Ablation of idiopathic PVC/VT

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Disclosure

• None
Category of Idiopathic PVC/VT

- Outflow tract PVC/VT
  - RVOT PVC/VT;
  - LVOT or aortic cusp PVC/VT;
- Mitral/Tricuspid valve annulus PVC/VT;
- Fascicular PVC/VT;
- Purkinje fibres PVC/VT
- PVC/VT in apparently normal heart:
  - Brugada syndrome;
  - Early stage of structural heart disease (ARVC, etc.);
  - Focal myocarditis;
  - Others

Neth Heart J (2018) 26:210–216
Retrospective analysis of idiopathic VT/PVC from Fuwai Hospital

- (March 1994- February 2009):
  - 930 patients with idiopathic ventricular arrhythmia
    - Mean age $36.71 \pm 14.79$ yrs, male: 503 (54.1%)
    - RVOT VT/VPC 516 patients
    - ILVT/LVOT 409 patients
    - VT/VPC originated from both LV and RV 5 patients
## Clinical Characteristics

<table>
<thead>
<tr>
<th>Number of Pts</th>
<th>Mean Age (Yrs)</th>
<th>Male</th>
<th>Pre-syncope</th>
<th>Syncope</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IR-VT/VPC</strong></td>
<td>516</td>
<td>39.58±13.72*</td>
<td>208 (40.3%)*</td>
<td>74 (14.3%)*</td>
</tr>
<tr>
<td><strong>IL-VT/VPC</strong></td>
<td>409</td>
<td>32.96±15.31*</td>
<td>292 (71.4%)*</td>
<td>24 (5.9%)*</td>
</tr>
</tbody>
</table>

* P<0.0001; #: not significant

Gender difference:
- RVOT VT: male 40%;
- Fascicular VT: male 85%

Anatomy of Outflow Tract (OT)

- Originates in an arc-like fashion from the RV inflow region to the anteroseptal aspect of the RVOT under PV
- Arc extends leftward to include the cusp region of the AV, both endo and epicardially
- Further extends toward the aorto-mitral continuity and superior mitral annulus
ECG characteristics of OVT VAs
### ECG criteria for differentiating right-sided vs left-sided origin of OVT tachycardias

<table>
<thead>
<tr>
<th>ECG criterion</th>
<th>Definition</th>
<th>Cut-off values</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>R wave duration index in leads V1 or V2</td>
<td>Percentage of longer R wave duration in V1 or V2 than QRS complex duration</td>
<td>R wave duration index ≥50% suggestive of a left-sided origin</td>
<td>Described for discrimination of RVOT vs aortic sinus cusp origin.</td>
</tr>
<tr>
<td>R/S wave amplitude index in leads V1 or V2</td>
<td>Greater percentage of R-to-S amplitude ratio in V1 or V2</td>
<td>R/S wave amplitude index ≥30% suggestive of a left-sided origin</td>
<td>Described for discrimination of RVOT vs aortic sinus cusp origin.</td>
</tr>
<tr>
<td>Precordial transition</td>
<td>First preordial lead where R wave exceeds S wave</td>
<td>If PT at V1 or V2—left origin; if PT later than V4—right origin</td>
<td>Highly influenced by cardiac rotation.</td>
</tr>
<tr>
<td>Comparison of PT of PVC/VT with SR</td>
<td></td>
<td>IF PVC preordial transition occurs later than SR; a left-sided origin can be excluded</td>
<td>Not useful if PVC transitions at or before the SR transition.</td>
</tr>
<tr>
<td>TZ index</td>
<td>TZ score (0.5-point increment grading based on PT) of PVC minus TZ score of SR</td>
<td>If &lt;0 predictive of a left-sided origin</td>
<td></td>
</tr>
<tr>
<td>V2 transition ratio</td>
<td>Percentage R wave during VT (R/R+S) in V2 divided by the percentage R wave in sinus rhythm (R/R+S)</td>
<td>If ≥0.6 highly predictive of an LVOT origin</td>
<td>To be used only if preordial transition is in lead V3.</td>
</tr>
<tr>
<td>V2S/V3R index</td>
<td>S wave amplitude in V2 divided by R wave amplitude in lead V3 during PVC/VT</td>
<td>If ≤1.5 predictive of a left-sided origin</td>
<td>Applicable irrespective of PT.</td>
</tr>
<tr>
<td>V4/V8 ratio</td>
<td>Ratio of PVC R wave in V4 to PVC R wave in V8</td>
<td>If &gt;3 suggestive of left-sided locations</td>
<td>V8 located at the inferior tip of the left scapula.</td>
</tr>
<tr>
<td>V4/V8 index</td>
<td>Normalised ratio of PVC R wave V4/V8 divided by sinus rhythm V4/V8</td>
<td>If &gt;2.28 suggestive of left-sided locations</td>
<td>V8 located at the inferior tip of the left scapula.</td>
</tr>
<tr>
<td>V3R/V7 index</td>
<td>R wave amplitude in lead V3R divided by that in lead V7 during VT or PVC</td>
<td>QRS pattern in V3R lead indicates RVOT origin; S wave in V7 indicates LVOT origin; V3R/V7 Index &lt;0.85 indicates RVOT origin</td>
<td>V3R and V7 located at the right correspondent place of V3 and the left posterior axillary line at fifth intercostal space, respectively.</td>
</tr>
<tr>
<td>QRS pattern in V5R</td>
<td>Different dominant QRS morphology patterns in V5R among outflow tract sites</td>
<td>V5R was a software-calculated, virtual lead derived by the standard 12-lead signals.</td>
<td>Validation needed in the actual V5R lead.</td>
</tr>
</tbody>
</table>

