PLACE 2026
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

CONGRESSO
ROMA, 25 - 27 Giugno 2026

TACHICARDIE VENTRICOLARI

Ablazione precoce della TV dopo il primo shock ICD: impatto su prognosi e ospedalizzazioni

MAGLIA Giampiero
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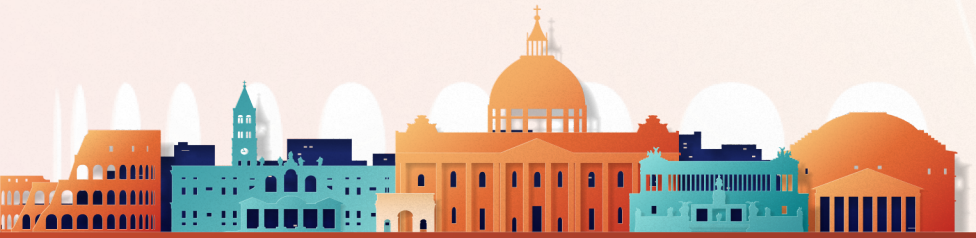

Background

- Le linee guida attuali suggeriscono l'ablazione della tachicardia ventricolare (TV) nei pazienti con cardiopatia strutturale e episodi ricorrenti di TV che determinano interventi del defibrillatore impiantabile (ICD)[1].
- Studi osservazionali retrospettivi hanno indicato che l'assenza di recidiva di TV dopo ablazione mediante catetere è associata a un miglioramento della sopravvivenza[2].
- Altri autori hanno riscontrato, sulla base di dati retrospettivi, che un'ablazione più precoce della TV, sia nelle cardiomiopatie ischemiche sia non ischemiche, è associata a un minor tasso di recidiva di TV, sebbene non sia stato possibile dimostrare un beneficio in termini di sopravvivenza[3].
- Studi randomizzati controllati che hanno valutato l'importanza del timing hanno affrontato la questione dell'ablazione profilattica mediante catetere, al momento dell'impianto dell'ICD, nella cardiomiopatia ischemica, producendo risultati discordanti in termini di riduzione degli episodi di TV o della mortalità[5–7].
- Tuttavia, posticipare il momento dell'ablazione a un futuro indefinito aumenta il rischio di recidiva di TV con probabili effetti negativi sull'andamento clinico. Rimane quindi importante definire quando la procedura di ablazione debba essere eseguita tra questi due estremi temporali.
- Il monitoraggio domiciliare è uno strumento utile per l'elettrofisiologo per identificare i pazienti che possono beneficiare di un'ablazione precoce della TV.

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

Edmond M. Cronin (Chair)[1], Frank M. Bogun (Vice-Chair)[2], Philippe Maury (EHRA Chair)[3], Petr Peichl (EHRA Vice-Chair)[4], Minglong Chen (APHRS Chair)[5], Narayanan Namboodiri (APHRS Vice-Chair)[6], Luis Aguinaga (LAHRS Chair)[7], Luiz Roberto Leite (LAHRS Vice-Chair)[8], Sana M. Al-Khatib[9,§§], Elad Anter[10,§§], Antonio Berruezo[11], David J. Callans[12,§§], Mina K. Chung[13,†], Phillip Cuculich[14,§§], Andre d'Avila[15,‡], Barbara J. Deal[16,§], Paolo Della Bella[17,*], Thomas Deneke[18,*], Timm-Michael Dickfeld[19,§§], Claudio Hadid[20,¶], Haris M. Haqqani[21,#], G. Neal Kay[22,§§], Rakesh Latchamsetty[2,§§], Francis Marchlinski[12,§§], John M. Miller[23,†], Akihiko Nogami[24,**], Akash R. Patel[25,††], Rajeev Kumar Pathak[26,#], Luis C. Sáenz Morales[27,¶], Pasquale Santangeli[12,§§], John L. Sapp Jr.[28,§§], Andrea Sarkozy[29,*], Kyoko Soejima[30,#], William G. Stevenson[31,§§], Usha B. Tedrow[32,§§], Wendy S. Tzou[33,§§], Niraj Varma[13,§§], Katja Zeppenfeld[34,*]

Recommendations for catheter ablation of VAs in patients with IHD

COR	LOE	Recommendations	References
I	B-R	1. In patients with IHD who experience recurrent monomorphic VT despite chronic amiodarone therapy, catheter ablation is recommended in preference to escalating AAD therapy.	S4.4.1
I	B-NR	2. In patients with IHD and recurrent symptomatic monomorphic VT despite AAD therapy, or when AAD therapy is contraindicated or not tolerated, catheter ablation is recommended to reduce recurrent VT.	S4.4.2–S4.4.4
I	B-NR	3. In patients with IHD and VT storm refractory to AAD therapy, catheter ablation is recommended.	S4.4.5–S4.4.9
IIa	C-EO	4. In patients with IHD and recurrent monomorphic VT, in whom AADs are not desired, catheter ablation can be useful.	
IIb	A	5. In patients with IHD and an ICD who experience a first episode of monomorphic VT, catheter ablation may be considered to reduce the risk of recurrent VT or ICD therapies.	S4.4.10–S4.4.14
IIb	C-LD	6. In patients with prior MI and recurrent episodes of symptomatic sustained VT for whom prior endocardial catheter ablation has not been successful and who have ECG, endocardial mapping, or imaging evidence of a subepicardial VT substrate, epicardial ablation may be considered.	S4.4.15–S4.4.19

Recommendations for catheter ablation of VT in NICM

COR	LOE	Recommendations	References
I	B-NR	1. In patients with NICM and recurrent sustained monomorphic VT for whom antiarrhythmic medications are ineffective, contraindicated, or not tolerated, catheter ablation is useful for reducing recurrent VT and ICD shocks.	S4.5.1–S4.5.6
I	B-NR	2. In patients with NICM and electrical storm refractory to AAD therapy, catheter ablation is useful for reducing recurrent VT and ICD shocks.	S4.5.7–S4.5.9
IIa	B-NR	3. In patients with NICM, epicardial catheter ablation of VT can be useful after failure of endocardial ablation or as the initial ablation approach when there is a suspicion of an epicardial substrate or circuit.	S4.5.4, S4.5.10–S4.5.13
IIa	B-NR	4. In patients with cardiac sarcoidosis and recurrent VT despite medical therapy, catheter ablation can be useful to reduce the risk of VT recurrence and ICD shocks.	S4.5.14–S4.5.18
IIa	C-EO	5. In patients with NICM and recurrent sustained monomorphic VT for whom antiarrhythmic medications are not desired, catheter ablation can be useful for reducing recurrent VT and ICD shocks.	
IIb	B-NR	6. In patients with NICM related to lamin A/C (*LMNA*) mutations and recurrent VT, catheter ablation may be considered as a palliative strategy for short-term arrhythmia control.	S4.5.19

…Too late???

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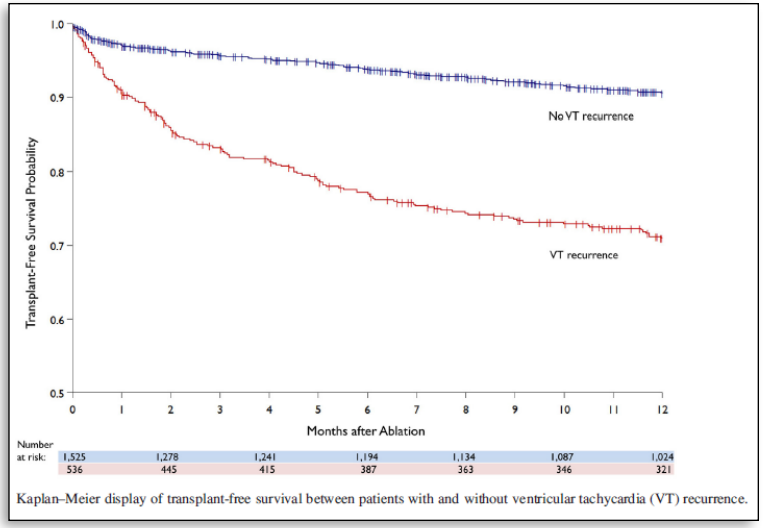
…new timing

Freedom from recurrent ventricular tachycardia after catheter ablation is associated with improved survival in patients with structural heart disease: An International VT Ablation Center Collaborative Group study

Roderick Tung, MD, FHRS,[*] Marmar Vaseghi, MD, MS, FHRS,[*] David S. Frankel, MD, FHRS,[†] Pasquale Vergara, MD, PhD,[‡] Luigi Di Biase, MD, PhD, FHRS,[§] Koichi Nagashima, MD, PhD,[¶] Ricky Yu, MD,[*] Sitaram Vangala, MS,[**] Chi-Hong Tseng, PhD,[**] Eue-Keun Choi, MD, PhD,[¶] Shaan Khurshid, MD,[†] Mehul Patel, MD,[††] Nilesh Mathuria, MD,[††] Shiro Nakahara, MD, PhD,[‡‡] Wendy S. Tzou, MD, FHRS,[§§] William H. Sauer, MD, FHRS,[§§] Kairav Vakil, MD,[¶¶] Usha Tedrow, MS, MD, FHRS,[¶] J. David Burkhardt, MD, FACC, FHRS,[§] Venkatakrishna N. Tholakanahalli, MD, FHRS,[¶¶] Anastasios Saliaris, MD,[***] Timm Dickfeld, MD, PhD, FHRS,[***] J. Peter Weiss, MD,[†††] T. Jared Bunch, MD,[†††] Madhu Reddy, MD, FHRS,[‡‡‡] Arun Kanmanthareddy,[‡‡‡] David J. Callans, MD, FHRS,[†] Dhanunjaya Lakkireddy, MD, FHRS,[‡‡‡] Andrea Natale, MD, FHRS,[§] Francis Marchlinski, MD, FHRS,[†] William G. Stevenson, MD, FHRS,[¶] Paolo Della Bella, MD,[‡] Kalyanam Shivkumar, MD, PhD, FHRS[*]

