Interventions for Ventricular Arrhythmias to Improve Your Patients' Outcomes

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September 30, 2023

Disclosures

- Educational grant- Medtronic
- I will be discussing off label usage of devices

Objectives

- Discuss pharmacologic interventions for Ventricular Arrhythmias (VA)
- Outline device therapy for VA
- Provide data for emerging therapies

Case Presentation

- 75 year old male with an ICM s/p dual chamber ICD, CAD s/p CABG, HTN, VT s/p 2 prior ablations (most recently 1 month prior)
- Current relevant medications (titration limited by blood pressure)
  - Amiodarone 200mg daily
  - Carvedilol 12.5mg BID
  - Lisinopril 5mg daily
  - Mexiletine 150mg TID
  - Spironolactone 25mg daily
- Presented with recurrent VT
- Next steps?

Classification

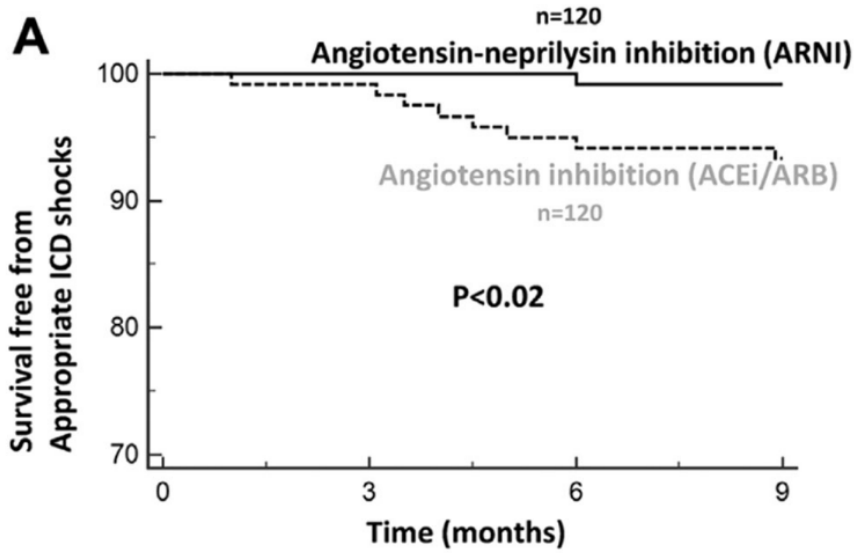
Structurally Normal Heart	Outflow Tract
	Papillary Muscle
	Idiopathic LV
	Fascicular
	PVC Trigger PMVT
Structural Heart Disease	Ischemic Scar
	Dilated Cardiomyopathy
	ARVC/D
	Hypertrophic Cardiomyopathy
	Sarcoid
	Chagas Myocarditis

8 Dukkipati,Srinivas R. 2017; 9 Dukkipati,Srinivas R. 2017

Prevention of VA

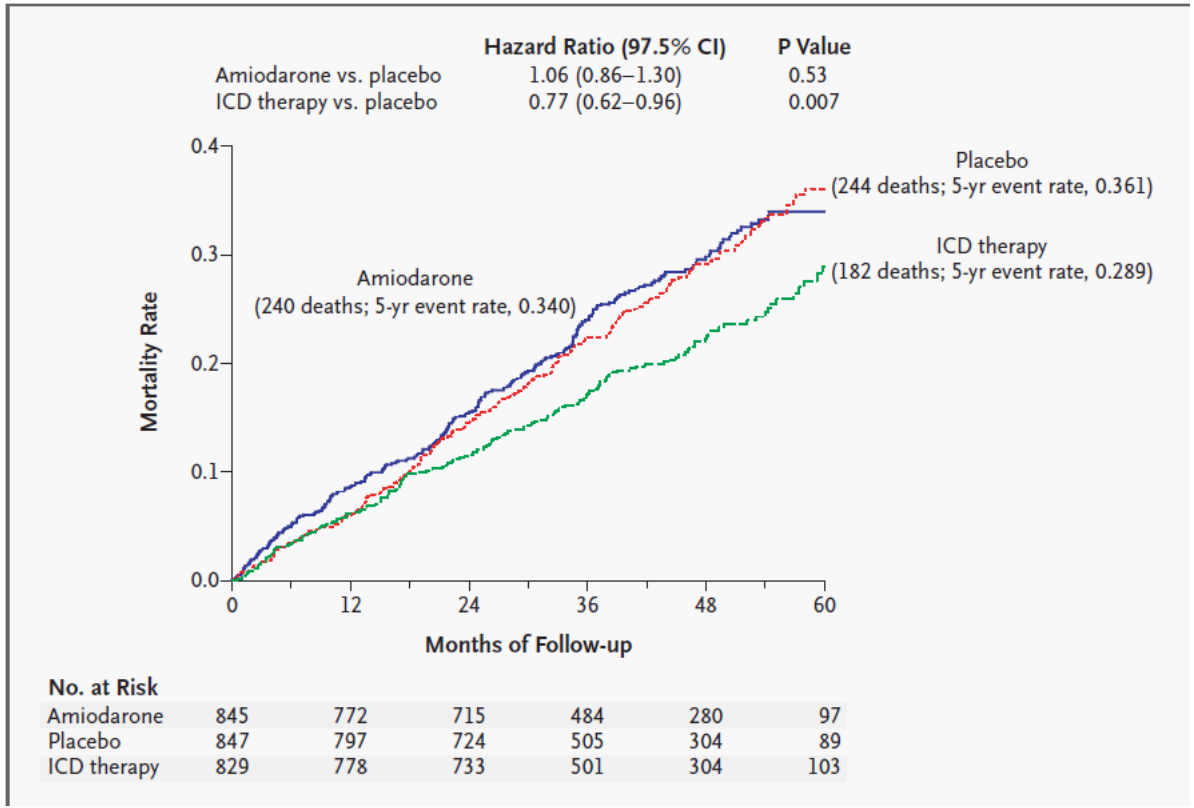
- Patients with heart failure and reduced EF (EF <40%)
  - Appropriate GDMT
    - Beta-blocker- carvedilol, metoprolol succinate, bisoprolol
      - Reduce oxygen demand, electrical excitability
      - Reduced sympathetic stimulation to the heart
    - ACE-I/ARB
      - Decrease oxygen demand
      - Slow ventricular remodeling and fibrosis
    - MRA (HR 0.76)
      - Maintain potassium homeostasis
      - Reduce fibrotic burden
    - SGLT2i- RR 0.68

