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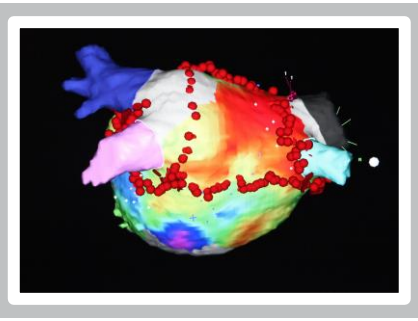
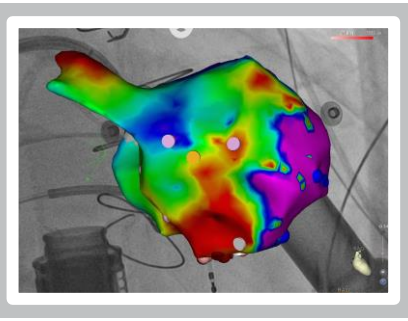
Bad Neustadt a. d. Saale
Medizinische Exzellenz aus Tradition

Case Report on a Patient with Recurrent VTs and Regained LV-funtion after Effective Ablation without ICD

P. Halbfaß

12th Expert Meeting Berlin 2019

RHÖN-KLINIKUM AKTIENGESELLSCHAFT

Case Presentation

- 52 y., male patient
- Admitted with palpitations ongoing for 6 weeks, often exercise-induced but also occurring spontaneously, less frequent at rest / at night, increasing in frequency, intermittent dizziness
- History of worsening dyspnoea on exertion (NYHA II)
- So far no syncope
- Arterial hypertension – treated with an ACE inhibitor

Case Presentation

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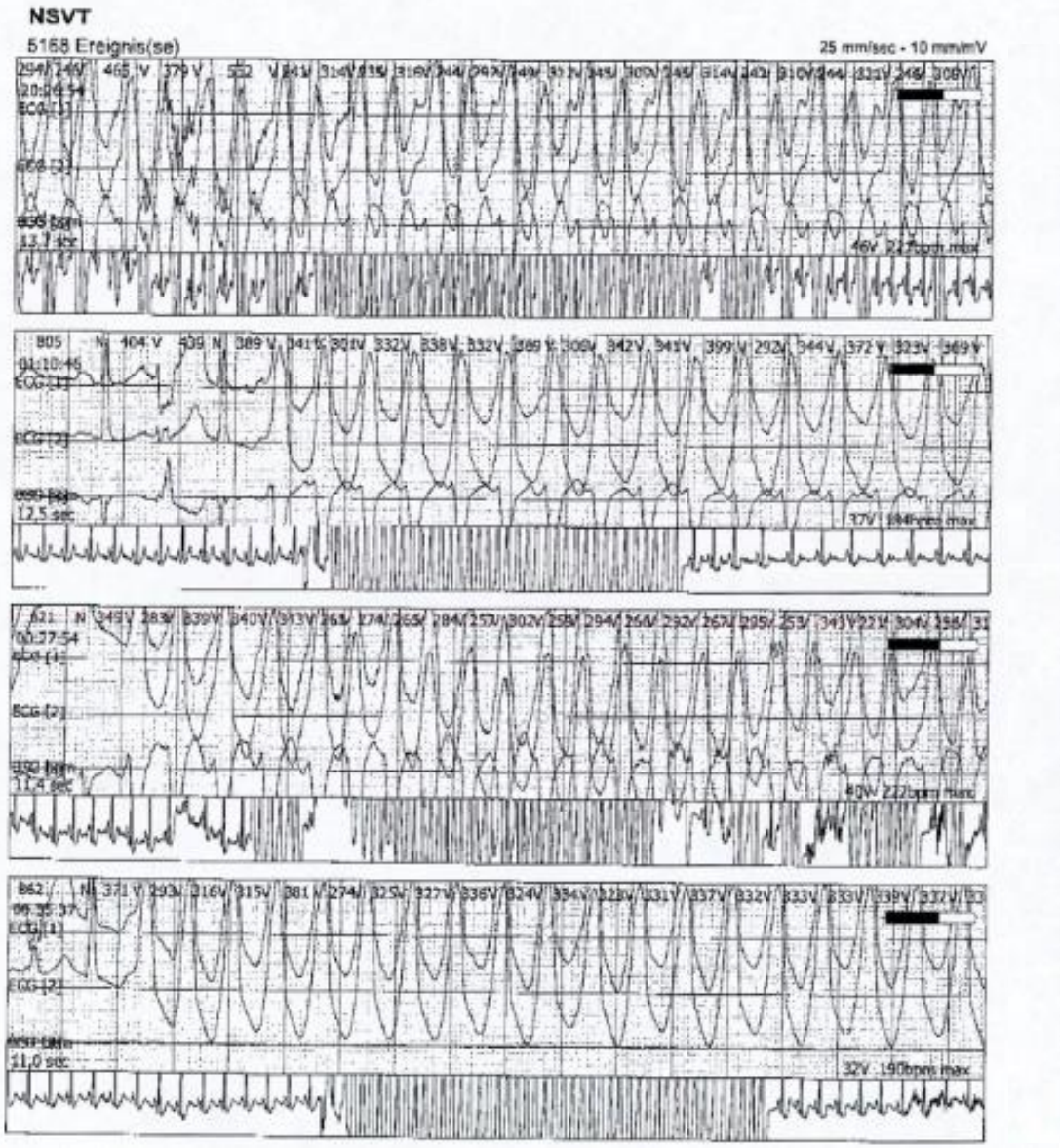
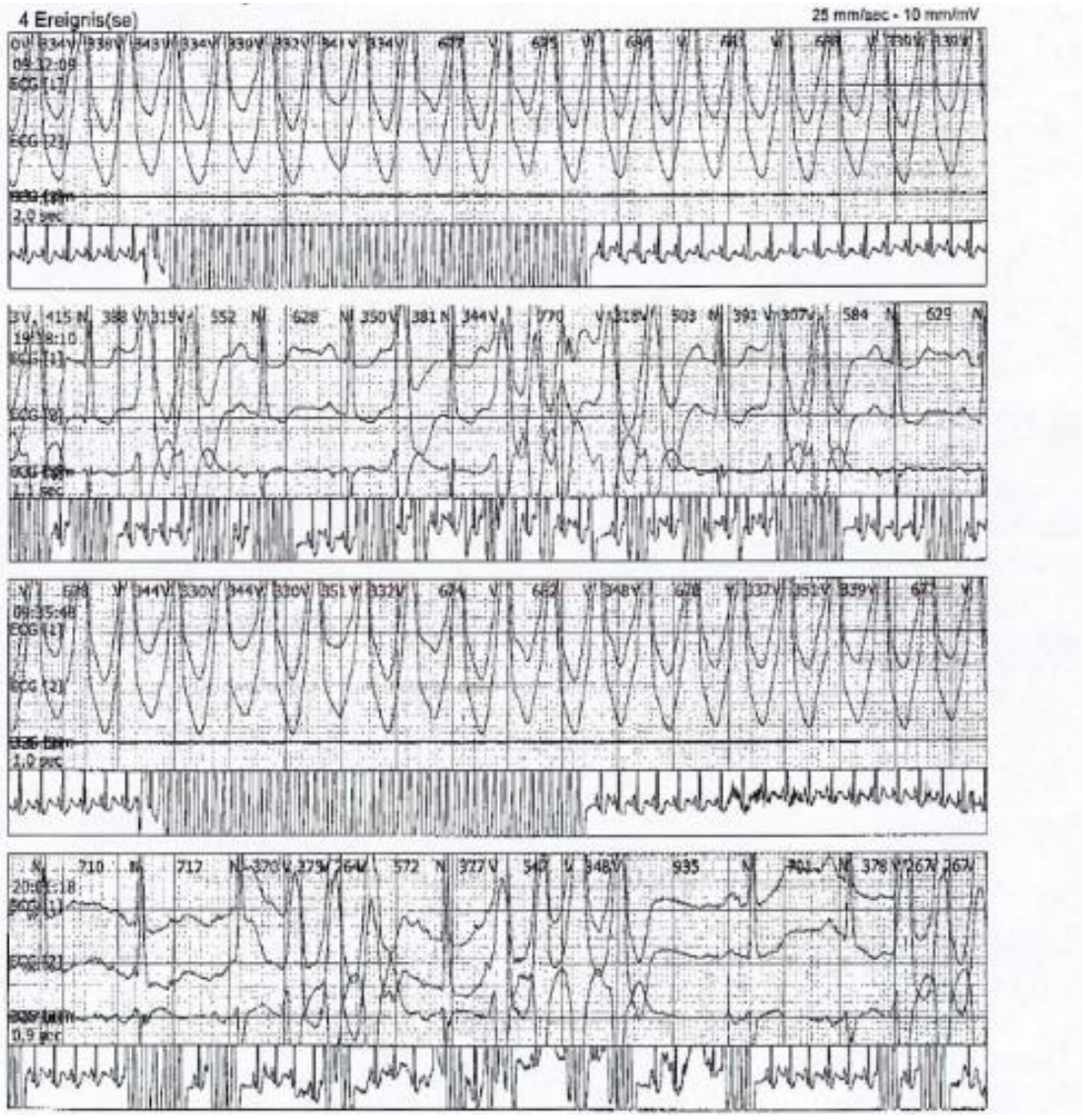
- Holter ECG (24 h) before admission : >45% PVC /nsVT





