFEQT) were linked to higher redo PVI rates within one year, highlighting QoL as a potential risk indicator
- **Practice variation:**
  Variations in clinical practices and decision-making were observed across heart centres
- **Integrating QoL into routine care could:**
  - *Personalize care pathways*
  - *Guide decisions on redo PVI*
  - *Support national benchmarking for standardizing outcomes*

HeartRhythm

The Official Journal of the Heart Rhythm Society, The Cardiac Electrophysiology Society, and The Pediatric & Congenital Electrophysiology Society

Heart Rhythm Society SM

Check for updates

PVI-only is not enough for all patients with persistent AF: A FLOW-AF subgroup analysis

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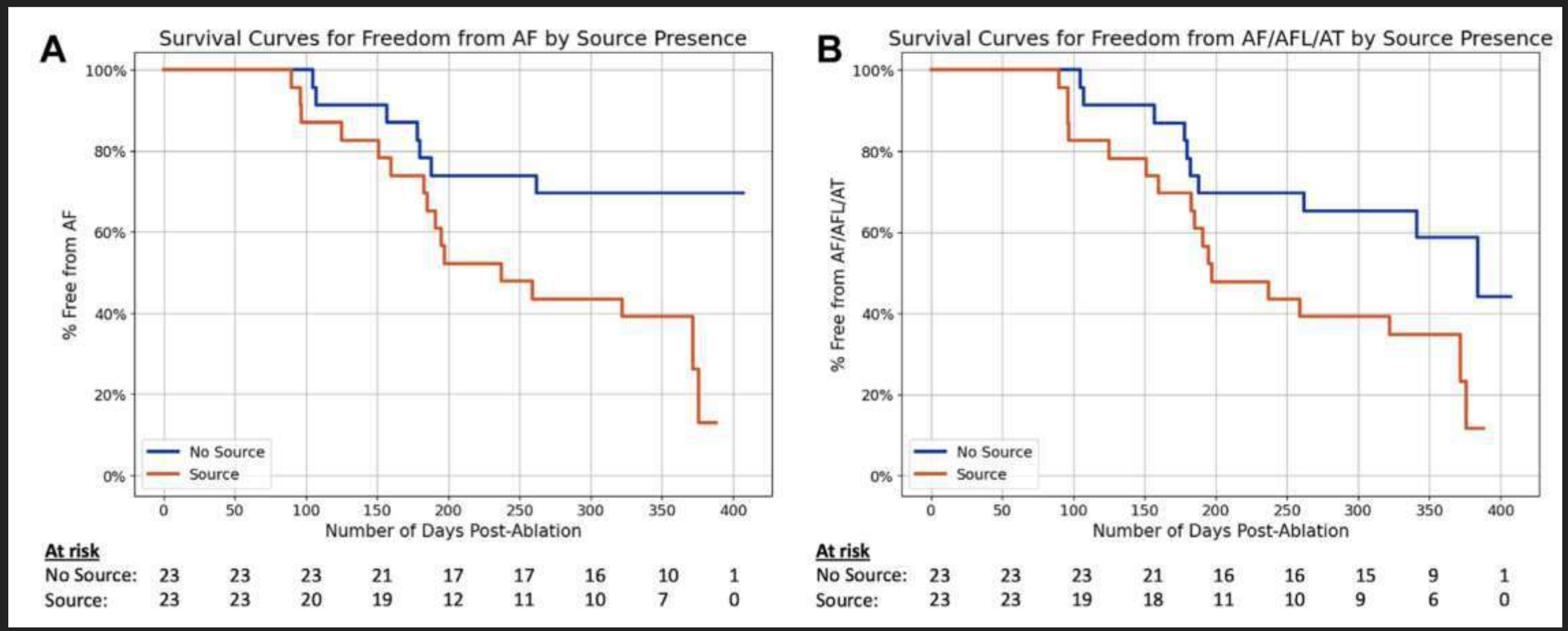

TAKE HOME MESSAGE

- Patients with heart failure and AF should undergo PVI.
- In case of reccurence additional ablation strategies can be implemented.
- When one deals with extensive negative remodeling or multiple ablation attempts failed, AVJ ablation and different pacing strategies can be combined.
- AVJ ablation and different pacing strategies can be combined in patients with narrow QRS complexes when rhythm control stategy is not an option.
- Both approaches can be combined in the same patient.
- Medical therapy only option can be used in extremely ill patients.

THANK YOU FOR YOUR ATTENTION.

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