PVC, premature ventricular contraction; PT, preordial transition; RVOT, right ventricular outflow tract; SR, sinus rhythm; TZ, transition zone; V1, ventricular tachycardia.
Mapping of Outflow Tract (OT) VAs

- Activation Mapping: primary mapping technique;
- Pace Mapping;
- Thermal Mapping;
- Entrainment mapping?

Activation mapping

• Conventional:
  Averagely 34 (20-60) ms earlier than body surface QRS;

• 3D:
  • Carto / EnSite NavX
  • EnSite Array
Pace Mapping

- Identical in ≥11/12 lead
  - Paso > 94%, Carto
  - Score map > 94%, Ensite

- Factors that decrease the accuracy:
  - Anode capture,
  - Large size myocardial capture,
  - Partial capture of a large substrate
  - Difference of CL (> 80ms)
  - Current output
Thermal Mapping

• Catheter ablation of RVOT VT may be limited by the inability to reproduce the arrhythmia at the time of activation and pace mapping;

• The target site was identified by Pace mapping;

• RF was applied for 5-10 seconds in target site to achieve a tip temperature of 45-50°C. At sites where morphologically consistent with the clinical VT was induced, RF was applied at target temperature between 50 - 60°C for 30-60 seconds.

Case 1  VT induced by RFCA while temperature reached 45ºC
VT was slowed while temperature increased
Idiopathic Ventricular Arrhythmias Originating From the Pulmonary Sinus Cusp
Prevalence, Electrocardiographic/Electrophysiological Characteristics, and Catheter Ablation

ABSTRACT

Pulmonary sinus cusp mapping and ablation: A new concept and approach for idiopathic right ventricular outflow tract arrhythmias

Jinlin Zhang, MD, Cheng Tang, MD, Yonghua Zhang, MD, Xi Su, MD

From the Department of Cardiology, Wuhan Asian Heart Hospital, Wuhan, China.

BACKGROUND Right ventricular outflow tract (RVOT) ventricular arrhythmias (VAs) may originate from the pulmonary sinus cusps (PSCs) far more frequently than previously recognized.

OBJECTIVE The purpose of this study was to assess whether mapping and ablation in PSCs might be an appropriate first-choice treatment in unsolicited patients with idiopathic RVOT VAs.

METHODS Ninety consecutive patients with VAs of RVOT-type origin were prospectively enrolled at our institution between August 2015 and September 2016. Pulmonary valve (PV) and PSCs were precisely localized by pulmonary arteriography. Activation and pace-mapping were performed in the PSCs and RVOT region below the PV, and ablation was preferentially performed in PSCs.

RESULTS In 81 patients (90%), earliest activation of VAs was found in PSCs, and ablation resulted in elimination of VAs without any additional ablation in the RVOT region underneath the PV. The best pace-map was obtained at successful ablation sites in PSCs in 96.3% of patients. In the remaining 9 patients, final successful ablation sites were in the aortic coronary cusps in 5 and at the lowest and most posterior part of the RVOT in 4. During mean follow-up of 15.2 ± 9.5 months, single procedural success rate was 96.7%.