From the [*]UCLA Cardiac Arrhythmia Center, UCLA Health System, Los Angeles, California, [†]Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, [‡]Hospital San Raffaele, Milan, Italy, [§]Texas Cardiac Arrhythmia Institute, St. David's Medical Center, Austin, Texas, [¶]Brigham and Women's Hospital, Boston, Massachusetts, [**]UCLA Department of Medicine Statistics Core, Los Angeles, California, [††]Baylor St. Luke's Medical Center/Texas Heart Institute, Houston, Texas, [‡‡]Dokkyo Medical University Koshigaya Hospital, Saitama, Japan, [§§]University of Colorado, Aurora, Colorado, [¶¶]University of Minnesota Medical Center, Minneapolis VA Medical Center, Minneapolis, Minnesota, [***]University of Maryland Medical Center, Baltimore, Maryland, [†††]Intermountain Heart Institute, Intermountain Medical Center, Murray, Utah, and [‡‡‡]University of Kansas Medical Center, Kansas City, Kansas.



Kaplan–Meier display of transplant-free survival between patients with and without ventricular tachycardia (VT) recurrence.

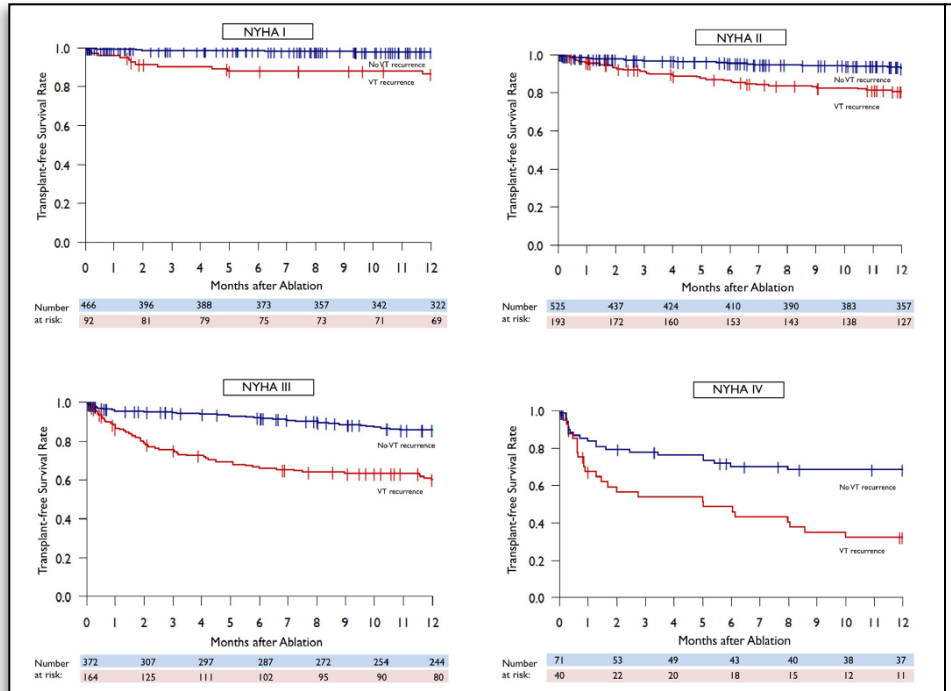


Figure 6 Kaplan–Meier display of transplant-free survival by ventricular tachycardia (VT) recurrence in patients by New York Heart Association (NYHA) functional class.

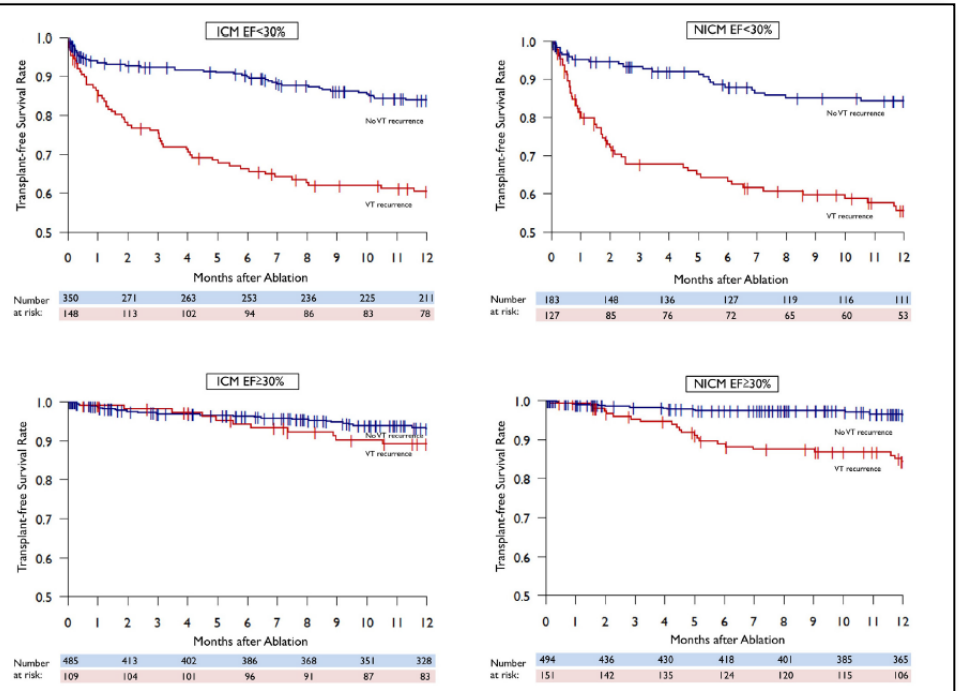


Figure 5 Kaplan–Meier display of transplant-free survival by ventricular tachycardia (VT) recurrence in patients with ejection fraction (EF) ≥30% and <30%. ICM = ischemic cardiomyopathy; NICM = nonischemic cardiomyopathy.

ORIGINAL RESEARCH ARTICLE

Preventive or Deferred Ablation of Ventricular Tachycardia in Patients With Ischemic Cardiomyopathy and Implantable Defibrillator (BERLIN VT)