Prevention of VA

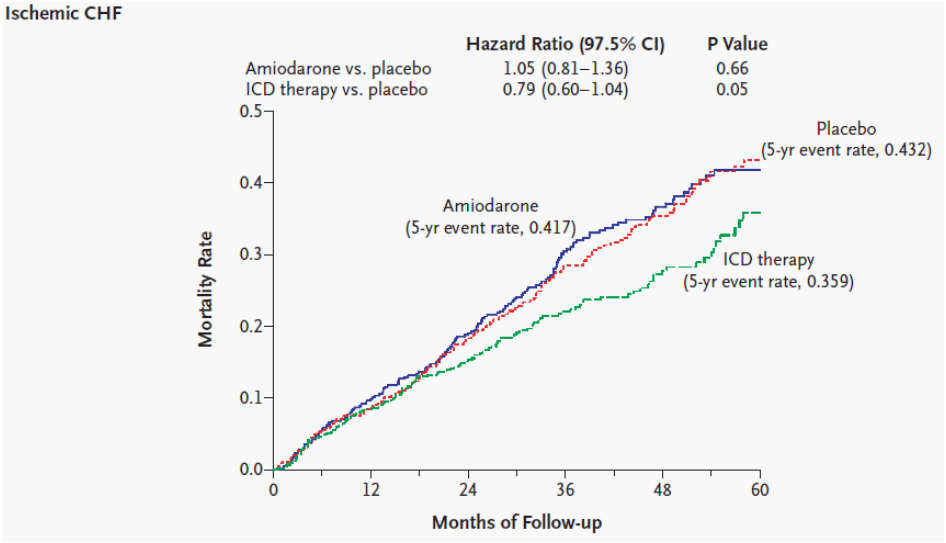


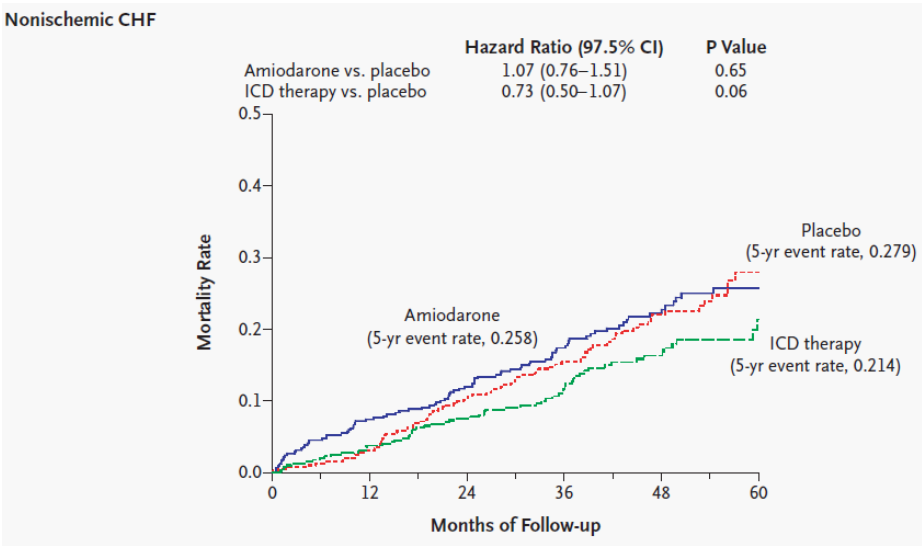
Huang E, Bernard ML, Elise Hiltbold A,et al. Sacubitril/valsartan: an antiarrhythmic drug?J CardiovascElectrophysiol. 2022;33:2375-2381.doi:10.1111/jce.15670HUANGET AL.|2381

Amiodarone or an Implantable Cardioverter–Defibrillator for Congestive Heart Failure