CONCLUSION In this single-center, prospective study, a strategy based on PSC mapping and ablation eliminated 90% (81/90) of unsolicited idiopathic RVOT-type VAs with favorable mid-term effectiveness.

KEYWORDS: Ablation; Catheter; Mapping; Right ventricular outflow tract; Ventricular arrhythmia

(Heart Rhythm 2018;15:38-45) © 2017 Published by Elsevier Inc. on behalf of Heart Rhythm Society.
Case 2 PVC origin in AC
RVOT: Free wall vs Septal

- QRS duration ≥140 msec
- QRS notching in inferior leads
- Lead V3 R/S ratio ≤ 1

Dixit. JCE 2003;14:1
Our experience: Free wall vs Septal

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRS duration of lead II ≥ 155ms</td>
<td>81.0%</td>
<td>73.2%</td>
<td>69.4%</td>
<td>83.7%</td>
</tr>
<tr>
<td>Notch in inferior leads</td>
<td>95.2%</td>
<td>62.5%</td>
<td>65.5%</td>
<td>94.6%</td>
</tr>
<tr>
<td>R wave in lead I &gt; lead III</td>
<td>83.3%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>88.9%</td>
</tr>
</tbody>
</table>

PPV: positive predict value, NPV: negative predict value
Case 3: OVT PVC

Before ablation

After ablation at RVOT PA-LC
Ablation at PA-LC

RAO 30

LAO 30
Mapping at PSC and Aortic sinus

Ablation at PA-LC Preceding by 43ms

Final target at site between LCC-RCC
Final target at LCC-RCC
Idiopathic VAs Arising From the LV-Summit
Success rate of LV summit ablation

<p>| Table. Ablation of Ventricular Arrhythmias Arising From the LV-Summit |
|-------------------------------------------------|-----------------|-----------------|-----------------|</p>
<table>
<thead>
<tr>
<th>No. of cases</th>
<th>Ablation sites</th>
<th>Acute success</th>
<th>Recurrence during follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daniels et al(^{10}) (2006)</td>
<td>Endo GCV/AIV: 5, Epi subxiphoid: 5, Surgical: 2</td>
<td>9/12 (75%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Yamada et al(^{15}) (2010)</td>
<td>Endo GCV/AIV: 14, Epi subxiphoid: 4</td>
<td>18/27 (67%)</td>
<td>No recurrence</td>
</tr>
<tr>
<td>Jauregui et al(^{11}) (2012)</td>
<td>Endo ASV: 5, Endo below ASV: 2, Endo ASV and below ASV: 2</td>
<td>9/16 (56%)</td>
<td>No recurrence</td>
</tr>
<tr>
<td>Nagashima et al(^{12}) (2014)</td>
<td>Endo GCV/AIV: 8, Endo LV: 4, Endo ASV: 1, Surgical: 3</td>
<td>16/30 (53%)</td>
<td>3/16 (19%)</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>52/85 (61%)</td>
<td></td>
</tr>
</tbody>
</table>

Circ J 2016; 80: 1073 – 1086
Delayed efficacy of radiofrequency catheter ablation on ventricular arrhythmias originating from the left ventricular anterobasal wall

Ligang Ding, MD, PhD,† Bingbo Hou, MD, PhD,† Lingmin Wu, MD, PhD,* Yu Qiao, MD, PhD,* Wei Sun, MD, PhD,* Jinrui Guo, MD,* Lihui Zheng, MD, PhD,* Gang Chen, MD, PhD,* Linfeng Zhang, MD, PhD,* Shu Zhang, MD, PhD, FHR,* Yan Yao, MD, PhD, FHR*

From the *Arrhythmia Center, Fuwai Hospital, National Center for Cardiovascular Diseases, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China, and †Zhongshan Hospital Xiamen University, Xiamen, Fujian, China.

BACKGROUND Ventricular arrhythmias (VAs) originating from the left ventricular anterobasal wall (LV-ABW) may represent a therapeutic challenge.

OBJECTIVE The purpose of this study was to investigate the delayed efficacy of radiofrequency catheter (RFCA) ablation without an epicardial approach on VAs originating from the LV-ABW.

