Catheter ablation of AVRT

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Origin of the Accessory pathways?

• In early stages of cardiac development, there is direct physical and electrical contact between the atrial and ventricular myocardium.

• Disrupted by subsequent in-growth of the AV sulcus tissue and formation of the annulus fibrosus.

• Defects in this annulus results in accessory pathways.

• That can be part of an AVRT circuit.
Clues

- From surface ECG
- Before Initiation of the Tachycardia
- During tachycardia
- For ablation
P wave Clue
Delta wave
Where can you find APs

- Anterior: 12%
- Anterolateral: 2%
- Midseptal: 25%
- Posterior: 60%
- Tricuspid valve: 12%
- Coronary sinus: 2%
- Left ventricle: 60%
It is All about Pathways
Where is the AP?
Where is the AP?
WPW - ORT
Antidromic WPW
High risk patient with pre-excitation

- H/O of syncope with documented tachycardia
- Shortest pre-excited RR interval < 250 ms during spontaneous or induced AF
- Rapid ventricular response over an AP during AF (spontaneous or induced during EPS)
- Multiple accessory pathways
- Ebsteins anomaly
- Familial WPW
Clues for Diagnosis

• From surface ECG
• Before Initiation of the Tachycardia
  – Effect of AES on pre excitation
  – Programmed ventricular stimulation
• During tachycardia
• For ablation
Effect of atrial Extra stimulation (AES) on Preexcitation
Programmed Electrical Stimulation during Sinus Rhythm

Left Lateral AP
PosteroSeptal AP
Clues for Diagnosis

• From surface ECG
• Before Initiation of the Tachycardia
• During tachycardia
  – Activation sequence.
  – Effect of BBB.
  – PVC HIS refractory.
  – Entrainment.

• For ablation
EGM – Tachycardia
Eccentric Atrial Activation
EFFECTS OF BUNDLE BRANCH BLOCK DURING THE TACHYCARDIA
Effect of LBBB
HIS refractory PVC terminating SVT

- Termination of SVT by His refractory PVC without affecting the atrium:
- Proof of accessory pathway and it being part of the arrhythmia circuit.
Entrainment
Entrainment with PPI-TCL <115

- Be sure that you are entraining.
- The tachycardia continues.
- Where is the last entrained beat.
- PPI measured at the pacing cath.

520-414 = 106 ms

AVRT
Response on cessation of pacing

A-A-V : suggest atrial tachycardia
V-A-V : Suggest AVRT/AVNRT.
Time to BURN
Clues for Diagnosis

- From surface ECG
- Before Initiation of the Tachycardia
- During tachycardia
- For ablation
  - Identification of optimal site
  - Different approaches for different pathways
Basics for Ablation

• If AP function is not eliminated at a site with apparent favorable electrographic features, catheter contact with the tissue may be inadequate.

• If preexcitation is present, ablation should be performed during NSR or, atrial pacing. For concealed APs, RF energy is delivered during ventricular pacing.

• Loss of AP conduction is expected within 1 to 6 seconds of RF application for most successful lesions. If no effect is seen after 15 seconds of RF delivery, energy delivery should be discontinued.
Catheter ablation of accessory pathway

Targeting the Ventricular Insertion Site
Unipolar Recording at the Ablation Site
• Retrograde aortic X trans-septal approach
• Similar overall success rates

ABLATION OF RIGHT SIDED PATHWAYS
RF ABLATION

- Onset of RF current
- Transient repolarization abnormalities → Cardiac memory
Take Home Message

• Many clues found at resting and tachycardia ECG before going to the EP lab.

• Accurate diagnosis and using multiple maneuvers is of paramount importance to guide ablation.

• Septal APs show central VA conduction needs to be differentiated well from AVNRT and AT.

• Success rate and lower rate of complications make ablation is our 1st choice in most cases.
Thank You