ECG on Admission

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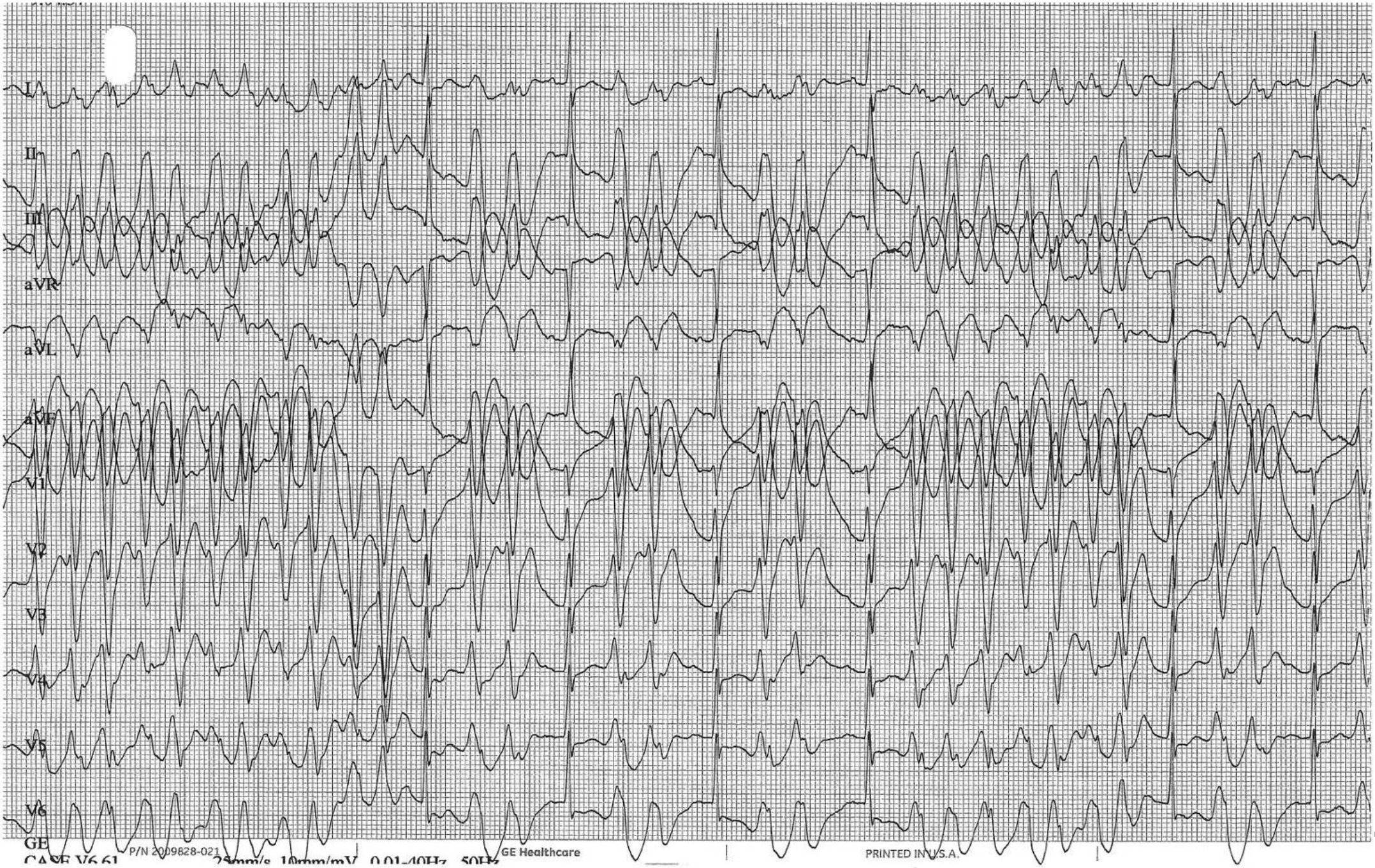

Case Presentation

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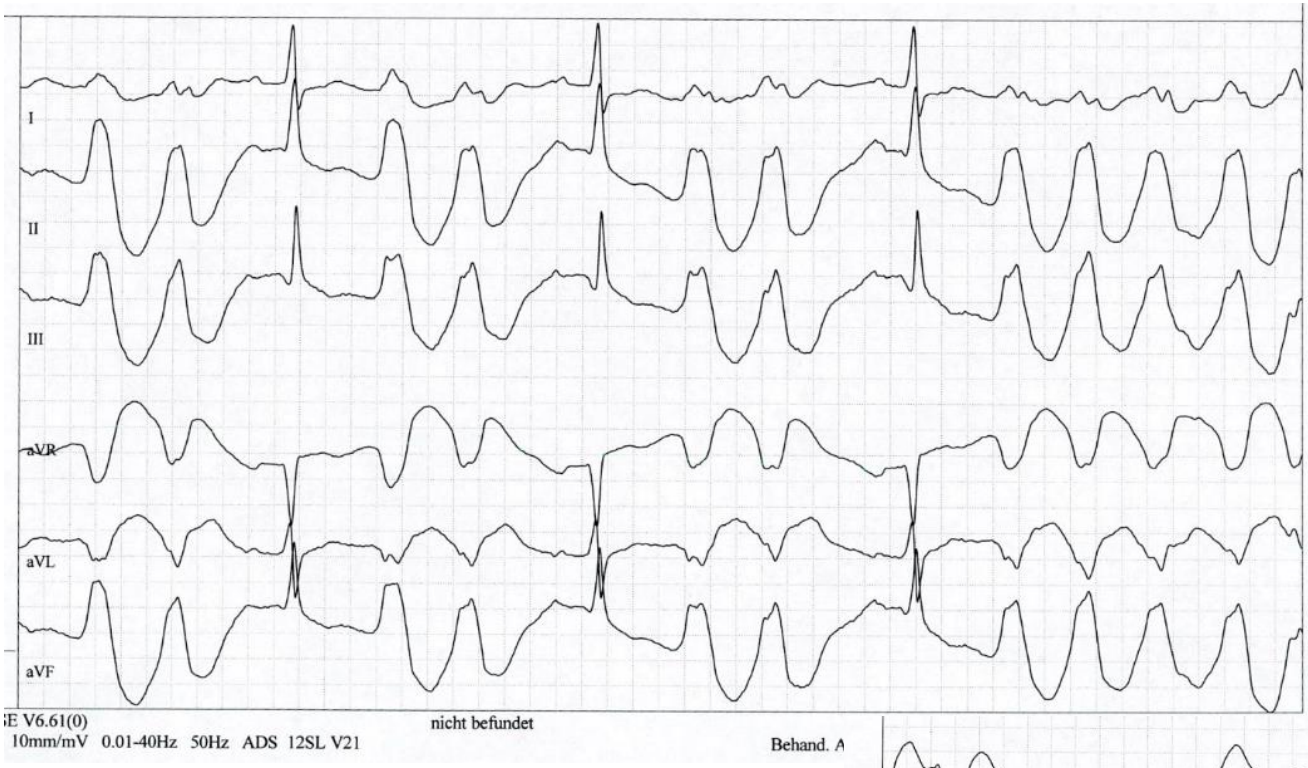
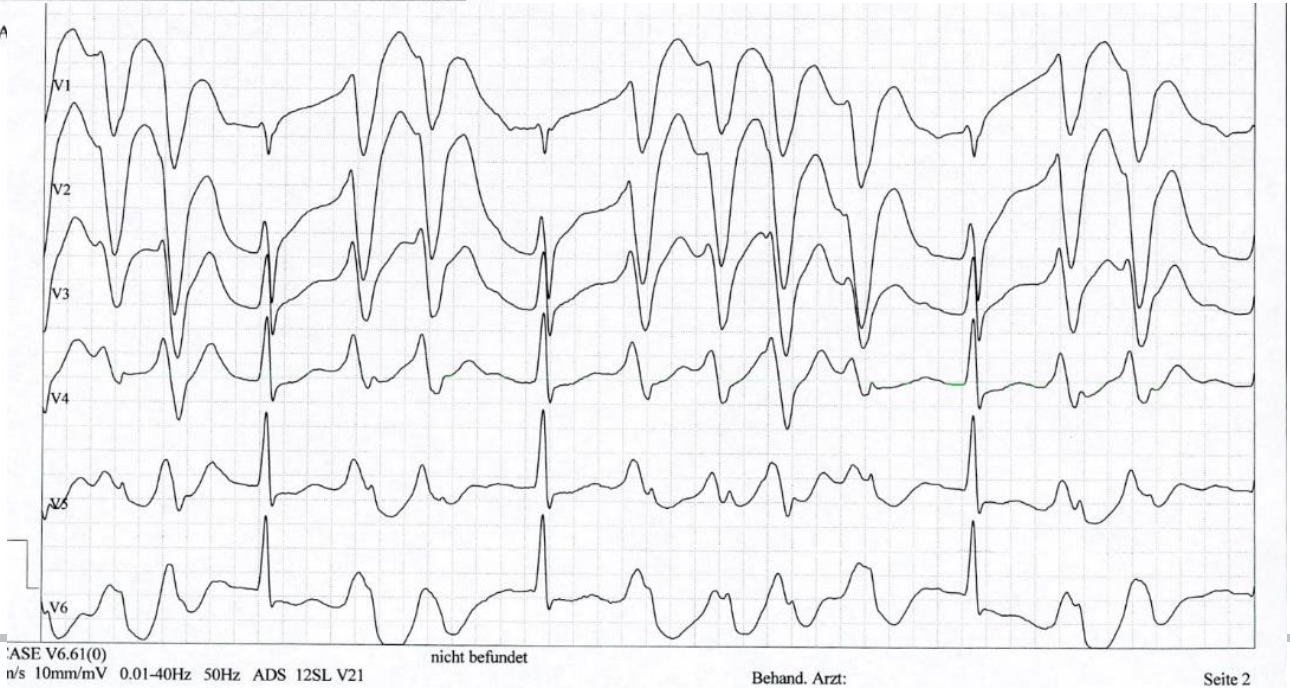