METHODS Eighty patients (mean age 46.9 ± 14.9 years; 47 male) with VAs originating from the LV-ABW were enrolled. After systematic mapping of the right ventricular outflow tract, aortic root, adjacent LV endocardium, and coronary venous system, 3–4 ablation attempts were made at the earliest activation sites and/or best pace-mapping sites. Delayed efficacy was evaluated in patients with acute failure.

RESULTS During mean follow-up of 23.8 ± 21.9 months (range 3–72 months), complete elimination of all VAs was achieved in 47 patients (59%) and partial success in 19 (24%), for an overall success rate of 83%. In 25 of 37 patients (68%) with acute failure, VAs were eliminated or significantly reduced (>80% VA burden) by the delayed effect of RFCA during follow-up. Logistic regression analysis revealed that response time to ablation was a predictor of occurrence of delayed efficacy. No complications occurred during follow-up.

CONCLUSION Instead of extensive ablation, waiting for delayed efficacy of RFCA may be a reasonable choice for patients with VAs arising from the LV-ABW.

KEYWORDS Ventricular arrhythmia; Radiofrequency catheter ablation; Left ventricular summit; Delayed efficacy; Electrocardiography

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Method

Branch diagram displaying mapping and ablation strategy

- Pts with LV-ABW VAs for mapping/ablation, n=80
  - VAs with RBBB morphology, n=52
    - Ablation attempt from ASC (n=15) and/or LV endocardium (n=43) and/or RVOT (n=3)
      - Ablation within GCV, n=10
        - Process success, n=43
  - VAs with LBBB morphology and precordial QRS transition ≤ V3, n=28
    - Ablation attempt firstly from RVOT (n=12) and/or ASC (n=18) and/or LV endocardium (n=18)
      - Ablation within GCV, n=6
        - Process success, n=23

Heart Rhythm. 2017 Mar;14(3):341-349
Mapping and Ablation method

- **Map:** RVOT, ASC, LV endocardium, CVS
- **Ablation:** 3-4 ablation attempts with about 90 seconds each time were performed at the earliest activation sites and/or best pace mapping sites, even with residual ventricular ectopy
- **Delayed efficacy** was evaluated in patients with acute failure

Heart Rhythm. 2017 Mar;14(3):341-349
Logistic regression analysis for predictors of occurrence of delayed efficacy

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds ratio</th>
<th>95% Confidential interval</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ablation</td>
<td>0.56</td>
<td>0.12-2.69</td>
<td>0.47</td>
</tr>
<tr>
<td>Ablation within CS</td>
<td>5.45</td>
<td>0.33-29.24</td>
<td>0.18</td>
</tr>
<tr>
<td>Response time to ablation</td>
<td>0.03</td>
<td>0.01-0.59</td>
<td>0.02</td>
</tr>
<tr>
<td>Activation time preceding VAs</td>
<td>1.05</td>
<td>0.79-1.25</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Heart Rhythm. 2017 Mar;14(3):341-349
An overall success rate of 83%
Delayed effect occurred at in 25 of 37 patients (68%) with acute failure
Case 4
Successfully ablation at LV antero-basal wall
Fluoroscopy at GCV

Ding Ligang, Yan Yao et al. Heart rhythm, 2016
VAs originating from Basal-septum

Among 859 VAs, 29 (3.4%) located at VBS

<table>
<thead>
<tr>
<th>Origin</th>
<th>N</th>
<th>M/F (n)</th>
<th>Age (Y, Mean±SD)</th>
<th>Symptoms [n (%)]</th>
<th>Comorbidity [n(%)]</th>
<th>Type of VAs [例（%）]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Palpation</td>
<td>Pre-syncope</td>
<td>CHD</td>
</tr>
<tr>
<td>RV Basal septal</td>
<td>18</td>
<td>9/9</td>
<td>57±11</td>
<td>17 (94)</td>
<td>1 (6)</td>
<td>3 (17)</td>
</tr>
<tr>
<td>LV Basal septal</td>
<td>11</td>
<td>8/3</td>
<td>48±15</td>
<td>10 (91)</td>
<td>0 (0)</td>
<td>1 (9)</td>
</tr>
</tbody>
</table>
The relationship between origin and success rate of VBS