A Multicenter Randomized Trial

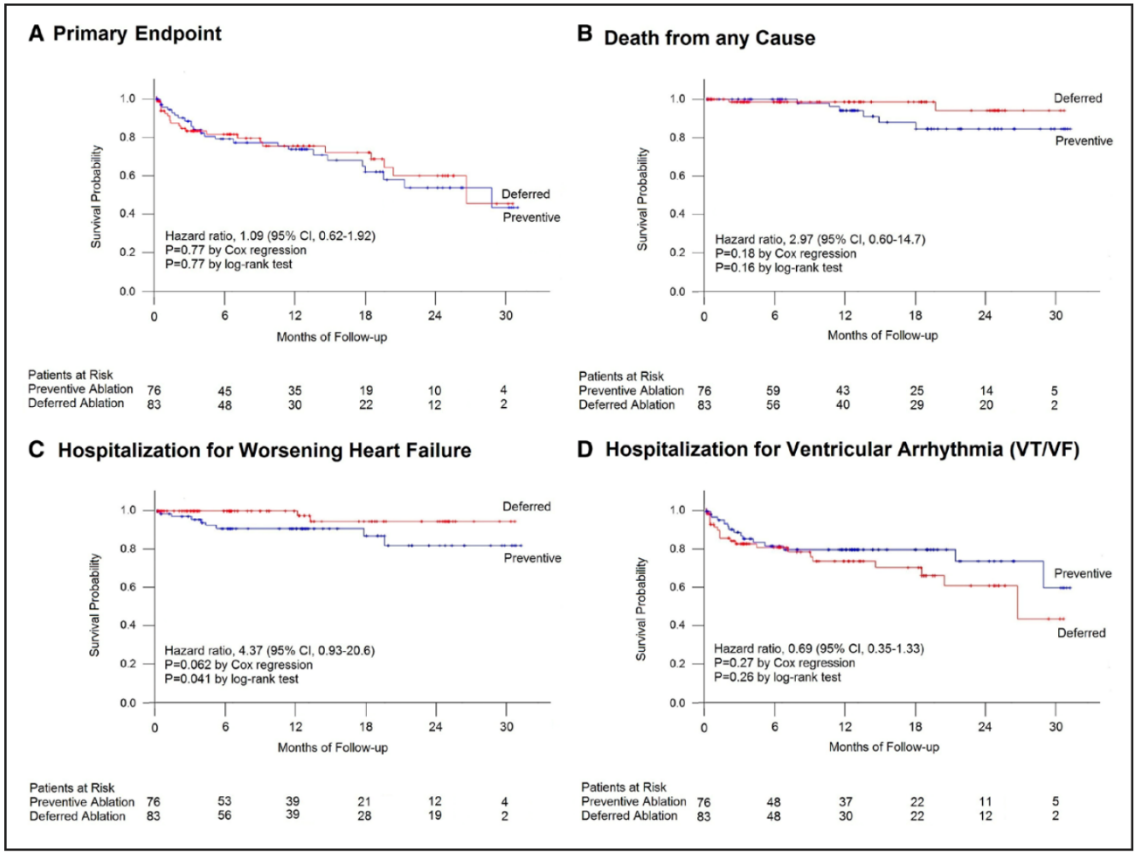


Table 1. Baseline Patient Characteristics*

	Preventive Ablation	Deferred Ablation
Patients in the ITT analysis set, n†	76	83
Age at enrollment, y	66±10	66±9
Male sex, n (%)	67 (88.2)	72 (86.7)
Time from last MI to enrollment, mo	123±144‡	110±109‡
Previous percutaneous revascularization, n (%)	39 (51.3)	47 (56.6)
Previous surgical revascularization, n (%)	22 (28.9)	17 (20.5)
Hemodynamically stable documented VT, n (%)	42/75 (56.0)	57/81 (70.4)
New York Heart Association class, n (%)		
I: No limitation of physical activity	16 (21.1)	27 (32.5)
II: Slight limitation of physical activity	43 (56.6)	38 (45.8)
III: Marked limitation of physical activity	17 (22.4)	18 (21.7)
LVEF, %	41±6	41±6
Hypertension, n (%)	62 (81.6)	66 (79.5)
Atrial fibrillation, n (%)	25 (32.9)	21 (25.3)
Diabetes mellitus, n (%)	23 (30.3)	22 (26.5)
Renal failure, n (%)	14 (18.4)	13 (15.7)
Type of implanted device, n (%)§		

LVEF 41±6 41±6

Ventricular Tachycardia Ablation Remains Treatment of Last Resort in Structural Heart Disease: Argument for Earlier Intervention

DAVID S. FRANKEL, M.D., STAVROS E. MOUNTANTONAKIS, M.D., MELISSA R. ROBINSON, M.D., ERICA S. ZADO, P.A.-C., DAVID J. CALLANS, M.D., and FRANCIS E. MARCHLINSKI, M.D.

From the Cardiovascular Division, Electrophysiology Section, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, USA

(J Cardiovasc Electrophysiol, Vol. 22, pp. 1123-1128, October 2011)

98 pts with structural heart disease referred for VT ablation

62 late referral: patients with 2 or more VT episodes, first and last episodes at least a month apart

36 early referral: 2 or more VT episodes, first and last episode less than a months apart

TABLE 1

Baseline Characteristics of Patients Stratified by Early versus Late Ventricular Tachycardia Ablation*

	Early	Late	All	P Value
N	36	62	98	
Male (%)	97.2	93.6	94.9	0.6
Age (years)	62.2 (12.4)	65.8 (12.8)	64.5 (12.7)	0.2
LVEF (%)	30.1 (15.8)	28.1 (13.1)	29.0 (14.1)	0.4
Cardiomyopathy etiology				
Ischemic (%)	62.9	62.9	62.9	0.9
Nonischemic (%)	37.1	37.1	37.1	
Years since MI-mean	11.8 (6.1)	12.9 (5.5)	12.4 (5.7)	0.5
Median	11	13	12	
Years since nonischemic cardiomyopathy onset-mean	6.0 (5.2)	9.7 (5.0)	8.2 (5.1)	0.1
Median	6	10	8	
Months since initial episode of VT-mean	10.6 (19.0)	16.0 (20.1)	14.0 (19.8)	0.2
Median	2	8	5	
ICD implanted prior to ablation (%)	91.7	98.4	95.9	0.1
VT storm (%)	50.0	62.9	58.2	0.3
Shocks in preceding month-mean	7.4 (16.0)	4.9 (6.2)	5.8 (10.9)	0.3
Median	3	4	4	
Antitachycardia pacing episodes in preceding month-mean	14.0 (28.6)	31.7 (119.2)	26.1 (99.6)	0.6
Median	4	2	2	
Antiarrhythmic drug use (%)				
Amiodarone >/ = 400 mg daily	47.2	62.9	57.1	0.05
Amiodarone < 400 mg daily	13.9	14.5	14.3	0.8
Previous amiodarone, now intolerant	11.1	9.7	10.2	0.8
Nonamiodarone antiarrhythmic drug alone or in combination with amiodarone	50.0	62.9	58.2	0.3

*P values indicate significance for comparison between early and late. Standard deviations are provided in parentheses. LVEF = left ventricular ejection fraction; MI = myocardial infarction; VT = ventricular tachycardia; ICD = implantable cardioverter defibrillator.

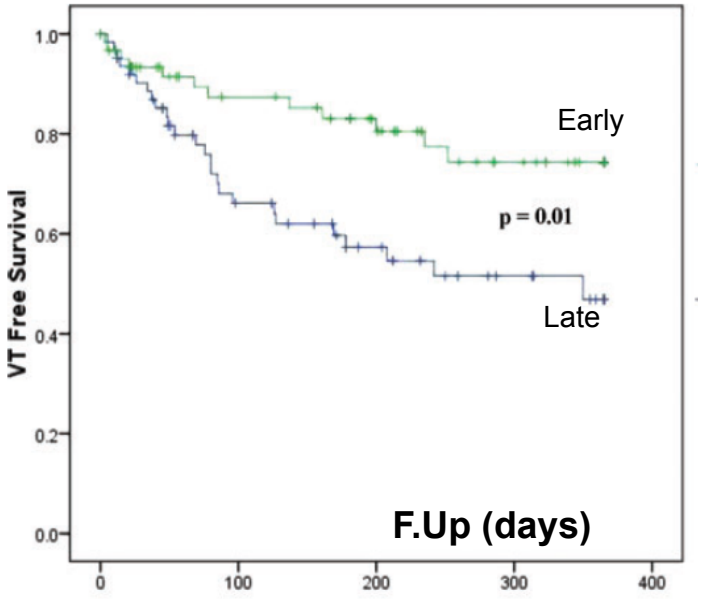


TABLE 3

Factors Predictive of Ventricular Tachycardia Recurrence Following Ablation

	Hazard Ratio	95% CI	P Value
Age (per 1 year increase)	1.02	0.99–1.04	0.3
LVEF (per 1% increase)	0.97	0.95–0.99	0.02
Ischemic cardiomyopathy	0.77	0.40–1.47	0.4
Early referral*	0.37	0.14–0.84	0.02
VT storm	1.57	0.81–3.04	0.2
Shocks in preceding month (per 1 shock increase)	1.00	0.98–1.03	0.9
ATP in preceding month (per 1 ATP increase)	1.02	0.99–1.06	0.1
Amiodarone >/ = 400 mg daily preablation	1.79	0.66–2.42	0.5
Amiodarone dose reduced following ablation	1.55	0.76–3.17	0.2
Clinical VT hemodynamically tolerated	0.56	0.29–1.10	0.1
Number VTs targeted (per 1 increase)	0.90	0.75–1.08	0.3
Endocardial ablation only	1.03	0.47–2.24	0.9
Procedural success	0.36	0.14–0.93	0.03

*In multivariate modeling, only early referral remained significantly associated with VT recurrence (P = 0.03). CI = confidence interval; LVEF = left ventricular ejection fraction; VT = ventricular tachycardia; ATP = antitachycardia pacing.

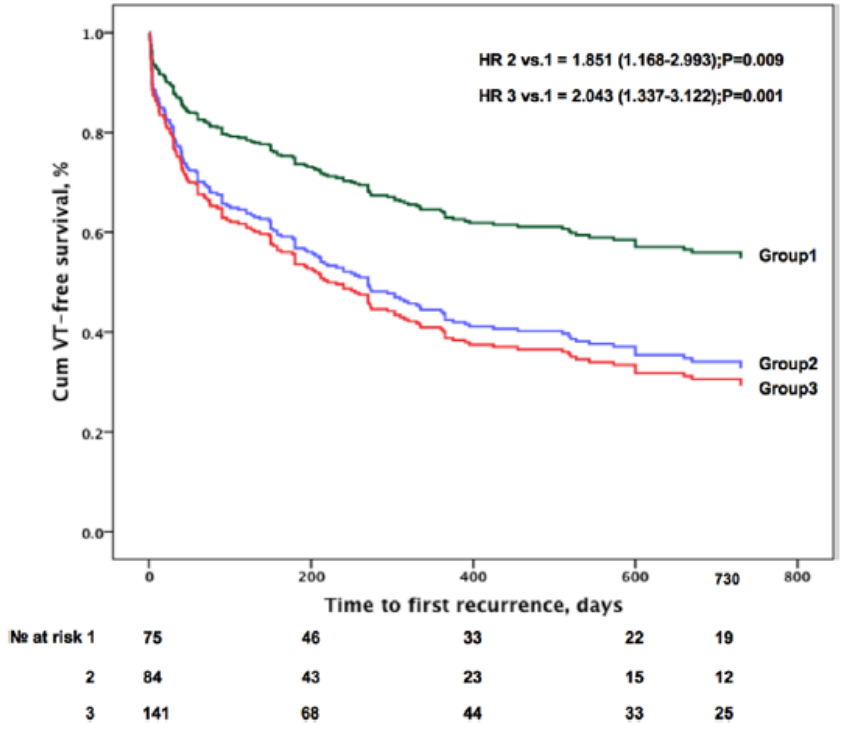
Early Referral for Ablation of Scar-Related Ventricular Tachycardia Is Associated With Improved Acute and Long-Term Outcomes