Case Presentation

- 52 y., m.
- Physical examination unremarkable aside from intermittently fast and irregular pulse
- Thyroid function tests were normal
- Transthoracic echocardiography on admission:
  - Dilated left ventricle and reduced systolic LV function (EF 30%), with global hypokinesia

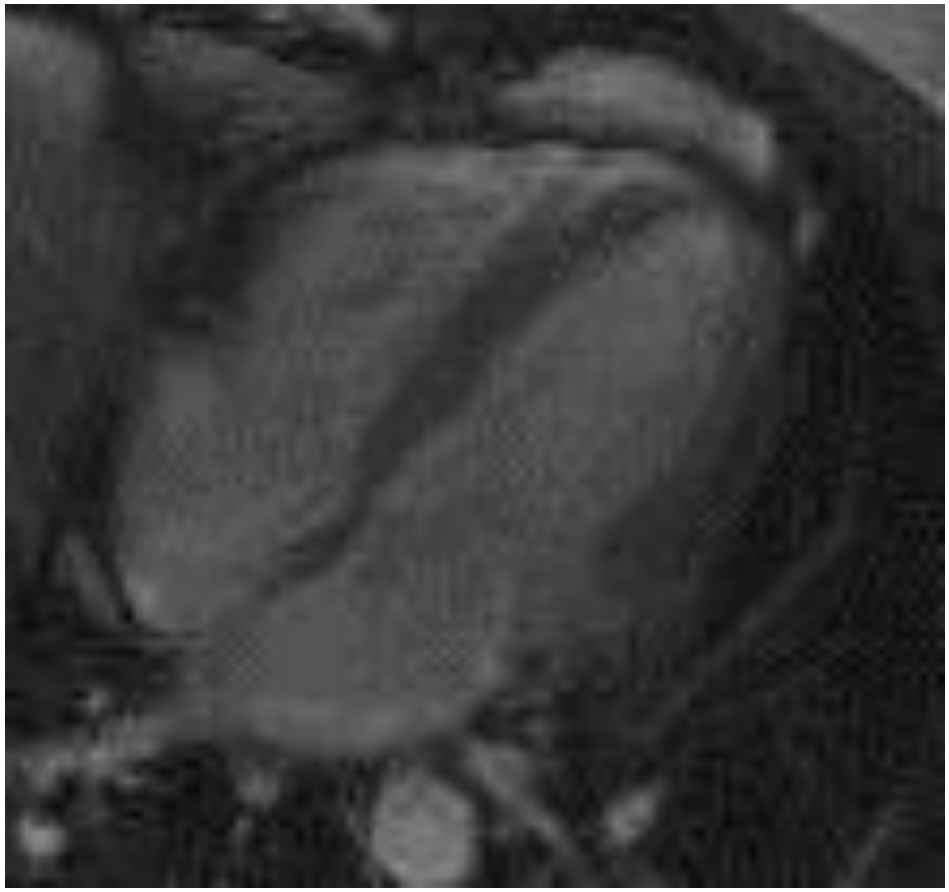
Case Presentation

- Suggestions?
- Diagnostic approach:
  - MRI?
  - Coronary angiography?
  - Genetic testing (ARVC)?
- Treatment approach:
  - AAD treatment: Class I?, III (amiodarone, sotalol)?, verapamil / B-blocker?
  - ICD implantation / +/- AAD?
  - HF medication?
  - .... EP study / catheter-ablation?