<table>
<thead>
<tr>
<th>Origin</th>
<th>N</th>
<th>Success or improved (n)</th>
<th>Success rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV-VBS</td>
<td>18</td>
<td>16</td>
<td>89</td>
</tr>
<tr>
<td>Anterior septal</td>
<td>15</td>
<td>13</td>
<td>87</td>
</tr>
<tr>
<td>(Para-His)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medial septal</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Posterior septal</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>LV-VBS</td>
<td>11</td>
<td>8</td>
<td>72</td>
</tr>
<tr>
<td>Anterior septal</td>
<td>5</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>(Para-His)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medial septal</td>
<td>2</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Posterior septal</td>
<td>4</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>
RV Para-His PVC : inferior

V₁ “W”
LV anterior septal origin PVC
LV posterior septal origin PVC
Background—The underlying mechanisms of reentry during left posterior fascicular ventricular tachycardia (LPF-VT) remain unclear. The purpose of this study is to describe the components of LPF-VT reentry circuit and their electrophysiological properties.

Methods and Results—Fourteen consecutive patients with LPF-VT underwent electrophysiology study and radiofrequency ablation. Via a multipolar electrode catheter placed from a retrograde aortic approach, a sharp inflection, high-frequency potential (P1) was detected in 9 patients (64%). The ranges of length and velocity of recorded P1 were 9 to 30 mm and 0.5 to 1.2 mm/ms, respectively. Macroreentry involving the ventricular myocardium was confirmed to be the mechanism in all patients by premature ventricular stimuli delivery or entrainment of LPF-VT with progressive fusion, or both. During LPF-VT, the earliest left posterior fascicle (LPF, P2) was considered to be the site of connection between P1 and P2, and the site of the earliest P2 along the left posterior ventricular septum correlated well with the His-ventricular interval during tachycardia. Radiofrequency ablation focused on the P1 potentials (9 patients with a recorded P1) or earliest P2 (5 patients without a recorded P1) was successful in all 14 patients. After 4.5±3.0 months of follow-up, no patients had recurrence of LPF-VT.

Conclusions—The LPF-VT macroreentrant loop involves the ventricular myocardium, a part of the LPF, a slow conduction zone, and in certain cases, a specially conducting P1 fiber. The His-ventricular interval during LPF-VT correlates with multiple electrophysiological measures and is a useful marker for identification of the optimal ablation site. (Circ Arrhythm Electrophysiol. 2016;9:e004272. DOI: 10.1161/CIRCEP.116.004272)
Left posterior fascicular block: a new endpoint of ablation for verapamil-sensitive idiopathic ventricular tachycardia.

Ma FS, Ma J, Tang K, Han H, Jia YH, Fang PH, Chu JM, Pu JL, Zhang S.

Abstract

BACKGROUND: Verapamil-sensitive, idiopathic left ventricular tachycardia (ILVT) with right bundle branch block configuration and left-axis deviation is known to be due to re-entry mechanism but the exact nature of reentrant circuit in ILVT is not fully elucidated. Radiofrequency (RF) ablation was applied during ventricular tachycardia (VT) and termination of the VT or abolishing the inducibility of the tachycardia was used as an endpoint for successful RF. In this study, the left posterior fascicular block in surface electrocardiogram (ECG) was used as a new endpoint of ablation to cure ILVT.

METHODS: Electrophysiological studies and radiofrequency ablation were performed in 39 consecutive patients [30 men, 9 women; age ranging from 10 to 64 years, mean (29 +/- 16) years] with verapamil-sensitive ILVT and structurally normal hearts. VT could be terminated by the intravenous administration of verapamil in all patients. The target site was the midseptum of LV where the earliest Purkinje potentials were recorded during VT. RF current was applied to the target site with or without late diastolic potential (LDP) during sinus rhythm in 37 patients and during VT in 2 patients to meet the ablation endpoint: the left posterior fascicular block in the surface ECG.

RESULTS: Thirty-seven patients with ILVT had been treated by RF ablation during sinus rhythm and two had been treated during VT. All of them met the endpoint of the left posterior fascicular block. Thirty-eight cases were symptom-free without medications during the follow-up period (range from 3 to 95 months, median 17 months). One patient developed a clinical recurrence and the left posterior fascicular block in surface ECG disappeared. The patient received another treatment. The endpoint was met and the procedure was successful.