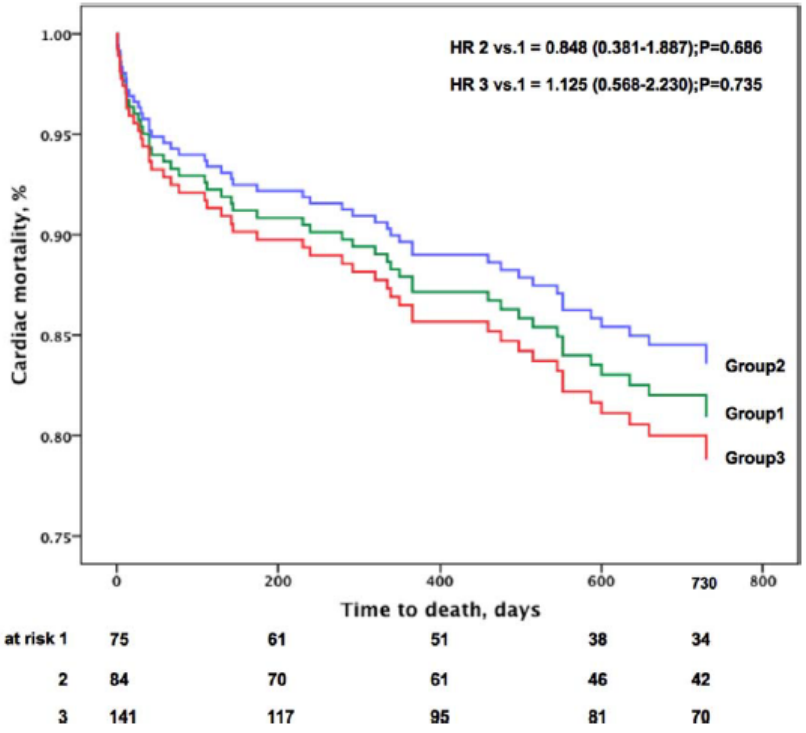
Results From the Heart Center of Leipzig Ventricular Tachycardia Registry

Borislav Dinov, MD; Arash Arya, MD; Livio Bertagnolli, MD; Valentina Schirripa, MD; Katharina Schoene, MD; Philipp Sommer, MD; Andreas Bollmann, PhD; Sascha Rolf, MD; Gerhard Hindricks, MD

Early ablation after the first VT episode:

- Group 1: within 30 days
- Group 2: between a month and a year
- Group 3: over 1 year





ORIGINAL ARTICLE

Catheter Ablation or Antiarrhythmic Drugs for Ventricular Tachycardia

J.L. Sapp, A.S.L. Tang, R. Parkash, W.G. Stevenson, J.S. Healey, L.J. Gula, G.M. Nair, V. Essebag, L. Rivard, J.-F. Roux, P.B. Nery, J.-F. Sarrazin, G. Amit, J.-M. Raymond, M. Deyell, C. Lane, F. Sacher, C. de Chillou, V. Kuriachan, A. AbdelWahab, I. Nault, K. Dyrda, S. Wilton, U. Jolly, A. Kanagasundram, and G.A. Wells, for the VANISH2 Study Team*

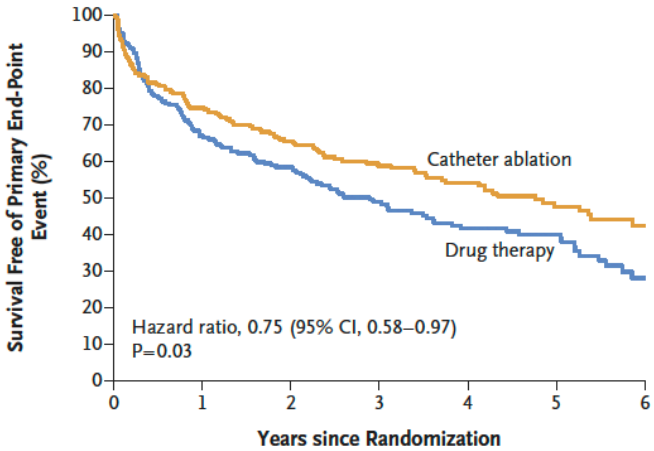


Figure 1. Kaplan–Meier Analysis of the Primary End Point.

Shown is survival without a primary end-point event, defined as a composite of death from any cause during follow-up or, more than 14 days after randomization, ventricular tachycardia (VT) storm (at least three VT events within 24 hours), appropriate shock from an implantable cardioverter–defibrillator (ICD), or treated sustained VT below the detection limit of the ICD, among patients assigned to catheter ablation or antiarrhythmic drug therapy.

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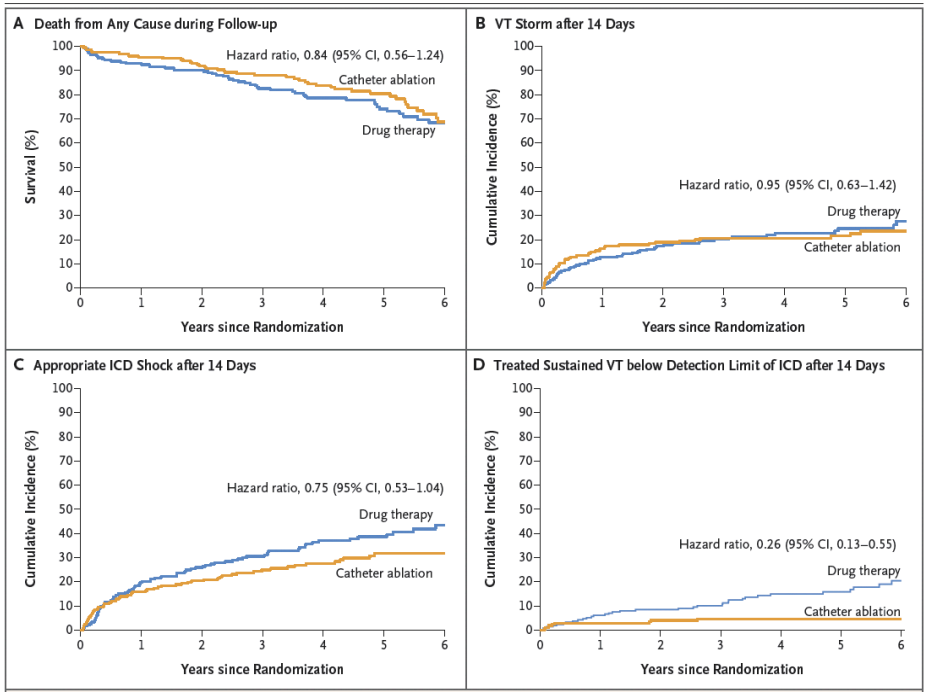


Figure 2. Kaplan–Meier Analysis of Components of the Primary End Point.

Panel A shows the percentage of patients who survived, in the analysis of death from any cause during follow-up. Panel B shows the cumulative incidence of VT storm more than 14 days after randomization. Panel C shows the cumulative incidence of appropriate ICD shock more than 14 days after randomization. Panel D shows the cumulative incidence of treated sustained VT below the detection limit of the ICD more than 14 days after randomization. Hazard ratios in Panels B through D were calculated with adjustment for the competing risk of death. The widths of the confidence intervals have not been adjusted for multiplicity and should not be used to infer definitive treatment effects.

ORIGINAL RESEARCH ARTICLE

Does Timing of Ventricular Tachycardia Ablation Affect Prognosis in Patients With an Implantable Cardioverter Defibrillator? Results From the Multicenter Randomized PARTITA Trial

Paolo Della Bella, MD; Francesca Baratto, MD; Pasquale Vergara, MD PhD; Patrizia Bertocchi, MD; Matteo Santamaria, MD PhD; Pasquale Notarstefano, MD; Leonardo Calò, MD; Daniela Orsida, MD; Luca Tomasi, MD; Marcello Piacenti, MD; Stefano Sangiorgio, MD; Francesco Pentimalli, MD; Etienne Pruvot, MD; João De Sousa, MD; Frederic Sacher, MD; Massimo Tritto, MD; Luca Rebellato, MD; Thomas Deneke, MD; Salvo Andrea Romano, MD; Martina Nesti, MD; Alessio Gargaro, MSc; Daniele Giacopelli, MSc; Giovanni Peretto, MD; Andrea Radinovic, MD

Lo studio PARTITA è stato progettato per verificare l'impatto prognostico dell'ablazione precoce della tachicardia ventricolare (TV) dopo il primo shock dell'ICD sugli endpoint di mortalità e peggioramento dello scompenso cardiaco (HF), e per fornire dati sulla storia naturale della TV dopo l'impianto dell'ICD, inclusa l'identificazione di specifici pattern aritmici che possano predire un successivo shock.