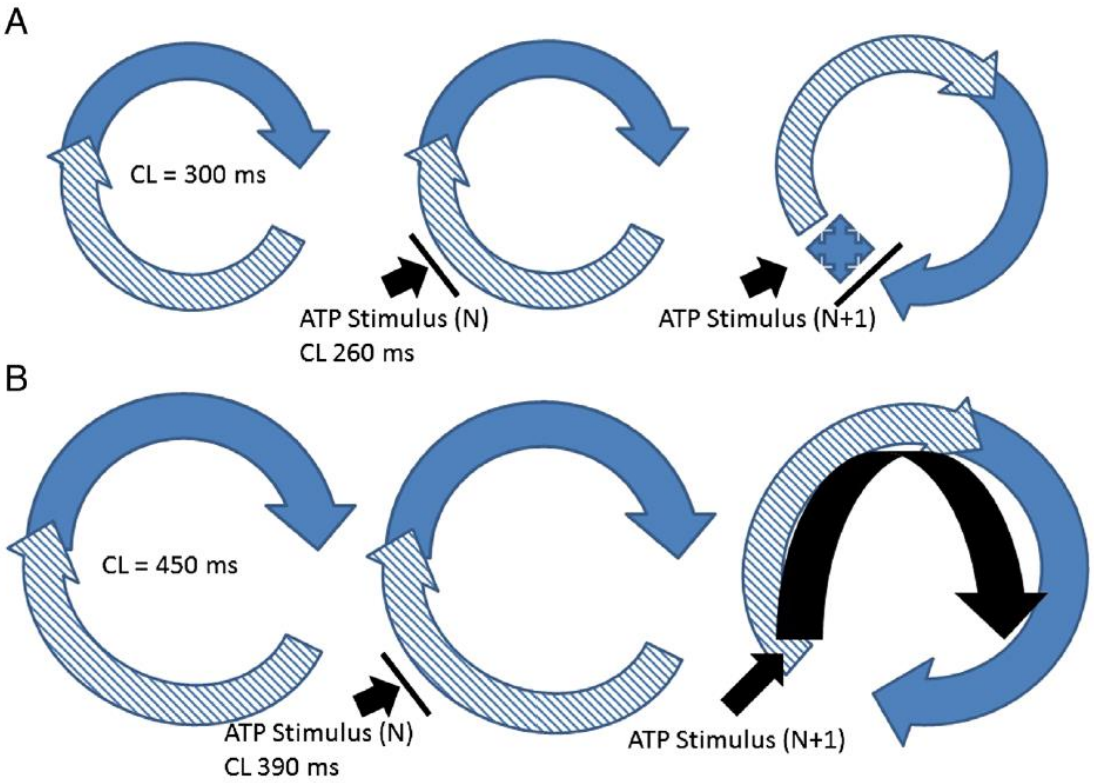
ICD Therapy SCD-HeFT





Bardy, Gust H 2005

Anti-Tachycardia Pacing

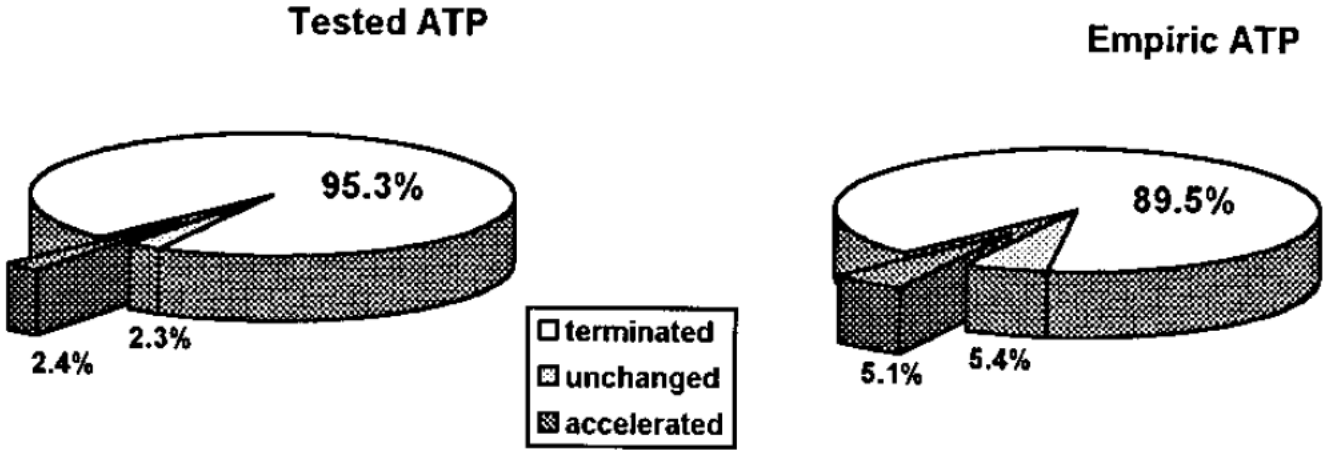


Cantillon,D.J. 2015

Empirical Versus Tested Antitachycardia Pacing in Implantable Cardioverter Defibrillators