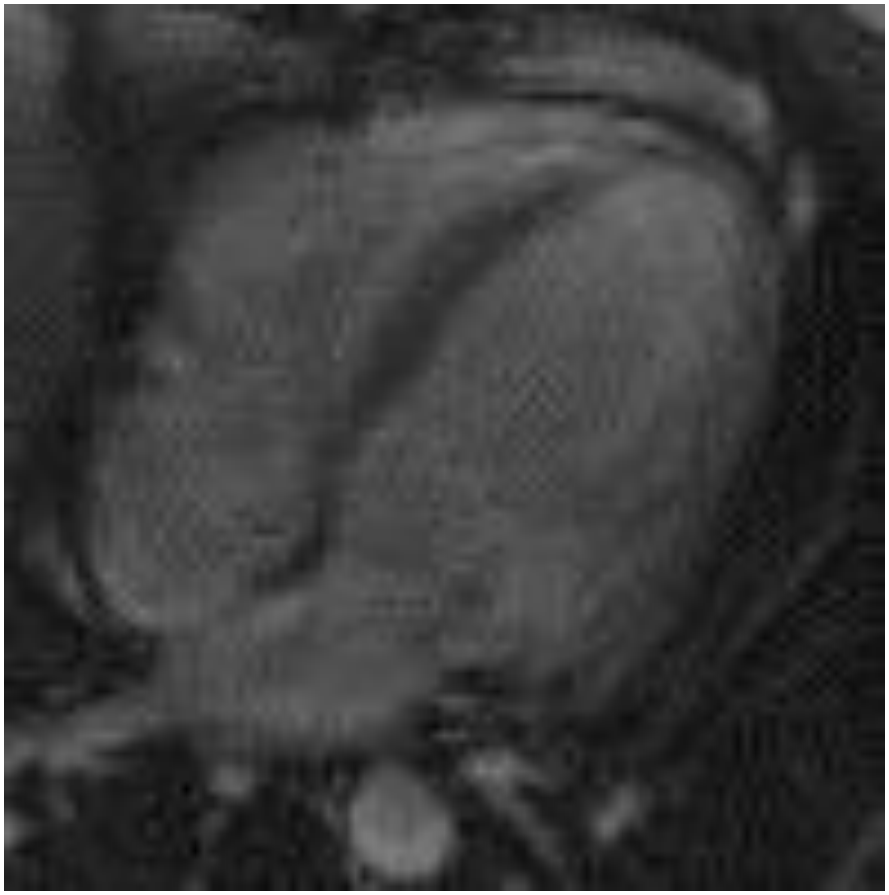
Case Presentation

- Cardiac MRI: reduced systolic LV-function 35% EF, moderately dilated LV and RV

endsystolic

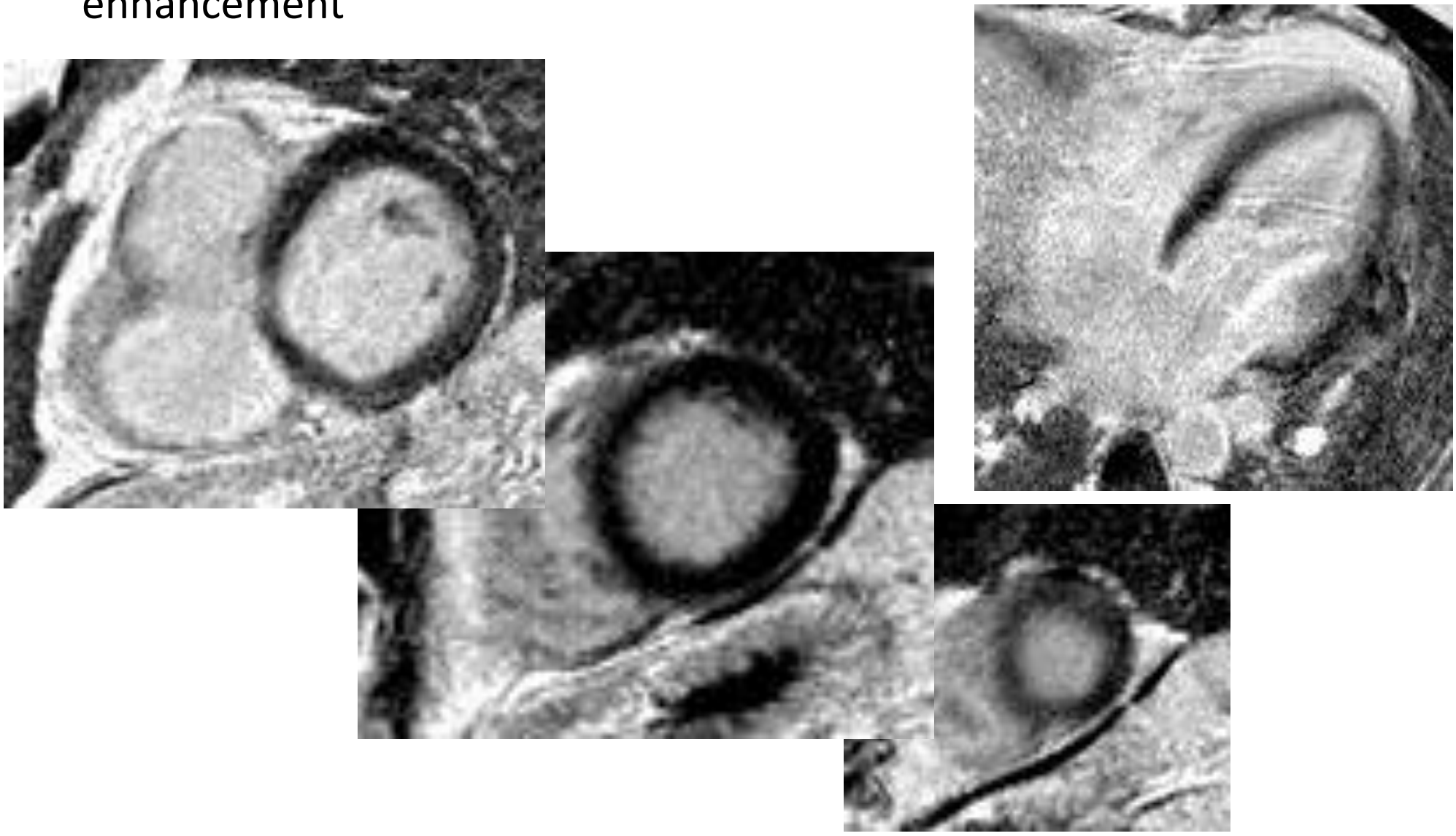


enddiastolic

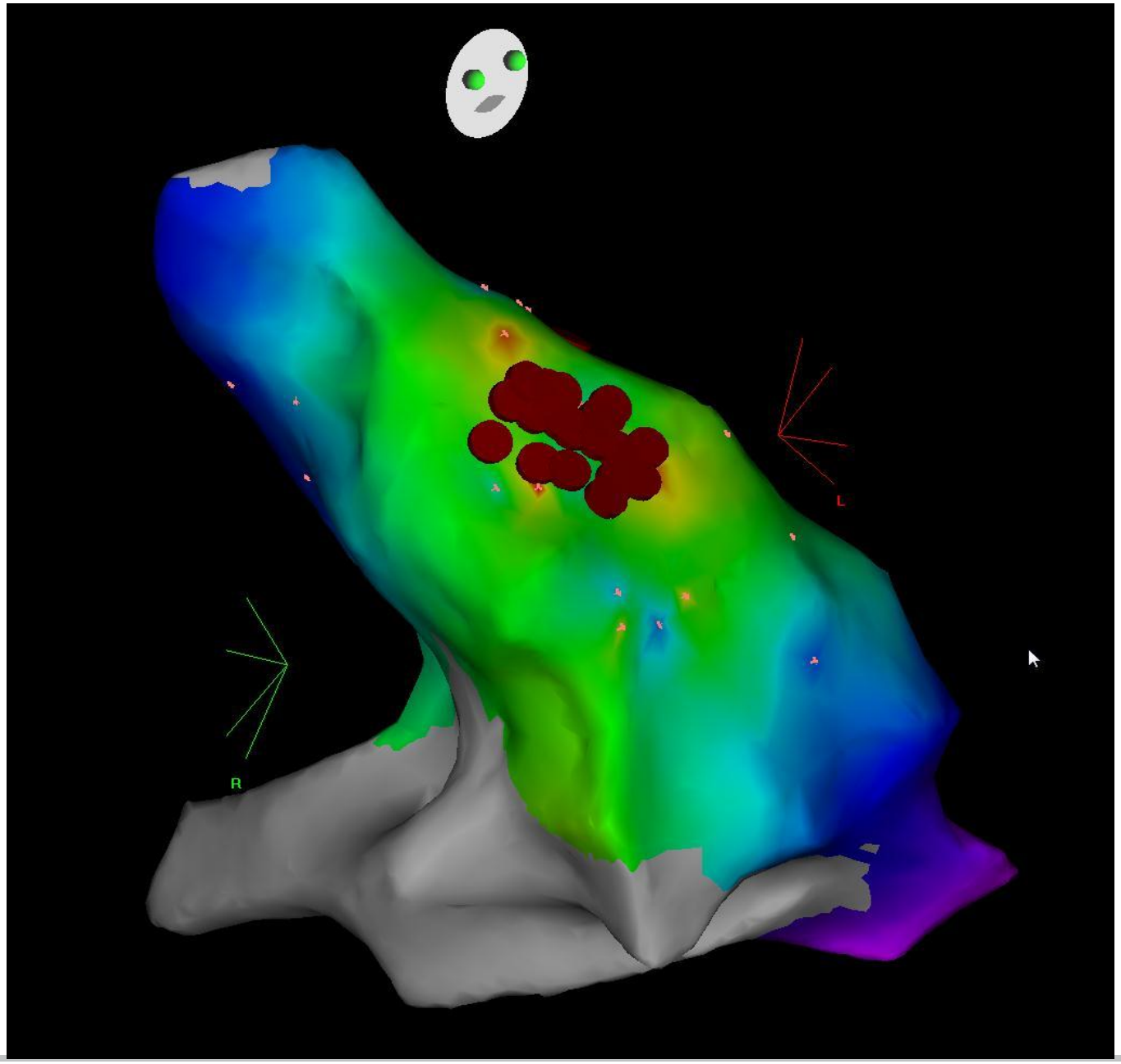


LGE-MRI: no late-enhancement

- 2- and 4- chamber view: phase-sensitive inversion recovery (PSIR) Late-enhancement



Activation Map RV/RVOT



Local Egram at successful ablation site

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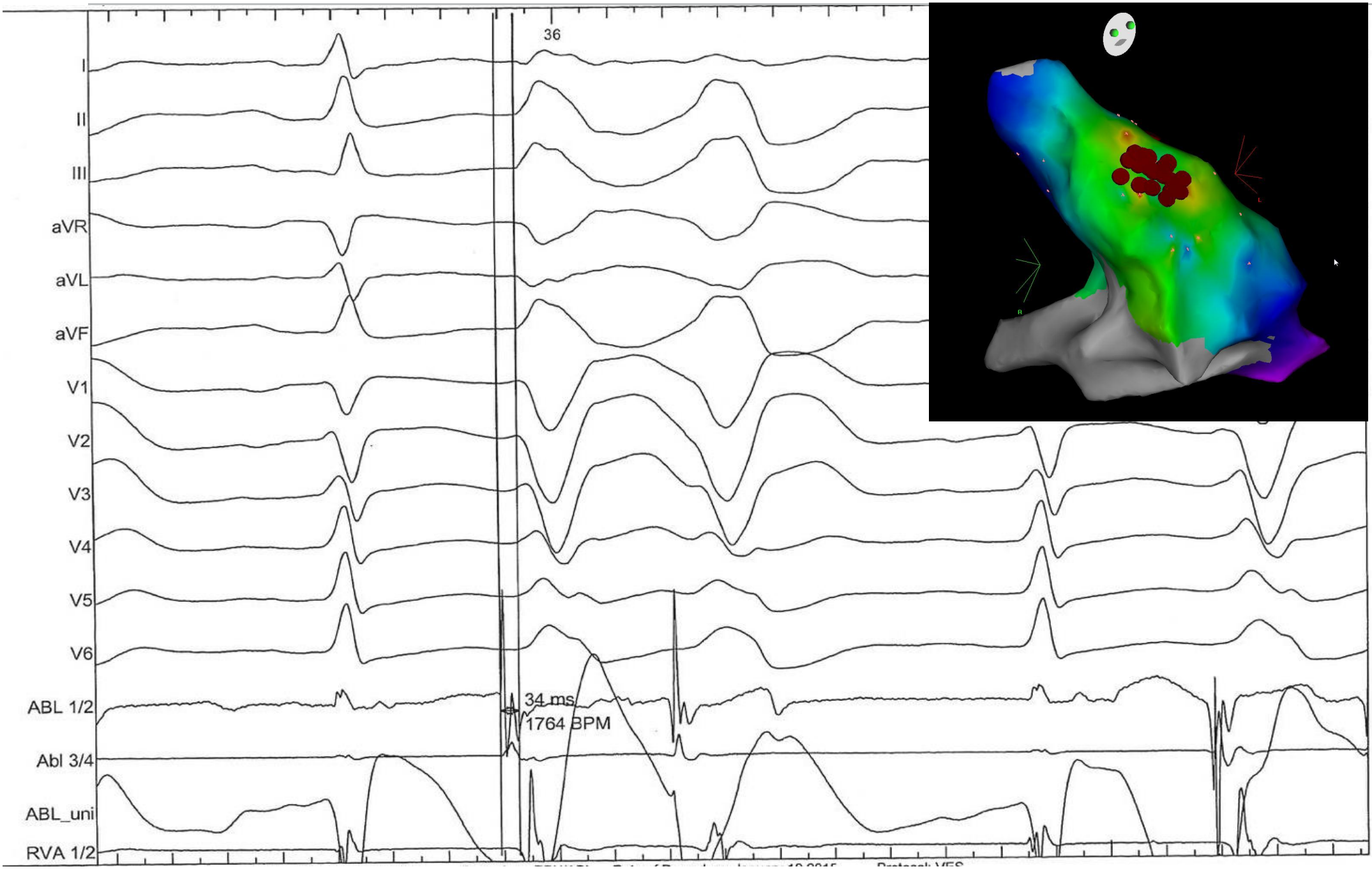