Disegno dello studio:

- Studio multicentrico, randomizzato, controllato, in due fasi
- Follow-up mediante monitoraggio domiciliare

Enrollment

Inclusion Criteria

- Man and woman over 18 years of age
- Patients implanted with ICD (single-/dual –chamber, with or without cardiac resynchronization therapy) for primary or secondary prevention of sudden cardiac death
- Both postinfarct and NICM

METHODS

- Standard ablation protocol (SR based elimination of late potentials, postprocedure prevention of VT inducibility);
- Homogeneous ICD programming based on long time detection criteria and highrate cutoffs

Appendix B. Recommended ICD setting

Detection	**VT1**	**VT2**	**VF**
Cut off interval	130 bpm	167 bpm /360 msec	200 bpm /300 msec
Det. Counter	32	30	12/16
ReDet. Counter	20	18	
SMART	ON[1]	ON[1]	
Onset	20%	20%	
Stability	12%[2]	12%[2]	

[1] in dual-chamber criteria; [2] ±24 ms in single-chamber criteria.

Therapy VT1	OFF (monitor)		

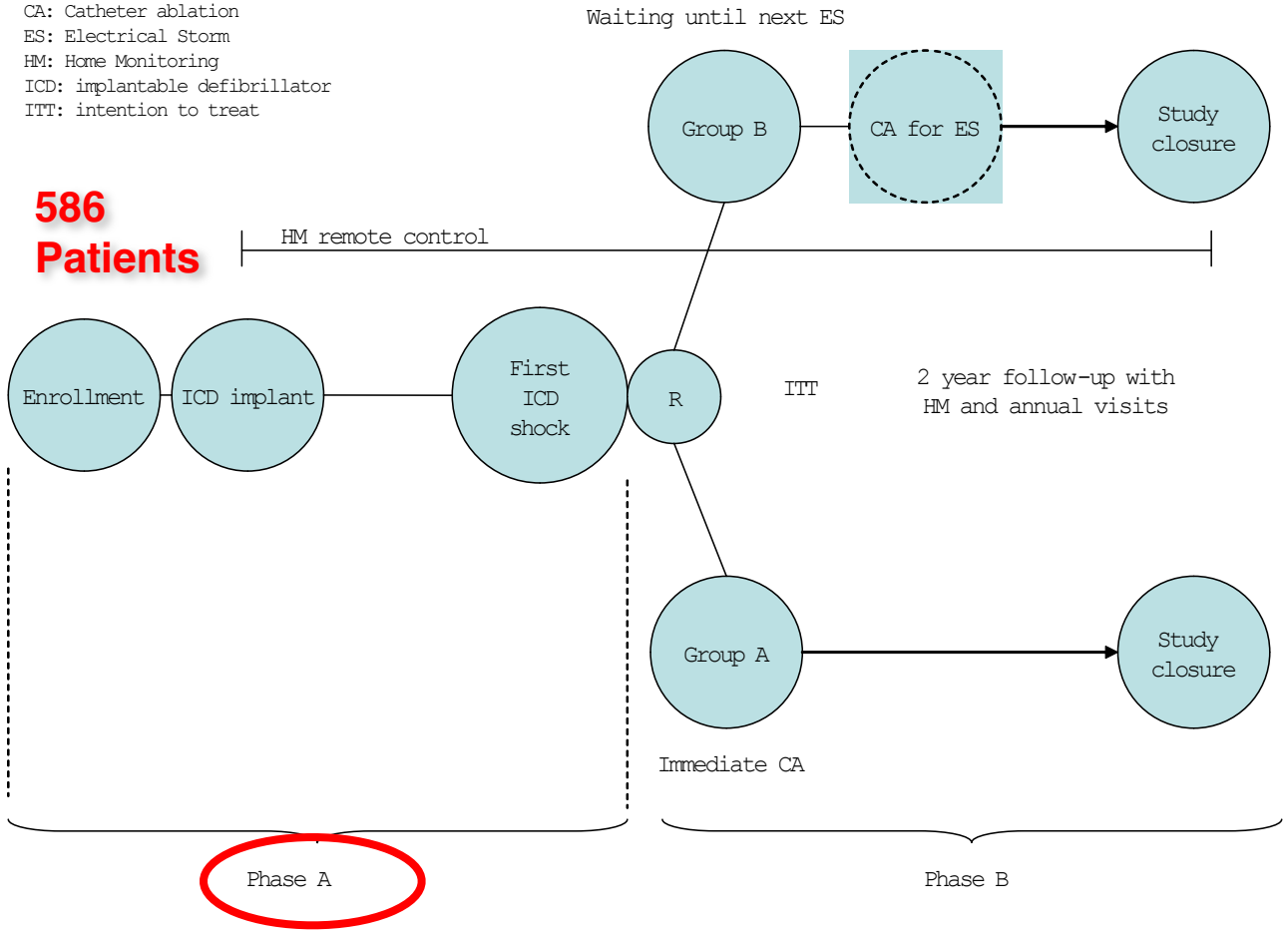
Therapy VT2	**ATP1**	**ATP2**	**Shocks**
Type	2*Burst	1*Ramp	Energy
Pacing in	VD	VD	1°: 10 Joule
Number of S1	8	8	2°-8°: max Joule
Add S1	ON		
Int. R-S1	85%	85%	
S1 decrement		10 ms	
Scan Dec.	10 ms		
Minimum Interval	200 ms		

Therapy VF	**ATP One Shot**		
Type	1*Burst		Energy
Pacing in	VD		Max energy
Number of S1	8		
Int. R-S1	85%		

Home Monitoring	ON		

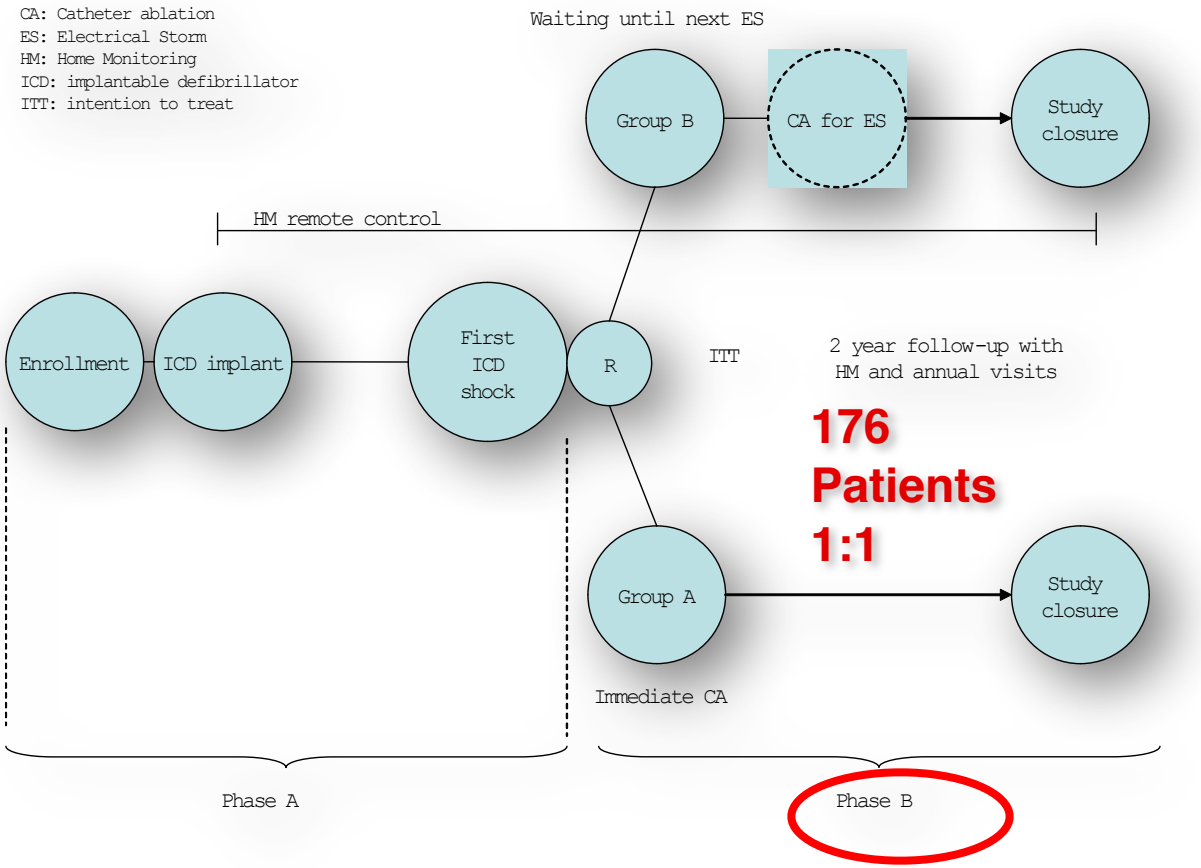
Phase A

CA: Catheter ablation
ES: Electrical Storm
HM: Home Monitoring
ICD: implantable defibrillator
ITT: intention to treat



- ICD patients (both primary or secondary prevention) until the first appropriate shock
- To verify predictors of subsequent shock.

Phase B



•After the first shock, patients are randomized to

- **Group 1 immediate ablation**
- **Group 2** standard treatment (ablation performed after recurrent VTS or electrical storm)

Primary endpoints

- **Phase A**: the first appropriate shock delivered for VT.
- **Phase B**: a composite of death from any cause or worsening HF that led to hospitalization.

Secondary endpoints

- **Phase B:** (i) death resulting from cardiac causes; (ii) recurrences of sustained VT or VF; (iii) appropriate ICD therapy; (iv) electrical storm.