CONCLUSIONS: The left posterior fascicular block in surface ECG used as an endpoint of RF ablation to treat ILVT is effective. It is important especially in those patients whose VT can not be induced or the inducible condition is unstable. The effective endpoint implied that the left posterior fascicle might be a critical part of the re-entrant circuit.
ILVT: Could fascicular block be the endpoint of ablation?

- The left posterior fascicular block in surface ECG used as an endpoint of RF ablation to treat ILVT is effective.

Chen ML, et al. JCE 2009
• The data of 213 cases who underwent EP study and catheter ablation between Jan. 2001-Dec. 2011 were analyzed.

• Mapping techniques:
  • Activation mapping (Including noncontact mapping in 32 case);
  • Pace mapping;

• Ablation setting:
  • Upper Power: 30-40 Watts
  • Upper temperature: 55-60°C

Yao Y, unpublished
Recurrence of fascicular VT ablation

• The recurrence rate of those who underwent primary ablation in our center were 16.8%(30/179) during 5.3 ± 3.2 yrs follow up;

• Combined with 34 cases which referred to our center, there were 64 cases experienced recurrence.

• The average recurrence time was 82.7 ± 139 day, and the median was 65 days

• There were 11 cases had VT with RBBB+RAD after ablation of VT with RBBB+LAD (9 referred from other centers);
Case, 24 yro male

- Baseline ECG
- Primary VT
- ECG post PF ablation
- Secondary VT

A  | B  | C  | D
---|----|----|---
I  |     |    |   
II |     |    |   
III|     |    |   
aVR|     |    |   
aVL|     |    |   
aVF|     |    |   
V1 |     |    |   
V3 |     |    |   
V5 |     |    |   

Baseline ECG     Primary VT     ECG post PF ablation     Secondary VT
VA Disassociation
Mapping at LAF

From His Bundle?
CT merge with activation mapping geometry
Complication rate in ablation of idiopathic VAs

Catheter ablation of symptomatic idiopathic ventricular arrhythmias

A five-year single-centre experience

A. W. G. J. Oomen¹ · L. R. C. Dekker¹ · A. Meijer¹

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Abstract
Aims This study was designed to gain insight into the patient characteristics, results and possible complications of ablation procedures for symptomatic idiopathic premature ventricular complexes (PVC) and idiopathic ventricular tachycardia (VT).
Methods Data were collected from all patients who underwent radiofrequency catheter ablation for symptomatic PVCs and idiopathic VT in the Catharina Hospital between 1 January 2011 and 31 December 2015. The procedural endpoint was elimination or non-inducibility of the clinical arrhythmia. Successful sustained ablation was defined as the persistent elimination of at least 80% of the PVCs or the absence of VTs at follow-up. In case of suspected PVC-induced cardiomyopathy, the systolic left ventricular function was reassessed 3 months post procedure.
Results Our cohort consisted of 131 patients who underwent one or more ablation procedures; 99 because of symptomatic premature ventricular complexes, 32 because of idiopathic VT. In total, 147 procedures were performed. The procedural ablation success rate was 89%. Successful sustained ablation rate was 82%. Eighteen (13.2%) patients had suspected PVC-induced cardiomyopathy. In 15 of them (83%), successful sustained ablation was achieved and the left ventricular ejection fraction improved from a mean of 39% (±8.8) to 55.4% (±8.1). Most arrhythmias originated from the right ventricular outflow tract (60%) or aortic cusps (13%). Complications included three tamponades.
Conclusion Catheter ablation therapy for idiopathic ventricular arrhythmias is very effective with a sustained success rate of 82%. In patients with PVC-induced cardiomyopathy, it leads to improvement of systolic left ventricular function. However, risk for complications is not negligible, even in experienced hands.
Summary

- VAs originating from RVOT/LVOT are the most common types of idiopathic VAs
  - Specific ECG features can predict the site of idiopathic, thus differentiating right from left ventricular, as well as endocardial from epicardial origins
- Catheter ablation for symptomatic premature ventricular beats and idiopathic VAs is very effective
- Ablation might be challenging especially in cases of epicardial, coronary sinus or para-Hisian origin
- The complication rate of catheter ablation is not negligible
Thank you!