ECG after effective ablation

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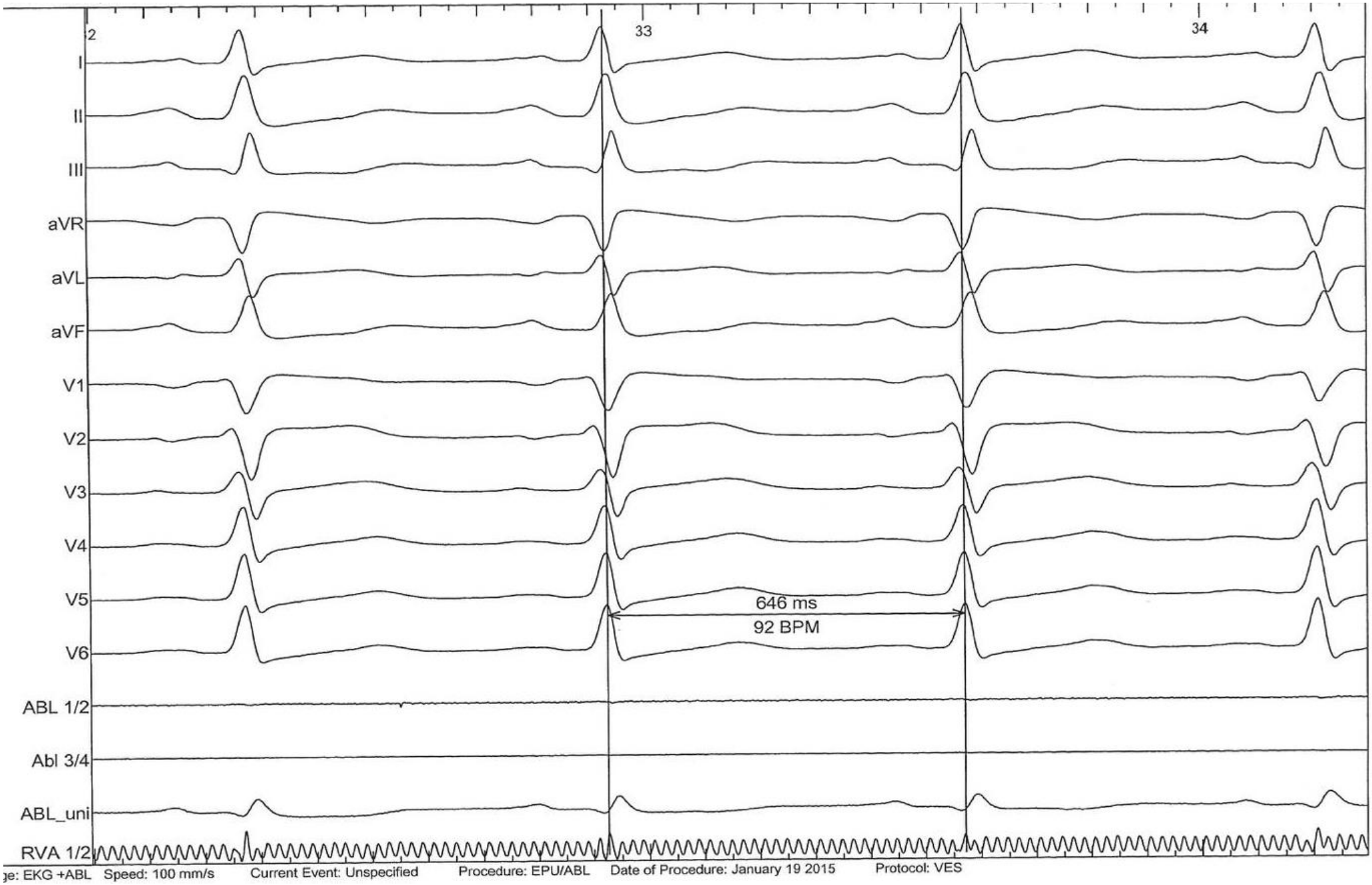

Voltage Map RV/RVOT

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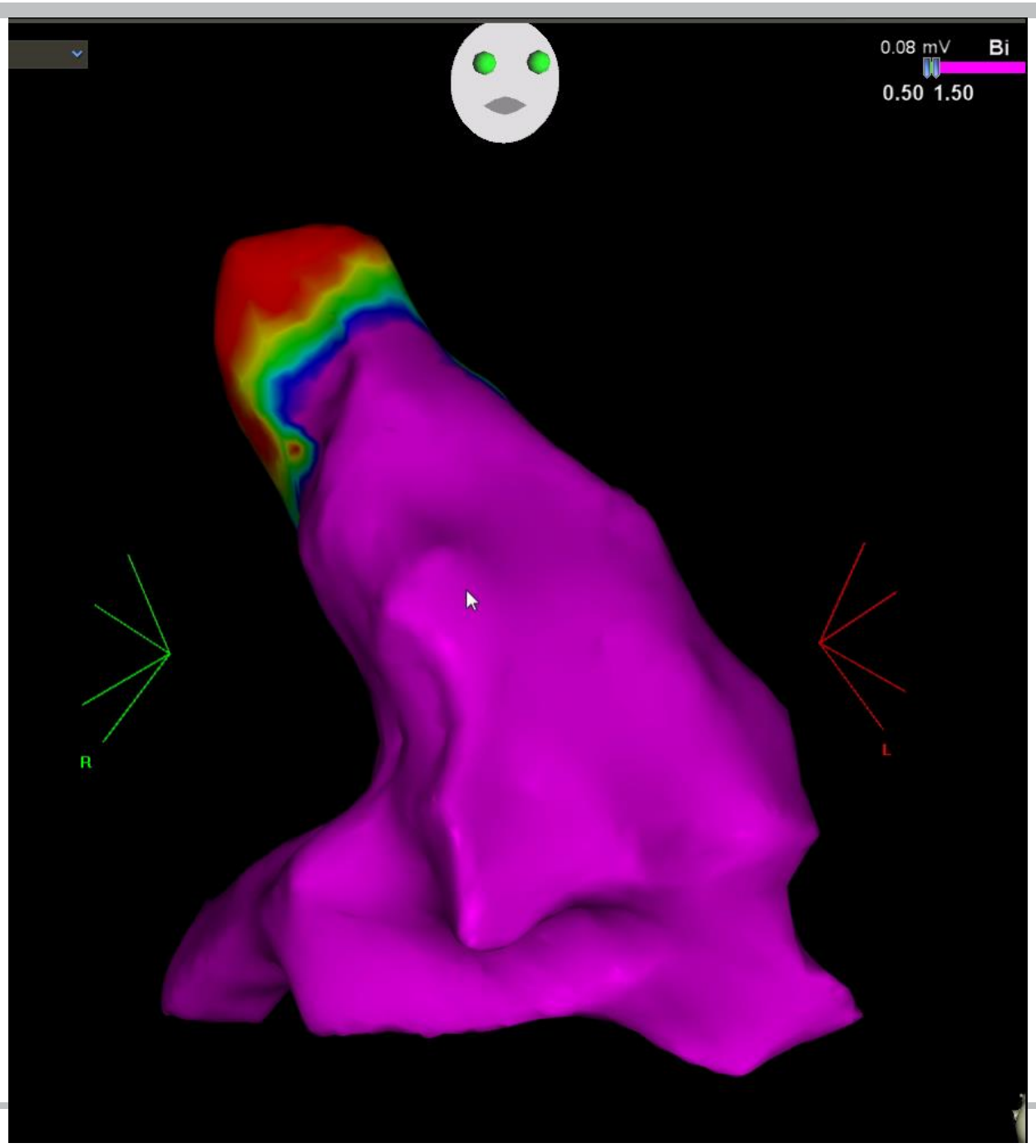
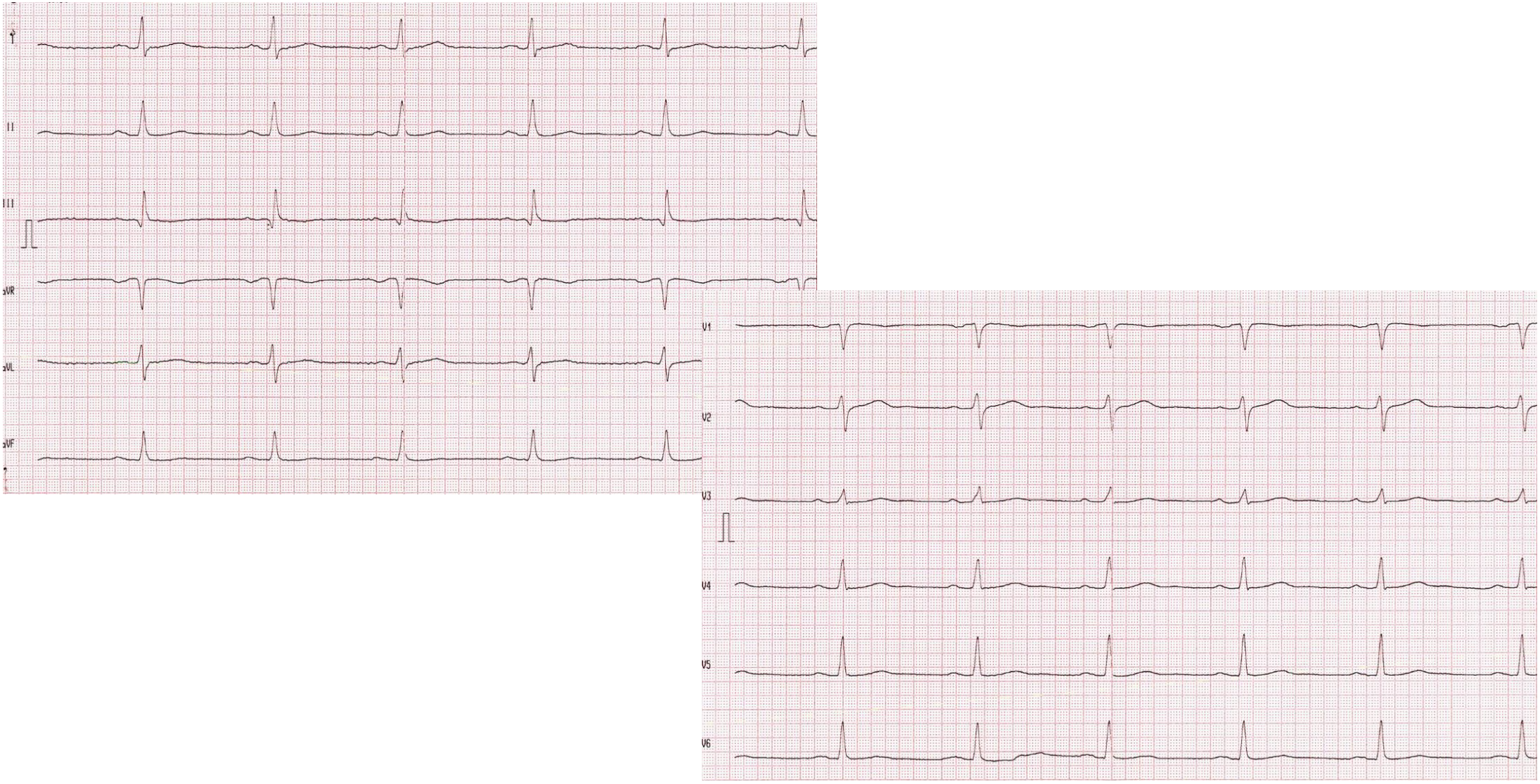