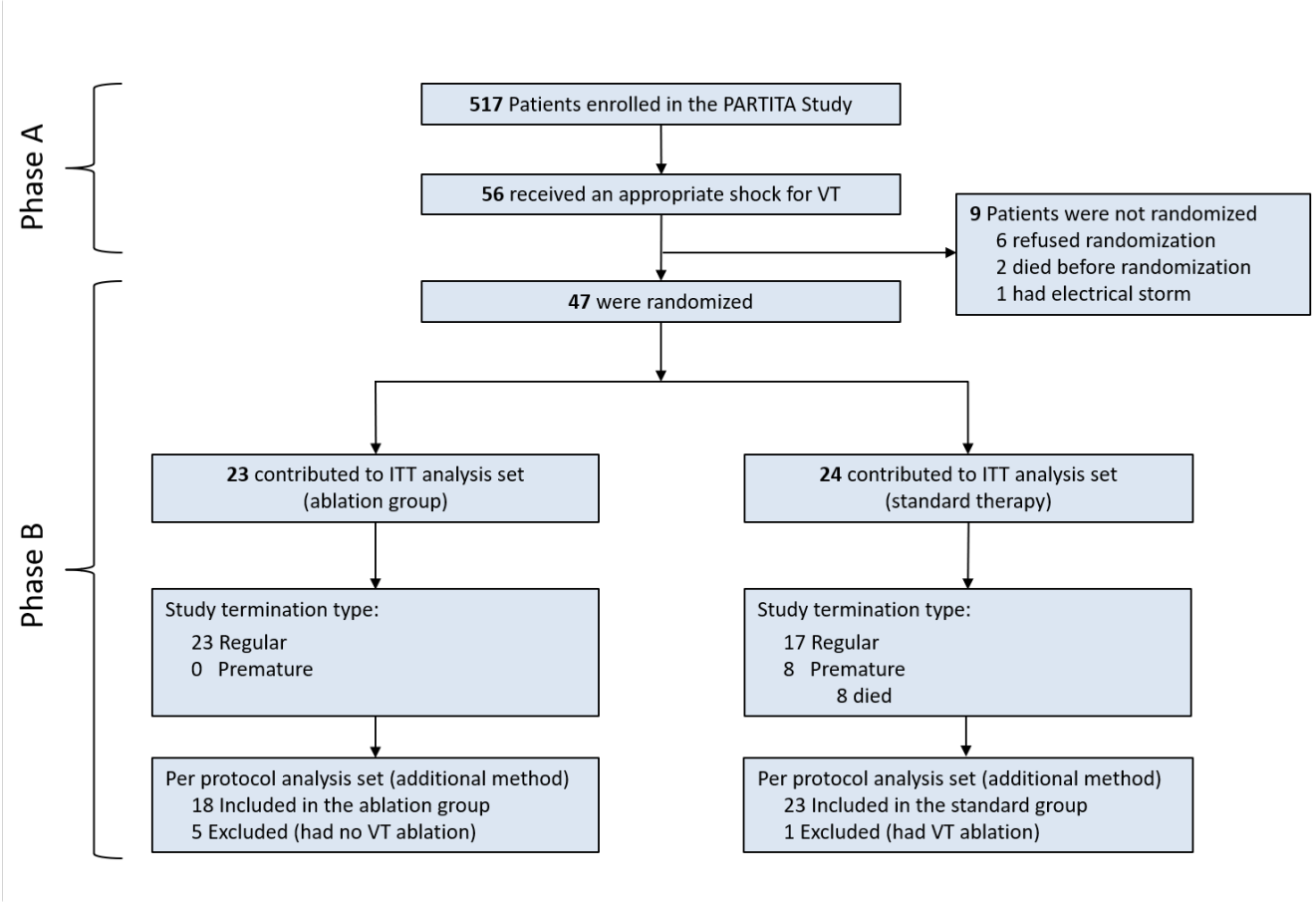
Study realization

PARTITA Trial

- From September 2012 to July 2021, a total of 517 patients were enrolled at 16 sites.
- The first patients was enrolled on 03-SEP-2012 and the last patient on 30-JUN-2021.

Study realization

- During a median follow-up of 2.4 years (IQR, 1.4-4.4), of the 517 patients enrolled in phase A, 246 (48%) patients had any VT episodes, 154 (30%) had sustained VTs, and 56 (11%) received a first appropriate shock for VT.



Shock rate

Possible reasons for a lower shock rate:

1. ICD Programming
   - Longer detection times
   - Therapy set at higher rates
2. Drugs:
   - Home Monitoring allows a rapid up-titration of beta blockers
   - Amiodarone substantially banned. Reduced risk of pro-arrhythmias
3. Clinical characteristics of the study population
   - Median ejection fraction 33%

Ventricular arrhythmias (Phase A)

Percentage of patients with	Overall, N = 517
Any ventricular tachycardia	246 (47.6%)
Non-sustained ventricular tachycardia	145 (28.0%)
Sustained ventricular tachycardia	154 (29.8%)
With no device therapy†	36 (7.0%)
Treated with ATP only	62 (12.0%)
Treated with shock only	6 (1.2%)
Treated with ATP and shock	50 (9.7%)
Ventricular fibrillation	29 (5.6%)
Inappropriate shock	19 (3.7%)

†VT episodes in the VT1 monitor zone (<167 bpm). All these patients underwent subsequent ICD reprogramming

Characteristics of randomized patients

	Randomized patients, N=47	Ablation, N=23	Standard therapy, N=24	P value
Male	40 (85%)	19 (83%)	21 (88%)	0.7
Age (years)	68.4 (9.3)	71.2 (8.1)	65.6 (9.6)	0.059
NYHA				0.5
Class I	8 (18%)	3 (13%)	5 (24%)	
Class II	29 (66%)	17 (74%)	12 (57%)	
Class III	7 (16%)	3 (13%)	4 (19%)	
Class IV	0 (0%)	0 (0%)	0 (0%)	
LV Ejection Fraction (%)	32.2 (8.6)	31.9 (9.0)	32.4 (8.3)	>0.9
QRS duration (ms)	123.6 (30.1)	126.3 (35.0)	120.9 (25.2)	>0.9
Device				0.5
Single-chamber ICD	13 (28%)	5 (22%)	8 (33%)	
Dual-chamber ICD	19 (40%)	11 (48%)	8 (33%)	
CRT-D	15 (32%)	7 (30%)	8 (33%)	
ICD Indication				0.5
Primary prevention	35 (74%)	16 (70%)	19 (79%)	
Secondary prevention	12 (26%)	7 (30%)	5 (21%)	
Cardiomyopathy				0.5
Ischemic	38 (81%)	20 (87%)	18 (75%)	
Idiopathic dilated	9 (19%)	3 (13%)	6 (25%)	

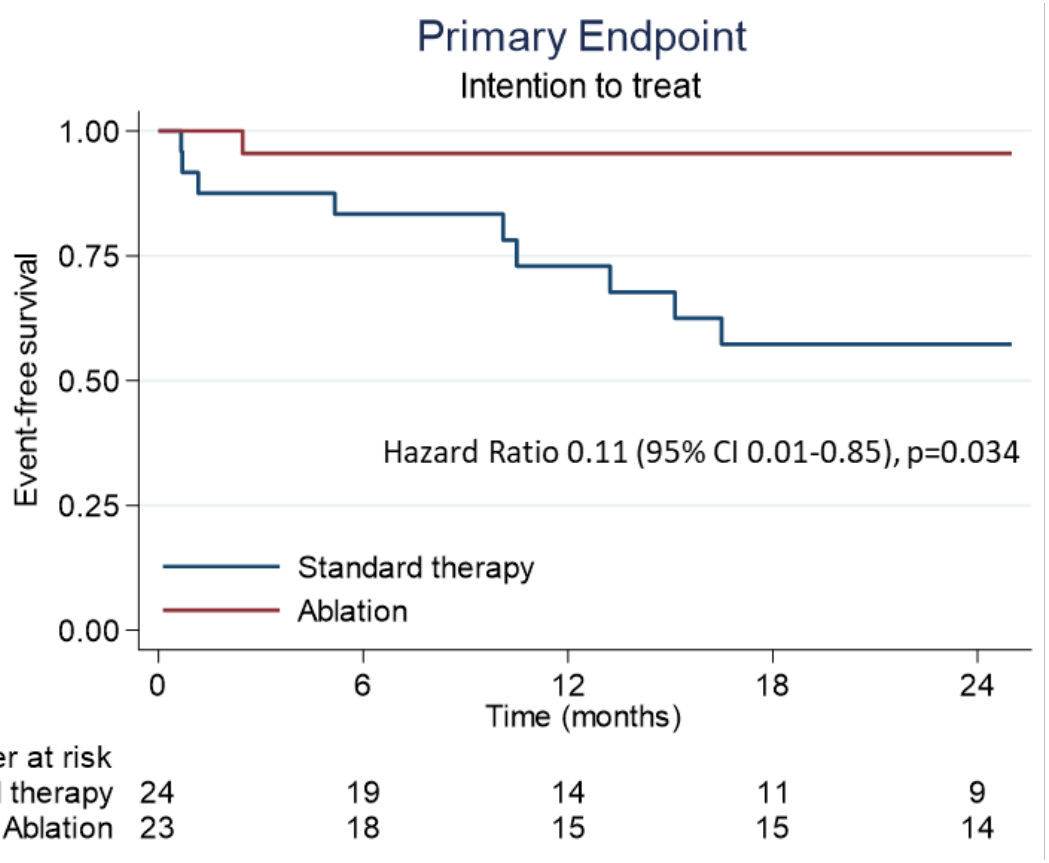
Characteristics of randomized patients

	Randomized patients, N=47	Ablation, N=23	Standard therapy, N=24	P value
Comorbidities				
Hypertension	32 (74%)	17 (81%)	15 (68%)	0.3
Diabetes	13 (30%)	4 (19%)	9 (41%)	0.12
Chronic renal failure	9 (21%)	3 (14%)	6 (27%)	0.5
COPD	7 (16%)	2 (9.5%)	5 (23%)	0.4
Stroke/TIA	3 (7.0%)	2 (9.5%)	1 (4.5%)	0.6
Liver disease	3 (7.0%)	1 (4.8%)	2 (9.1%)	>0.9
History of atrial fibrillation	18 (38%)	9 (39%)	9 (37%)	0.7
Drug therapy				
ACE inhibitors	34 (72%)	17 (74%)	17 (71%)	0.8
ARBs	8 (17%)	3 (13%)	5 (21%)	0.7
Aspirin	32 (68%)	16 (70%)	16 (67%)	0.8
Betablockers	47 (100%)	23 (100%)	24 (100%)	-
Diuretics	40 (85%)	20 (87%)	20 (83%)	>0.9
Statins	36 (77%)	17 (74%)	19 (79%)	0.7
Amiodarone	5 (12%)	1 (5%)	4 (21%)	0.2