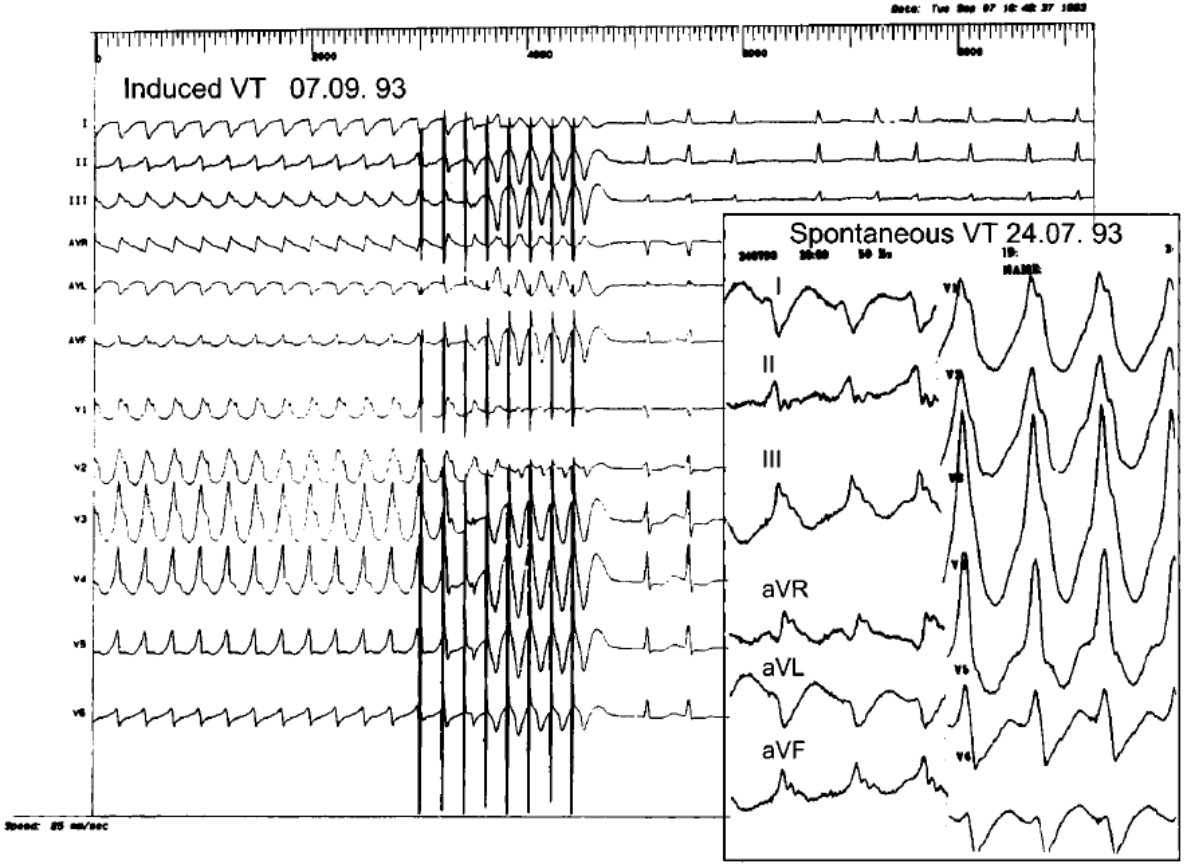
A Prospective Study Including 200 Patients

Anselm Schaumann, MD; Friederike von zur Mühlen, MD; Bernhard Herse, MD; Bernd-Dieter Gonska, MD; Heinrich Kreuzer, MD