Case Presentation

- 12-lead ECG post ablation



Case Presentation

- Holter ECG (24 h) 6 weeks after ablation : 0 (ns)VT, 128 PVCs

Schlaganzahl

Normalschläge	VES-Schläge	SVES-Schläge	Stimulierte Schläge
Anzahl 91.554	Anzahl 128	Anzahl 302	Anzahl 854
Prozent 99 %	Prozent <1%	Prozent <1%	Prozent <1%
Max./Zeit 4.370 am Fr 17:00	Max./Zeit 26 am Sa 14:00	Max./Zeit 51 am Sa 14:00	Max./Zeit 522 am Sa 13:00

Frequenzabhängige Ereignisse

Herzfrequenzen (1-Min.-Durchschnitt)		Bradykardie	6	Tachykardie	0
Max. HF	85 BPM am Sa 12:03	Summe	34 Sek., 0,0%	Summe	
Mittl. HF	64 BPM	Längste	6 Schläge am Sa 05:31	Längste	
Min. HF	48 BPM am Sa 05:36	Min. Frequenz	36 BPM am Sa 05:32	Max. Frequenz	

Pause 0

Ventrikuläre Arrhythmien

VT	0, 0,0% aller Schläge (0 pro 1000)
Längste	
Max. Frequenz	
V-Salve	0, 0,0% aller Schläge (0 pro 1000)
Längste	
Max. Frequenz	
Couplet	0, 0,0% aller Schläge (0 pro 1000)
Triplet	1, 0,0% aller Schläge (0 pro 1000)
Einzelne VES-Ereignisse	125, 0,1% aller Schläge (1 pro 1000)

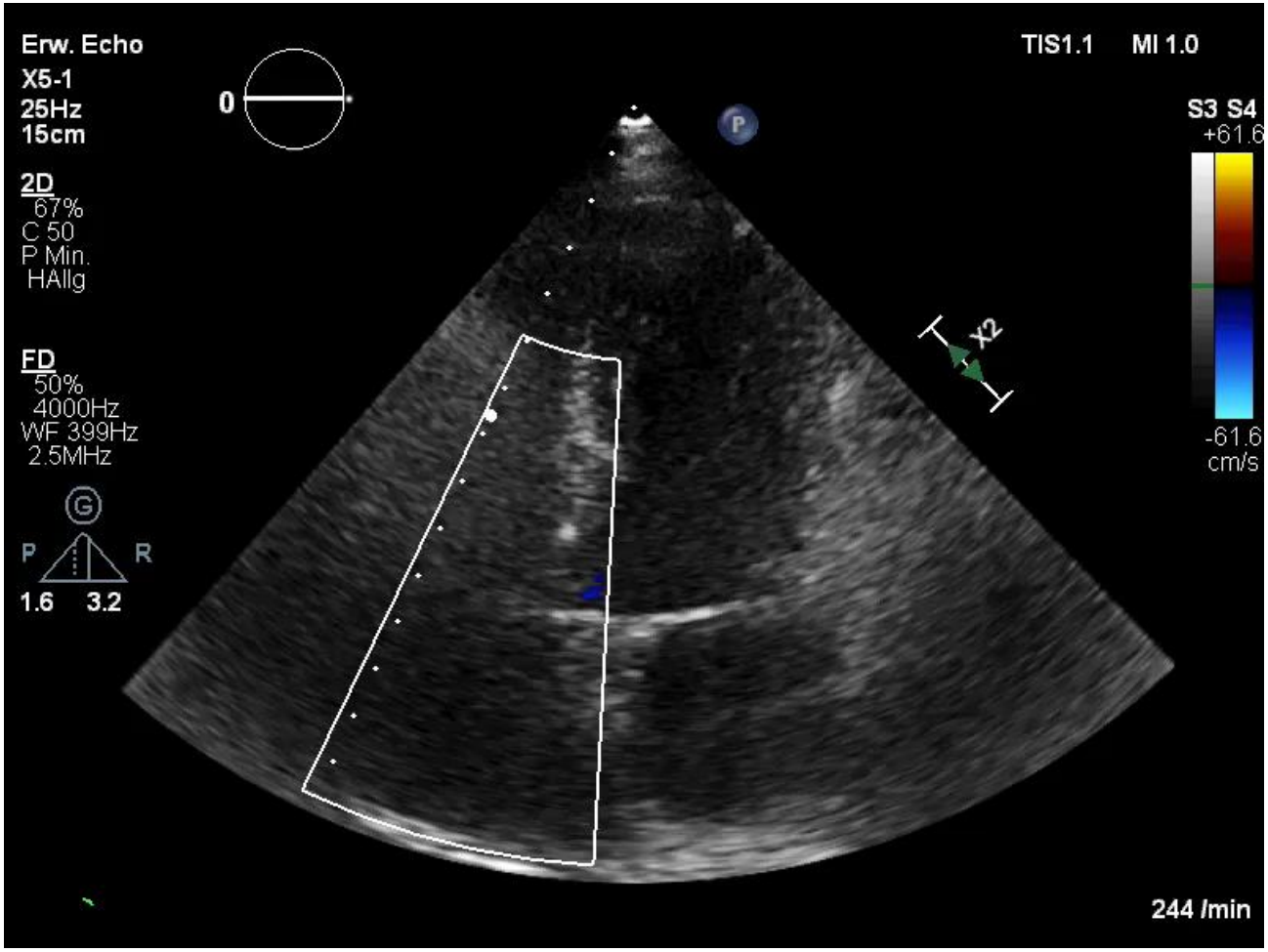
Indikation (Grund für Test):