Results – Primary endpoint

Intention-to-treat

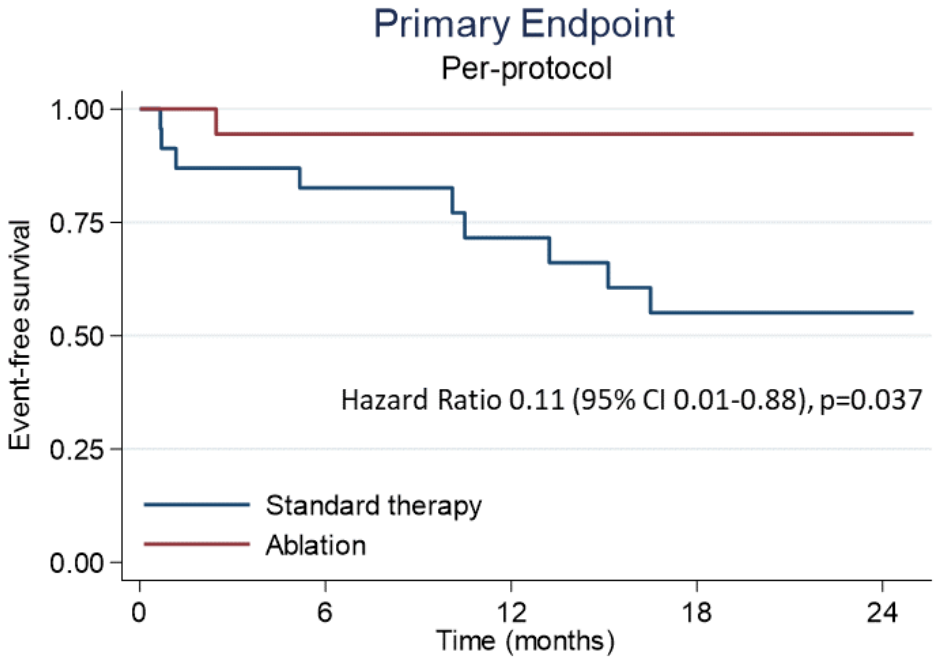
At the time of first interim analysis (median follow-up 24.2 [IQR, 8.5-24.4] months), the composite primary endpoint of death or worsening HF hospitalization occurred in significantly less patients in the ablation group as compared to standard therapy (1 patient [4%] vs. 10 patients [42%], log-rank p=0.010).



Sensitivity analysis – Primary endpoint

Per-protocol

- Five patients in the ablation group did not undergo the procedure (patient refusal), and one in the standard therapy group underwent ablation 9 months after randomization due to an electrical storm. The results of the per-protocol analysis were consistent with the results of the primary analysis.



Results – Secondary endpoints

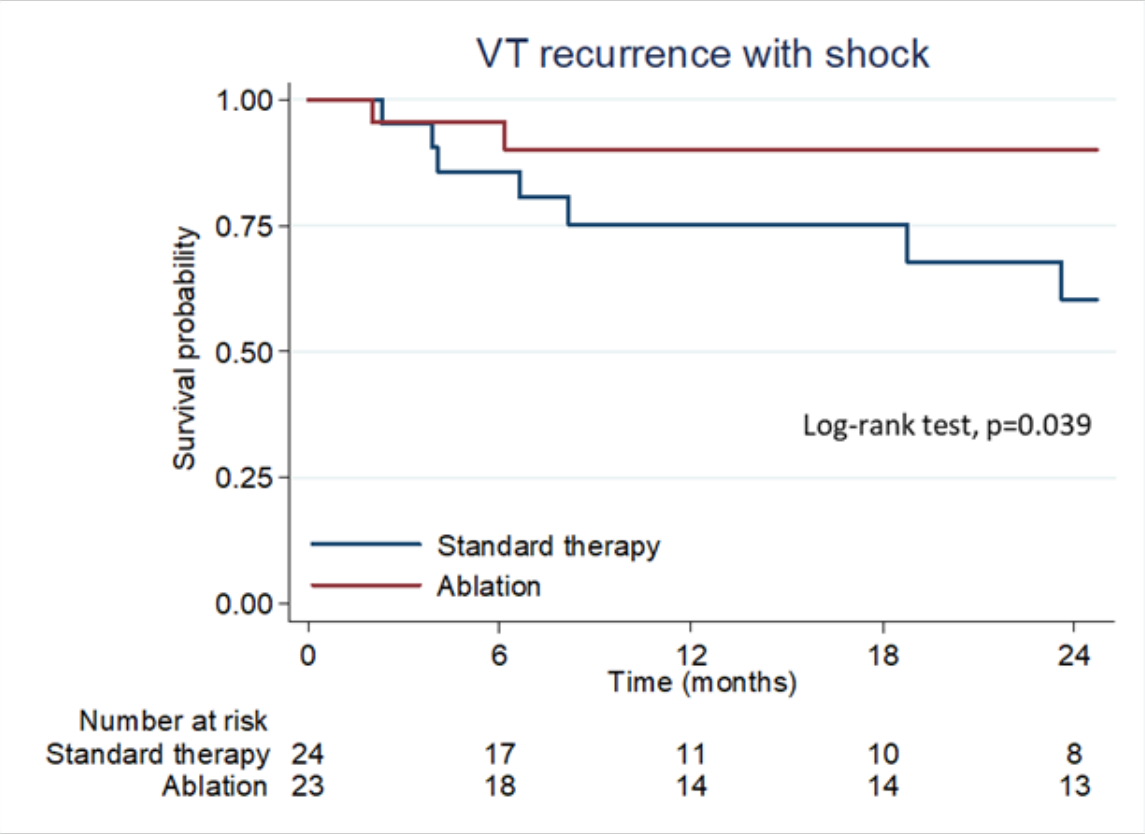
- The proportions of patients with all-cause death and recurrent VTs with shocks were significantly lower in the ablation group.
- Beside a trend in reduction of cardiac deaths, we could not observe significant differences in worsening HF hospitalization rate, recurrences of any VTs, recurrences of VTs successfully treated with, and electrical storms.

	Ablation, N=23	Standard therapy, N=24	P value
All-cause death	0 (0%)	8 (33.3%)*	0.004
worsening HF hospitalization	1 (4.3%)	4 (16.7%)	0.159
worsening HF hospitalization or cardiac death	1 (4.3%)	6 (25.0%)	0.053
Cardiac death	0 (0%)	3 (12.5%)	0.087
Recurrent VTs	7 (30.4%)	12 (50.0%)	0.434
Recurrent VTs with ATP	7 (30.4%)	11 (45.8%)	0.639
Recurrent VTs with shock	2 (8.7%)	10 (41.7%)	0.039
Electrical storm	0 (0%)	2 (8.3%)	0.280

**Among patients in phase B, there were 8 deaths in the control group. Two of these patients died of heart failure during follow-up after 5 and 10 days of hospitalization, 1 patient had a fatal cardiac arrest outside the hospital, 3 died from non cardiac causes (2 malignant tumors [sarcoma and squamous cell carcinoma of the skin], 1 sepsis), and 2 died from an unknown cause.*

Results – Secondary endpoints

VT recurrence with shock



Conclusioni

- Lo studio PARTITA è stato interrotto prematuramente con una dichiarazione di superiorità dell'ablazione rispetto al trattamento standard alla prima analisi ad interim della Fase B, secondo un disegno bayesiano adattativo.
- Il tasso dell'endpoint primario, costituito da morte e ospedalizzazione per wHF, è stato del 5% nel gruppo ablazione rispetto al 43% nel gruppo di controllo, con una riduzione relativa del rischio dell'89%.
- L'ablazione mediante catetere è stata inoltre associata a una minore recidiva di episodi di TV trattati con shock e a una riduzione della mortalità.
- Questi risultati supportano la considerazione dell'ablazione della TV nei pazienti con cardiomiopatia dilatativa ischemica o non ischemica e indicazione a prevenzione primaria o secondaria per ICD dopo il primo shock appropriato.