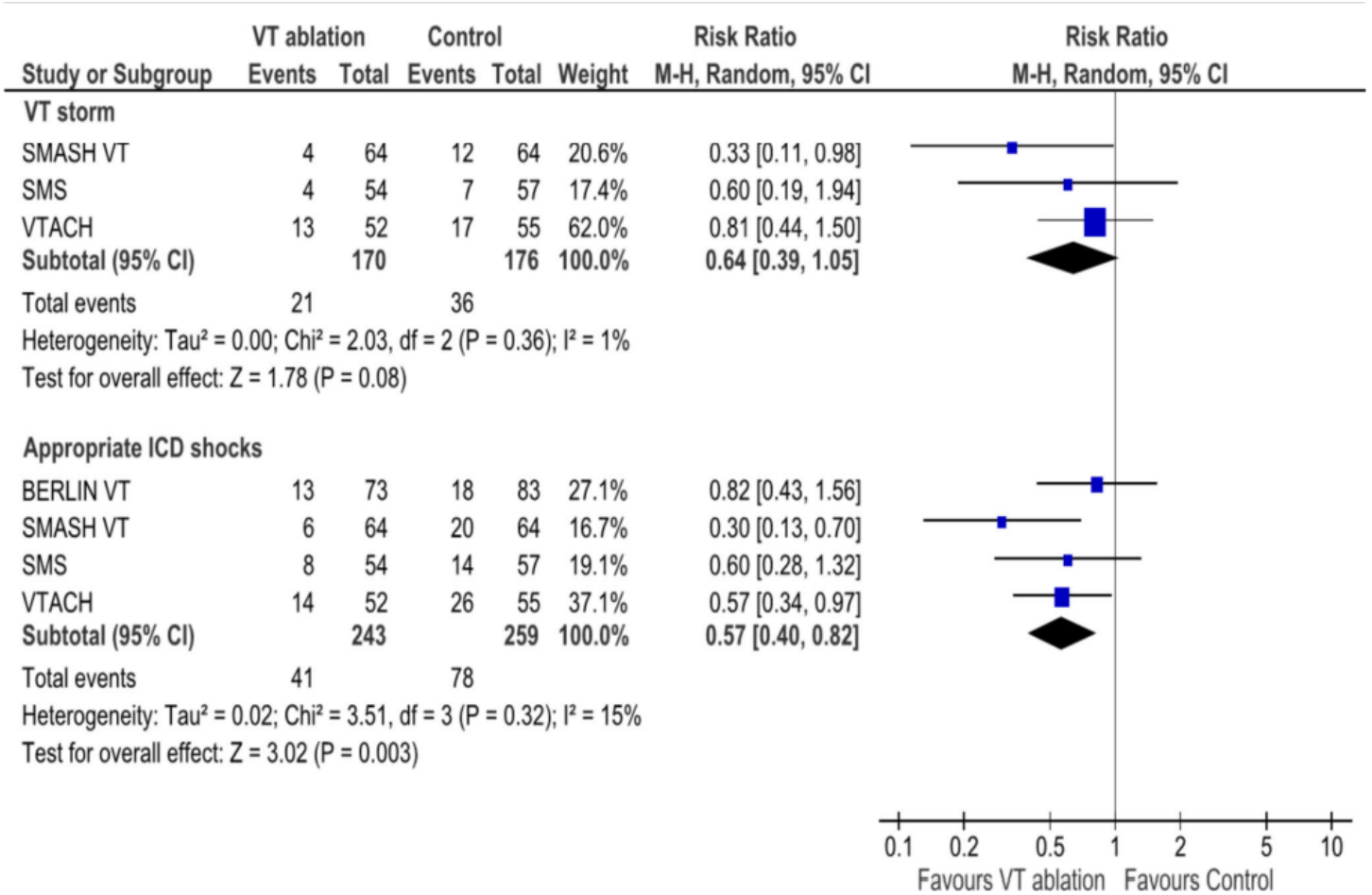


Schaumann,A. 1998

Anti-tachycardia Pacing

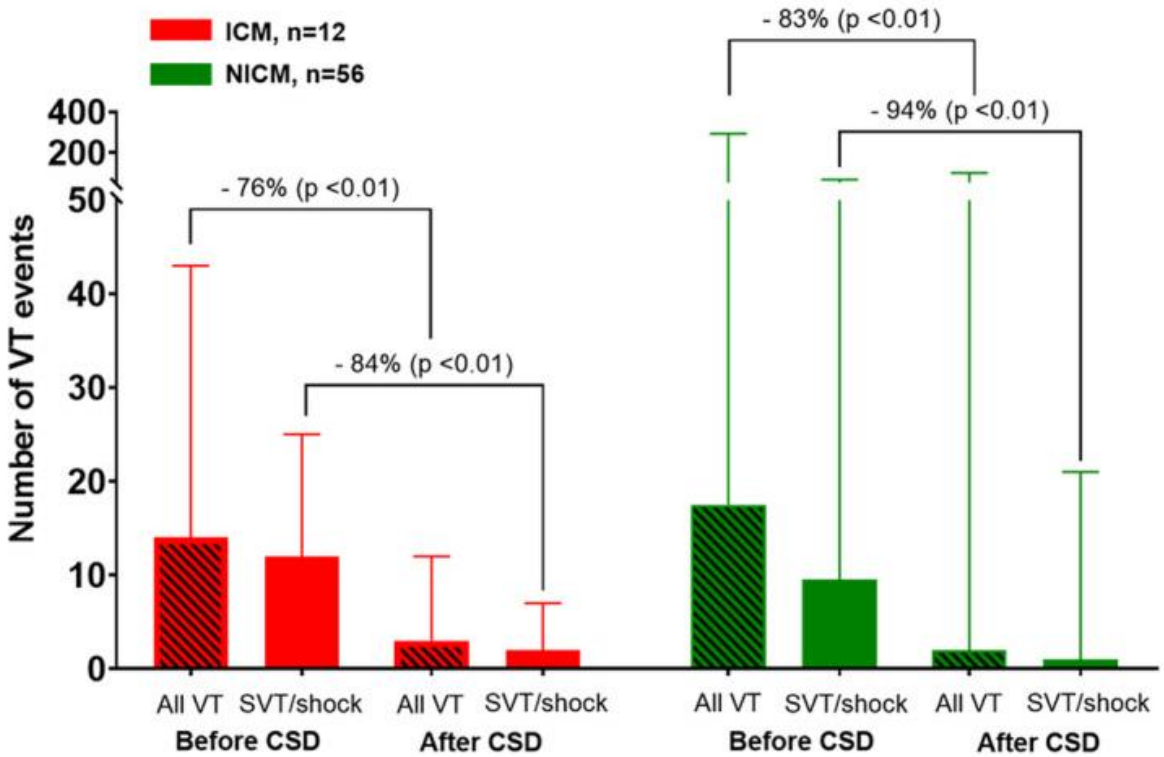


Schaumann,A. 1998



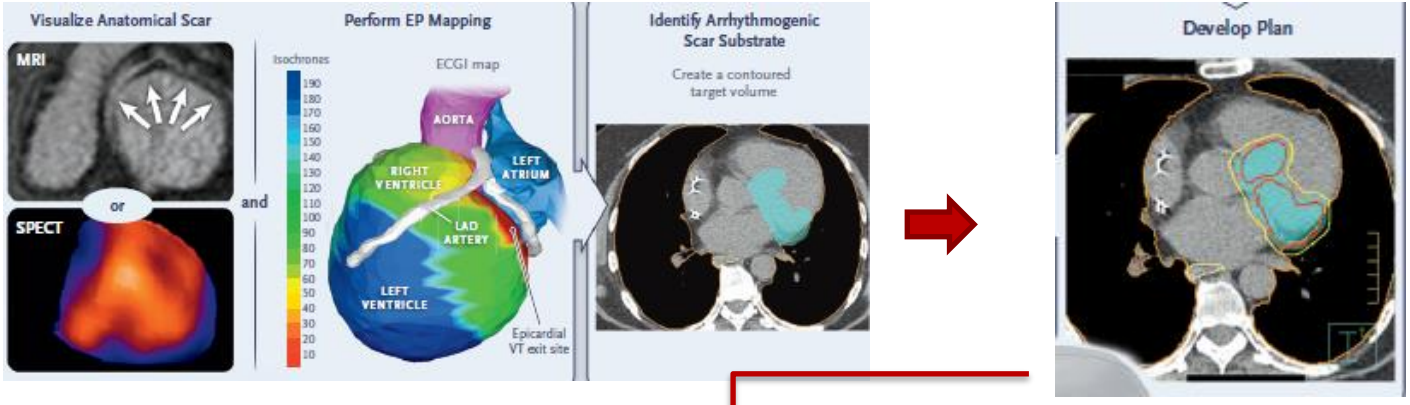
Lima da Silva, Gustavo, et al. "Radiofrequency catheter ablation of ventricular tachycardia in ischemic heart disease in light of current practice: a systematic review and meta-analysis of randomized controlled