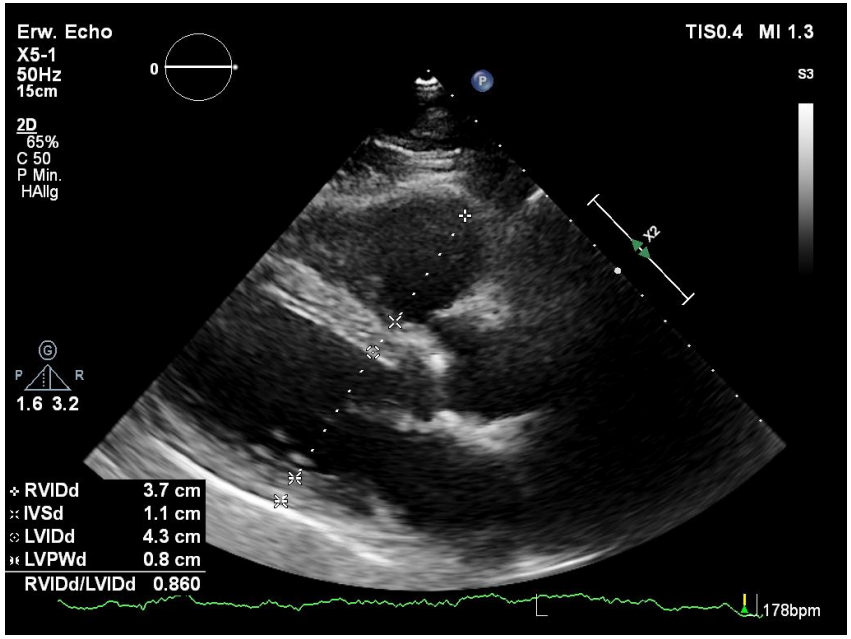
Supraventrikuläre Arrhythmien

AF	0 Episoden
Gesamtdauer	
Max. Frequenz	
SVT	0
Längste	
Max. Frequenz	
SVES	52, 0,1% aller Schläge (0 pro 1000)

Case Presentation

- Echocardiography 6 weeks after effective VT ablation:
  - systolic function nealy normalized





Follow-up

- 2 years after successful ablation:
  - Normal systolic LV-function and ventricular diameters (echocardiography)
  - ECG: no PVCs, Holter ECG: reported as unremarkable
  - Medication: ACE inhibitor (art. hypertension)
  - No inadequate dyspnoea on exertion, dizziness or syncope

Conclusion Casereport

- Systolic LV function normalized after effective PVC / VT ablation
- MRI, voltage map without any evidence of early stage of ARVC
- Follow-up MRI or EP study not done
- Life Vest might have been useful as a bridge before a final decision, specially if LV-function does not recover quickly
- Key question:

  → Reduced LV function due to structural Heart Disease and PVCs/ VTs aggravating preexisting CMP or

  pure arrhythmia-induced CMP or

  combination of both?

Voltage Map RV/RVOT before ablation

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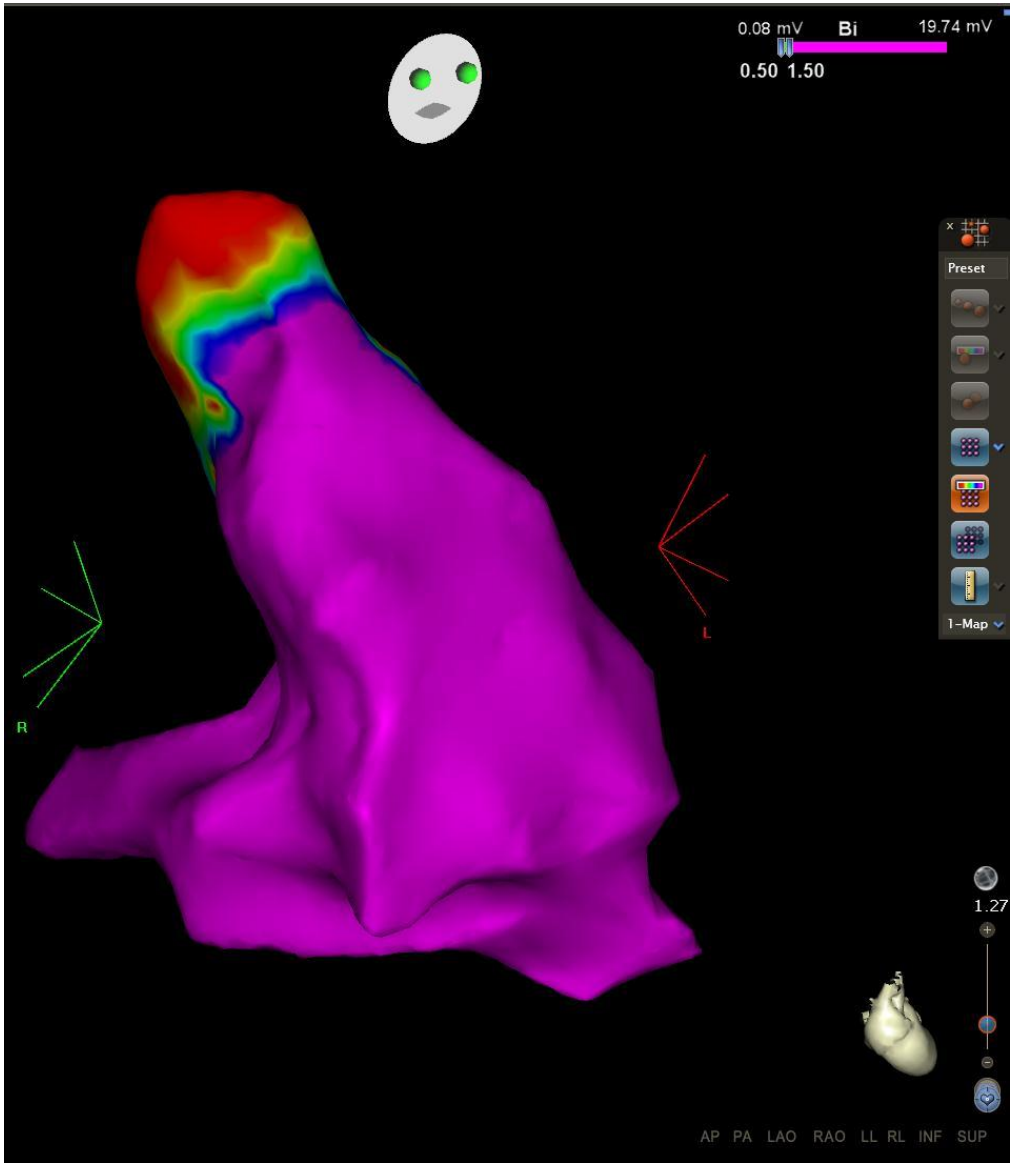