Conclusioni

- E’ stato osservato un tasso di tachicardie ventricolari (TV) trattate con shock inferiore alle attese (circa il 10% a 3 anni sia nella prevenzione primaria sia in quella secondaria).
- Ciò è stato probabilmente dovuto a molteplici fattori: le caratteristiche della coorte dello studio, la rapida ottimizzazione della terapia con beta-bloccanti grazie al monitoraggio remoto, l’uso sostanzialmente limitato dell’amiodarone, la programmazione moderna degli ICD e l’efficacia dell’ATP (stimolazione antitachicardica).

A sub analysis from the PARTITA trial

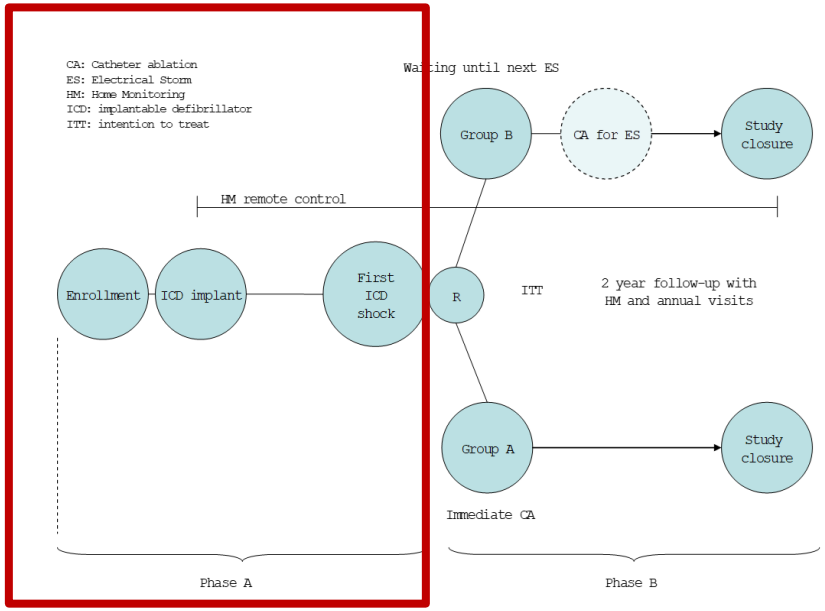
- E' possibile sviluppare un modello di stratificazione del rischio per predire la comparsa del primo shock?

Circulation: Arrhythmia and Electrophysiology

ORIGINAL ARTICLE

Active Arrhythmia Pattern: A Novel Predictor of ICD Shocks—A Subanalysis From the PARTITA Study

Andrea Radinovic, MD; Daniele Giacopelli, PhD; Caterina Bisceglia, MD; Gabriele Paglino, MD; Alessio Gargaro, MSc; Paolo Della Bella, MD



Classification Tree Model

- Il dataset originale è stato suddiviso casualmente in due parti: il campione di training (70% della coorte dello studio), utilizzato per costruire l'albero CART, e il campione di test (30% della coorte dello studio).
- Abbiamo analizzato un ampio numero di variabili per costruire il modello predittivo utilizzando il CART e abbiamo impiegato un approccio di validazione incrociata a dieci fold per ottimizzare il parametro di complessità (0,039).

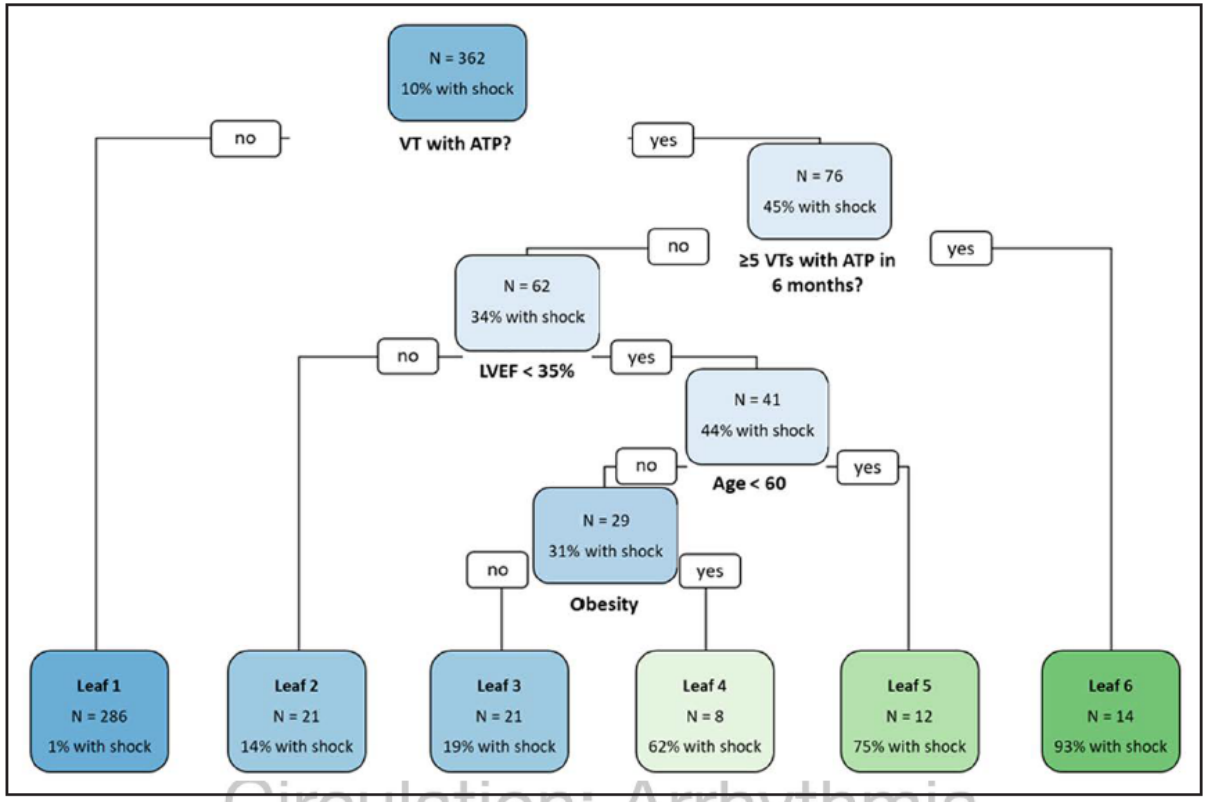


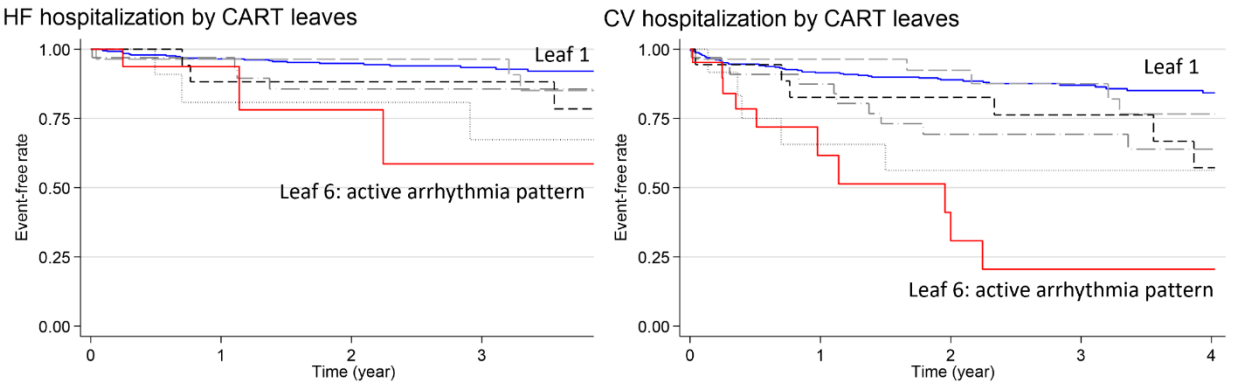
Figure 1. Classification tree with 6 leaves for predicting the occurrence of appropriate shock for ventricular tachycardia developed in the training sample.

The number of patients (N) and the probability of shock are shown at each node. ATP indicates antitachycardia pacing; LVEF, left ventricle ejection fraction; and VT, ventricular tachycardia.

HF, CV hospitalization by model risk groups

- L'analisi di sopravvivenza ha evidenziato un rischio significativamente più elevato sia di scompenso cardiaco (HF) (HR 5,45; IC 95% 1,62–18,4; p=0,006) sia di ospedalizzazione cardiovascolare (HR 7,29; IC 95% 3,66–14,5; p<0,001) nei pazienti appartenenti alla foglia 6 (pattern aritmico attivo) rispetto a quelli della foglia 1.

HF, CV hospitalization by model risk groups



Significant higher risk of both worsening HF and CV hospitalization for patients with 'active arrhythmic pattern' compared to those with the lowest shock risk.

Conclusioni

- I pazienti con un pattern aritmico attivo (≥5 ATP in 6 mesi) presentano un rischio aumentato di shock dell'ICD, così come di ospedalizzazione per scompenso cardiaco (HF) e ospedalizzazione cardiovascolare (CV).
- L'ablazione mediante catetere può essere proposta a questo gruppo ad alto rischio come strategia preventiva per ridurre l'incidenza di eventi maggiori.
- Sono necessari ulteriori studi prospettici randomizzati per confermare i benefici dell'ablazione precoce della tachicardia ventricolare (TV).