trials." *Journal of Interventional Cardiac Electrophysiology* 59 (2020): 603-616.

Sympathetic Denervation



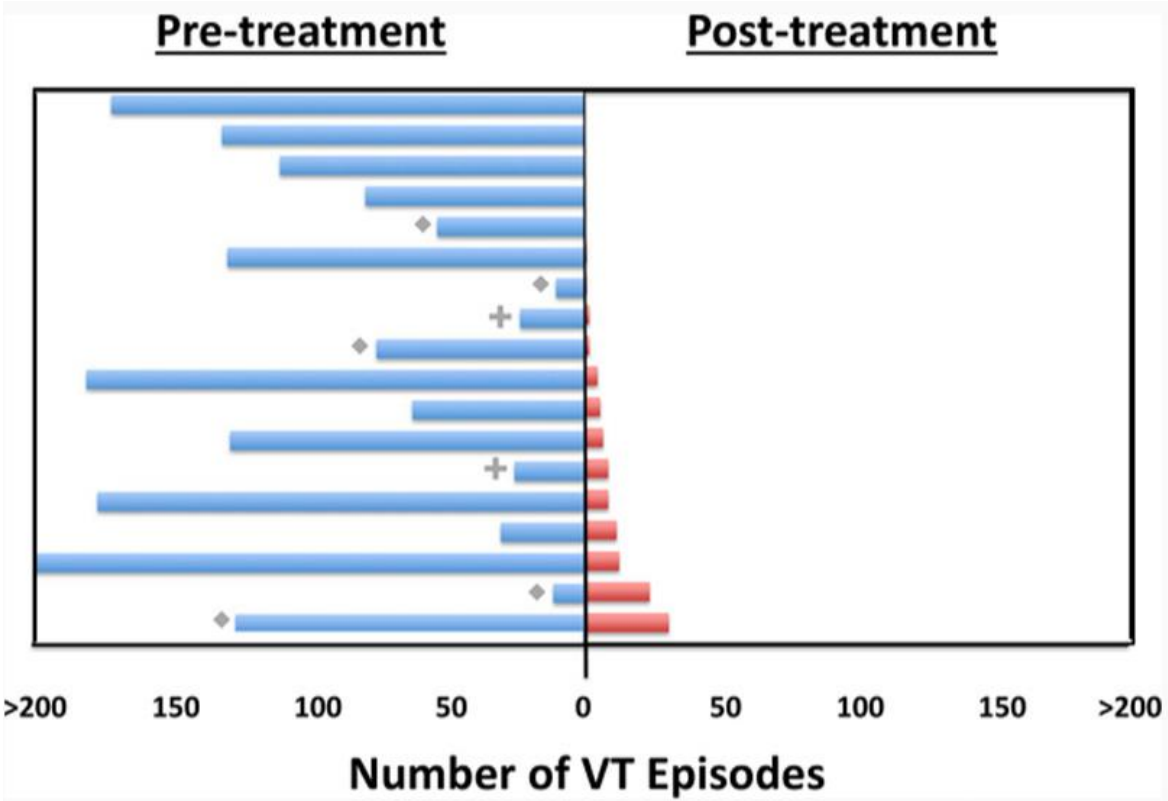
Dusi, Veronica, et al. "Arrhythmic risk profile and outcomes of patients undergoing cardiac sympathetic denervation for recurrent monomorphic ventricular tachycardia after ablation." Journal of the American Heart Association 10.2 (2021): e018371.