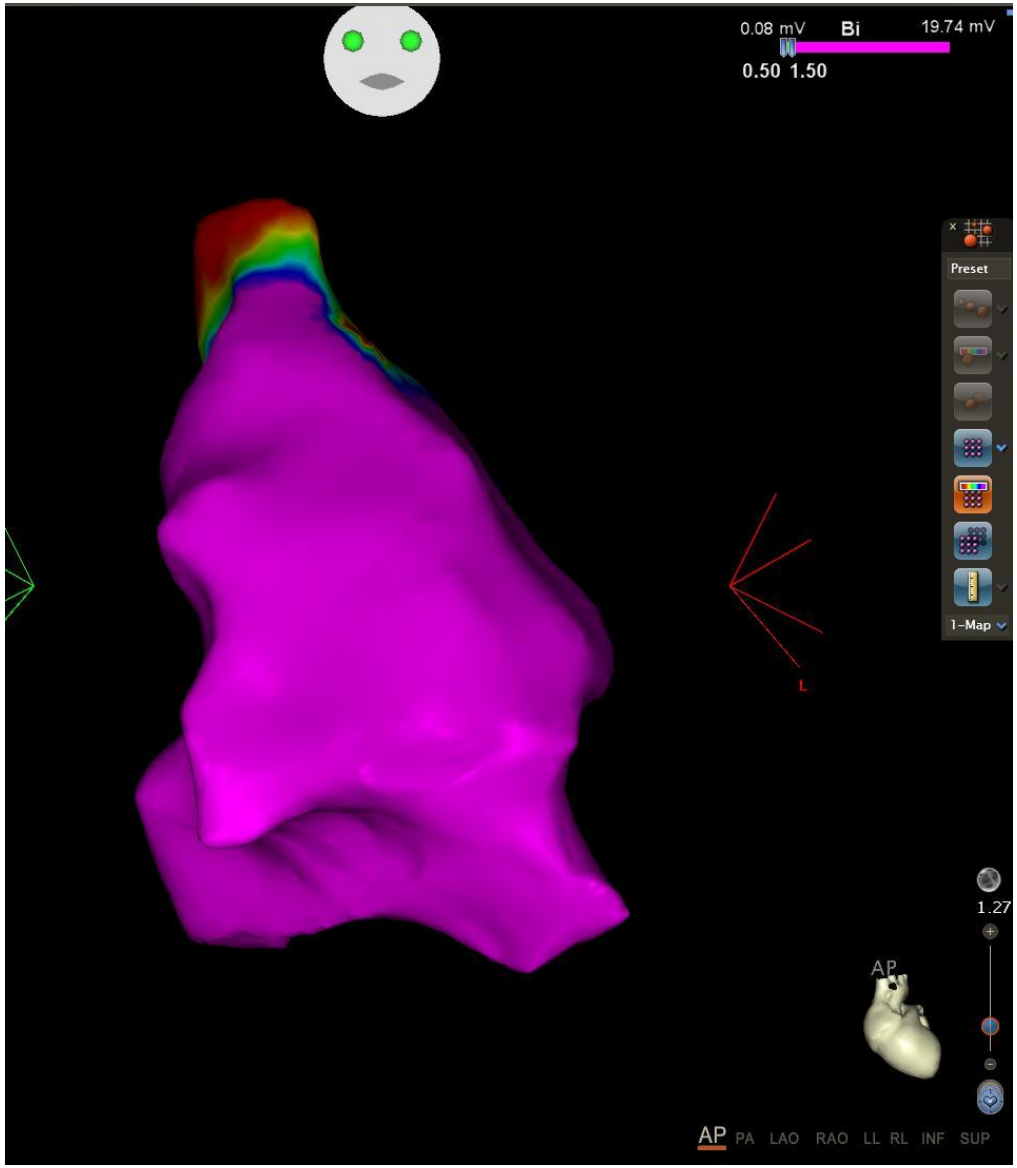

Conclusion Casereport

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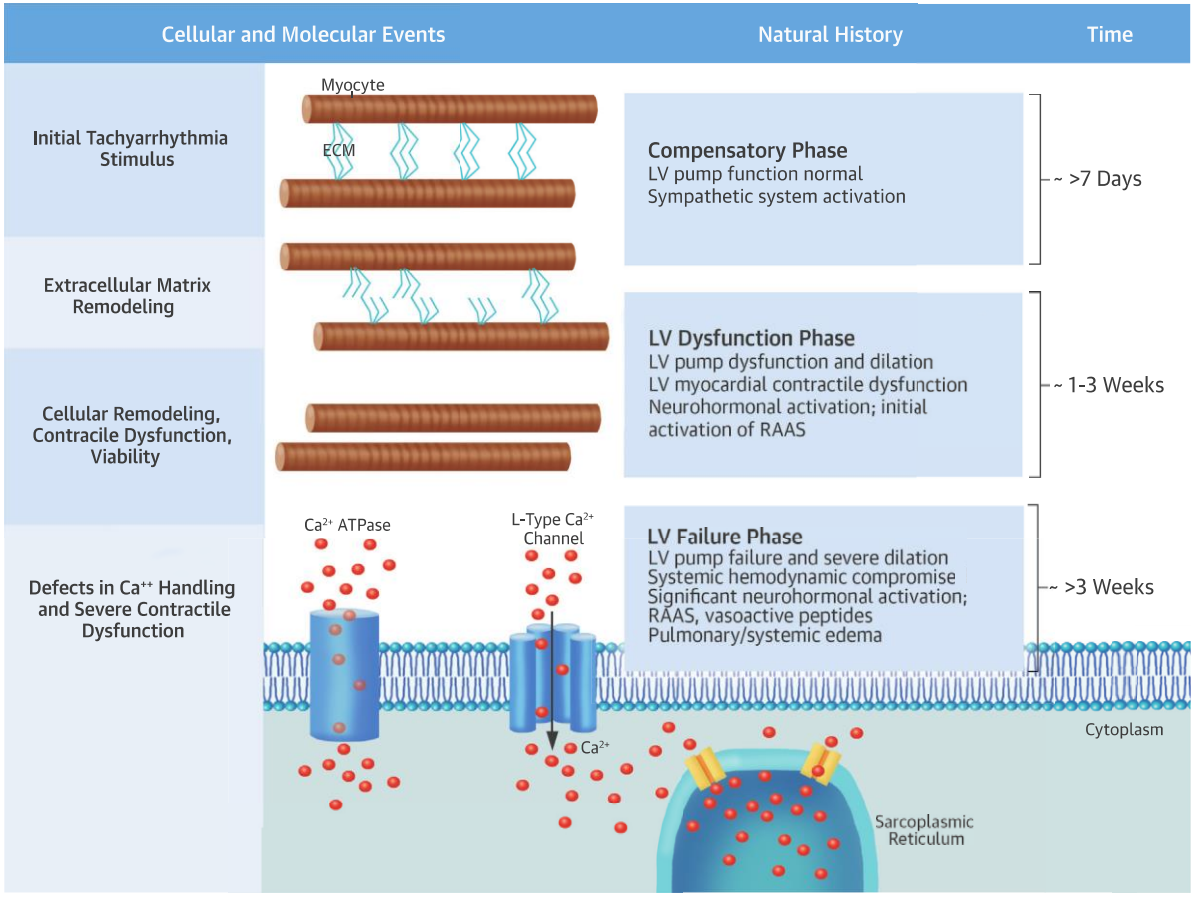
- Natural history and pathophysiology of Arryhtmia induced CMP

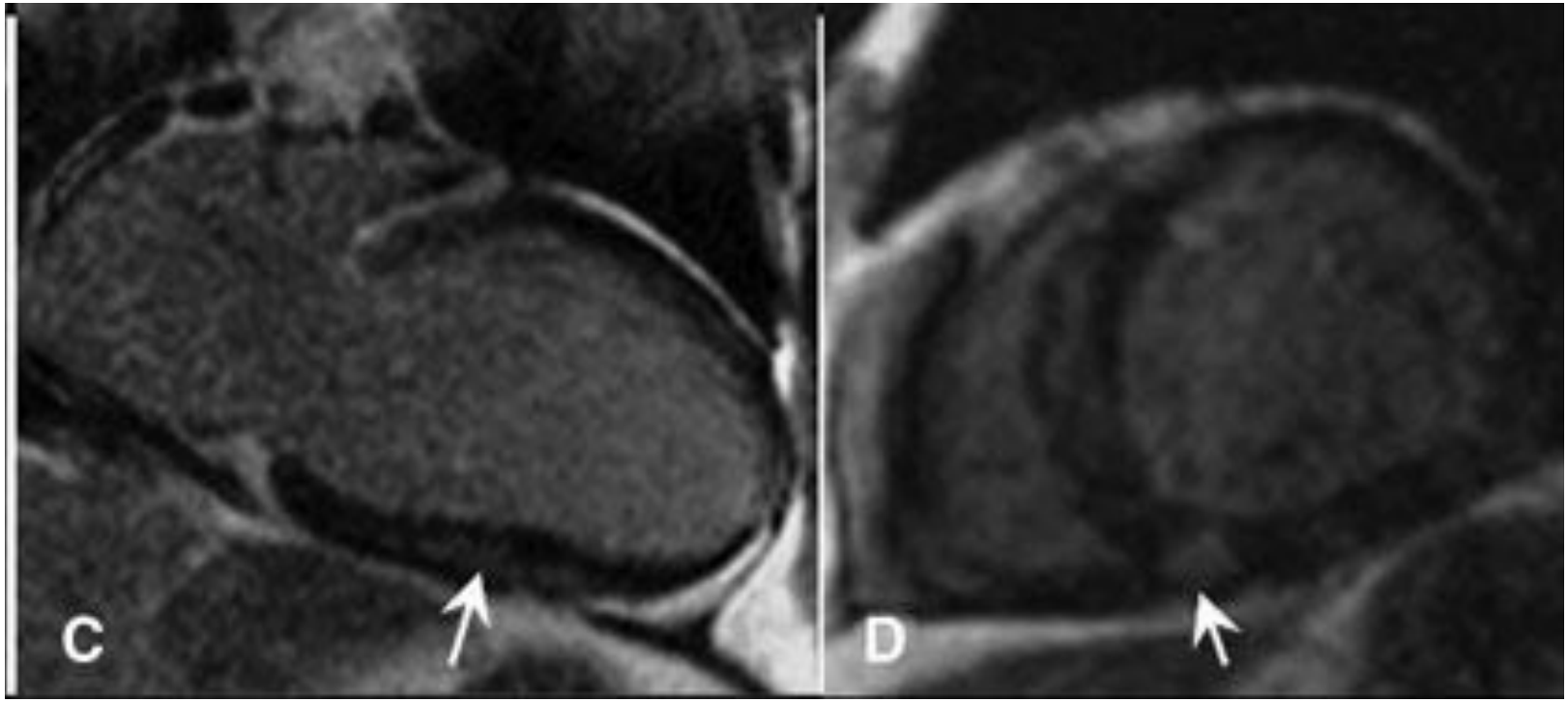
CENTRAL ILLUSTRATION **Schematic Illustration of the Natural History and Pathophysiology of Rapid Pacing-Induced Dilated Cardiomyopathy and Heart Failure**



Gopinathannair, R. et al. J Am Coll Cardiol. 2015; 66(15):1714–28.

Conclusion Casereport

- 50 y, m, frequent PVC + nsVT (38% PVC burden), successful ablation LCC → EF 26% → 29%. CHD excluded, LGE +



- 1 of 19 pts. with LV recovery after successfull PVC ablation LGE +
- versus 4 of 5 pts. without LV-recovery LGE +

Hasdemir et al., PACE 2012

Introduction

- Reduced systolic LV function – ICD indicated [1]
- High PVC / VT burden possibly associated with decreased systolic LV function
- Tachycardia Induced Cardiomyopathy → Definition...
- TICMP mechanisms: systolic function, diastolic function, cardiac desynchronization – atrioventricular, interventricular, mitral regurgitation developing with dilated LV and desynchronization
- Effective catheter ablation of PVC / VT → restoring LV function

1