Non-Invasive Ablation



Cuculich, Phillip S 2017

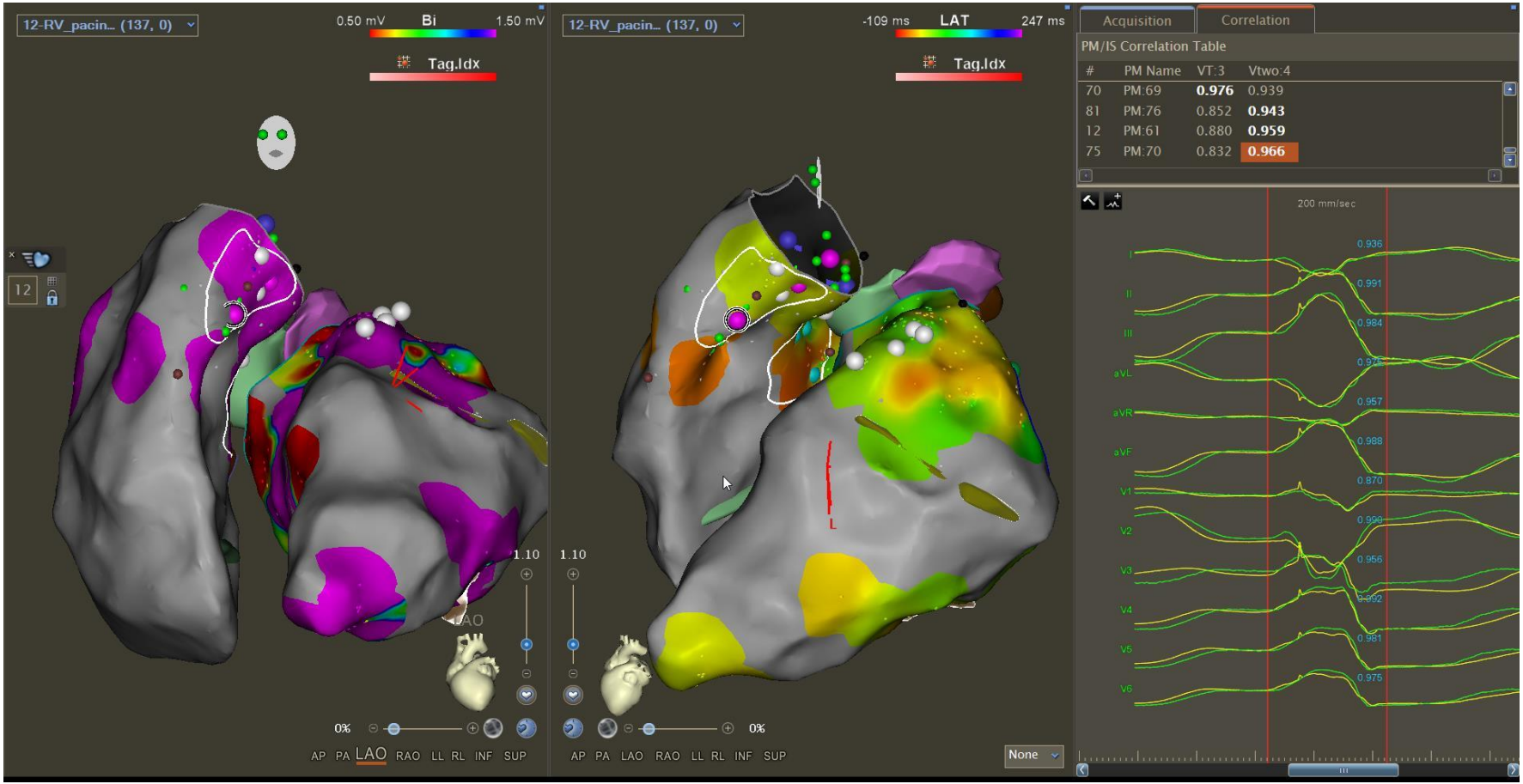
Radioablation

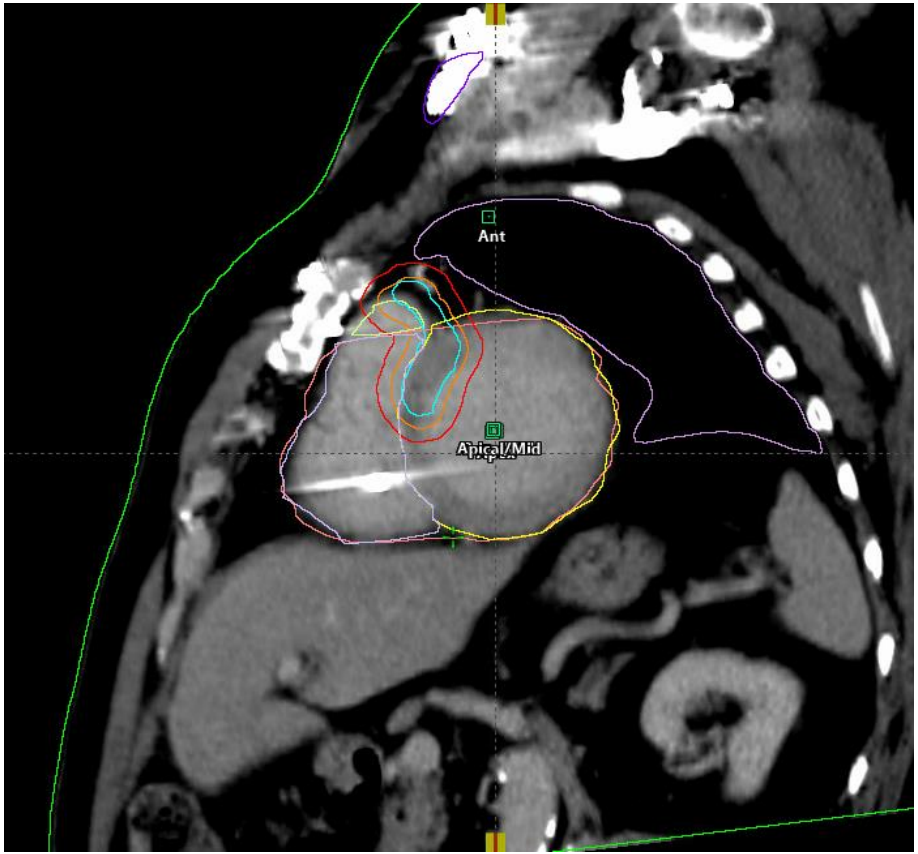


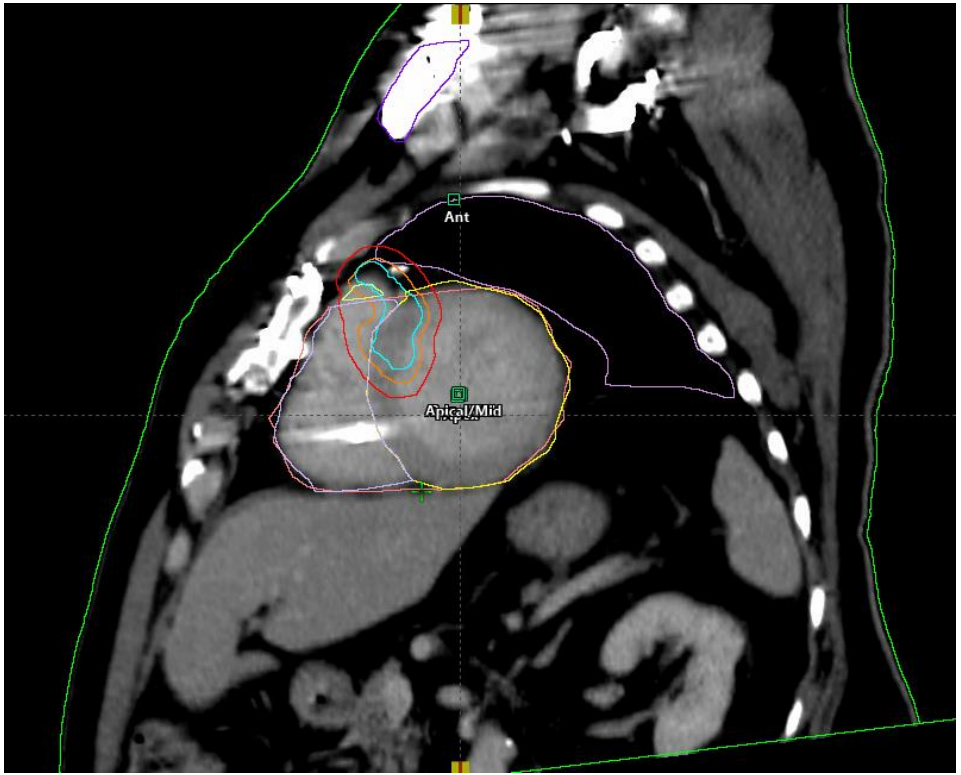
Robinson, Clifford G., et al. "Phase I/II trial of electrophysiology-guided noninvasive cardiac radioablation for ventricular tachycardia." Circulation 139.3 (2019): 313-321.

Case Presentation

- Due to recurrent VT, underwent surgical bilateral sympathetic denervation
- Following the procedure, had a single ICD shock, but repetitive slow VT







Conclusions

- Baseline GDMT is the foundation to preventing VA in patients with reduced EF
- AAD have not been shown to improve mortality
- ICD programming with ATP can reduce ICD shocks related to VA
- Catheter ablation can reduce ICD shocks in refractory VA cases
- Cardiac sympathetic denervation and external beam radiation therapy are emerging therapies for refractory VA

Thank You

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