

DIAGNOSTIC ELECTROPHYSIOLOGIC TESTING AND CATHETER ABLATION

Patient: Jane Doe
 Hospital ID #: 1735465
 Encounter #: 4624615
 Date of procedure: 3/25/2003
 Location of procedure: Electrophysiology Laboratory #2
 Referring physician #1: A. Doctor, MD
 Referring physician #2: B. Doctor, MD
 Primary electrophysiologist: A. EPDoc, MD
 Assisting electrophysiologist: None
 Electrophysiology fellow #1: A. Fellow, MD
 Electrophysiology fellow #2: B. Fellow, MD
 Indication: Palpitations
 ASA Class: II
 Antiarrhythmic drugs: None

METHODS

Patient Preparation, Anesthesia, and Catheter Insertion

The patient was brought to the Cardiac Electrophysiology Laboratory in the post-absorptive state. An intravenous line was established. R2 pads for defibrillation were placed in an antero-posterior configuration. A grounding pad for the ablation system was attached to the patient. Surface electrocardiographic electrodes were attached to the patient in standard positions. A Foley catheter was inserted into the bladder using sterile technique. Blood pressure monitoring was performed using an automatic cuff. A 5 French intra-arterial catheter placed in a femoral artery. The patient's electrocardiogram, blood pressure, pulse oximetry, and exhaled CO₂ were monitored throughout the procedure. Sedation was achieved using IV Versed and fentanyl by the EP nursing staff. Local anesthesia was achieved with lidocaine subcutaneously. The right groin and left groin catheter insertion sites were prepped using Betadine and draped in a sterile manner. At each prepped region, the blood vessel was entered using a modified Seldinger technique with appropriately sized sheaths, and catheters were inserted and initially positioned under fluoroscopic guidance at the cardiac sites as described in the table below:

Catheter Type	Sheath Size (French)	Vessel	Cardiac Site
Steerable Bulbous "D" Curve Biosense-Webster 6 French (4 poles)	8	L femoral vein	CS
Steerable Quadripolar Biosense-Webster 6 French (4 poles)	7	L femoral vein	HRA
Steerable Quadripolar Biosense-Webster 6 French (4 poles)	7	L femoral vein	His
Steerable Quadripolar Biosense-Webster 6 French (4 poles)	7	L femoral vein	RV
BP Monitoring Sheath Daig 5 French	5	R femoral artery	

Pacing thresholds were obtained. The original atrial pacing threshold was 1.3 mA and the ventricular pacing threshold was 1.0 mA. Subsequent pacing was performed at twice threshold.

Programmed Stimulation and Recording

Basic resting conduction intervals were recorded. Incremental right atrial pacing was performed with determination of anterograde block cycle lengths. Anterograde refractory period measurements were obtained using atrial extrastimuli at multiple drive cycle lengths. Incremental right ventricular pacing was performed with determination of retrograde block cycle lengths. Retrograde refractory period measurements were obtained using ventricular extrastimuli at multiple drive cycle lengths. The initial ventricular pacing site was the RV apex. The second ventricular pacing site was not used. Isoproterenol was administered to a maximum dose of 1 mcg/min IV. Programmed stimulation was repeated following drug administration. Incremental right atrial pacing was performed with determination of anterograde block cycle lengths. Anterograde refractory period measurements were obtained using atrial extrastimuli at multiple drive cycle lengths. Incremental right ventricular pacing was performed with determination of retrograde block cycle lengths.

Mapping

Mapping was then performed. Activation mapping was performed during induced or spontaneous arrhythmias, sinus rhythm, and/or pacing. Mapped sites are listed in the table below.

Mapped Site(s)
CS
TA

Based on the results of the diagnostic electrophysiologic testing and electrical mapping, a decision was made to proceed with catheter ablation.

Catheter Ablation

Catheter ablation was performed using a 4 mm bulbous-tipped catheter. At the ablation target sites, radiofrequency current was applied between the catheter tip and the grounding pad on the patient's skin. Ablation current delivery was guided by impedance. Current delivery was terminated immediately for any rise in impedance. Further details on ablation are contained in the results section.

Post-Ablation Programmed Stimulation and Recording

Following catheter ablation, diagnostic electrophysiologic testing was repeated using the same methods that were performed before catheter ablation. Programmed stimulation was repeated on isoproterenol, 1 mcg/min IV.

Termination of Procedure

At the end of the procedure, the catheters were removed and hemostasis was achieved by applying pressure to the puncture sites. The patient left the laboratory in stable condition.

The attending electrophysiologist was present for the entire procedure.

Complications: None

Procedure Times: Total: 210 min; Vascular: 135 min; Fluoroscopy: 17 min

EBL (cc): 35

Drugs Administered

Drug	Route	Dose
Fentanyl	IV	375 mcg
Isoproterenol	IV	36 mcg
Lidocaine	SC	10 cc
Normal Saline	IV	800 cc
Versed	IV	15.2 mg

RESULTS

Diagnostic Electrophysiologic Testing

Study State: Pre-Ablation

Basic Conduction Intervals:

Spontaneous rhythm: Sinus Rhythm

Interval	Duration (ms)	Normal Values (ms)
Basic Cycle Length	767	600-1000
PR	465	120-200
QRS	98	<120
QRS Morphology	normal	
QT	422	<500
QTc	482	<440
PA	34	<50
AH	108	60-125
HH		10-20
HV	49	35-55

Other properties:

Anterograde dual AV nodal pathways: Yes

Anterograde AV nodal reentrant echoes: Yes

Retrograde dual AV nodal pathways: Yes

Retrograde AV nodal reentrant echoes: Yes

Retrograde conduction present: Yes

Accessory pathway: No

Block Cycle Lengths and Refractory Periods

Structure: Atrium

Pacing site: HRA

Atrium Refractory Periods

Pacing (HRA) CL (ms)	ERP (ms)
600	240
500	240
400	260

Structure: Anterograde AV Node
 Pacing site: HRA
 Block cycle length (ms): 369

Anterograde AV Node Refractory Periods

Pacing (HRA) CL (ms)	ERP (ms)
600	<= 240
500	<= 240
400	<= 260

Structure: Ventricle
 Pacing site: RV apex

Ventricle Refractory Periods

Pacing (RV apex) CL (ms)	ERP (ms)
600	300
500	260
400	

Structure: Retrograde Conduction
 Pacing site: RV apex
 Block cycle length (ms): <400

Retrograde Conduction Refractory Periods

Pacing (RV apex) CL (ms)	ERP (ms)
600	320
500	280
400	

Arrhythmias:

Arrhythmia	CL (ms)	Morphology	Site	Induction	Termination	Comment
AV Nodal Reentry Tachycardia - Usual (Slow-Fast)	300	normal and LBBB	HRA	rapid atrial pacing	IAP	

Study State: Post-Ablation

Basic Conduction Intervals:

Spontaneous rhythm: Sinus Rhythm

<i>Interval</i>	Duration (ms)	Normal Values (ms)
Basic Cycle Length	657	600-1000
PR	149	120-200
QRS	104	<120
QRS Morphology	normal	
QT	362	<500
QTc	447	<440
PA	28	<50
AH	86	60-125
HH		10-20
HV	53	35-55

Other properties:

Anterograde dual AV nodal pathways: Yes
 Anterograde AV nodal reentrant echoes: Yes
 Retrograde dual AV nodal pathways: No
 Retrograde AV nodal reentrant echoes: No
 Retrograde conduction present: Yes
 Accessory pathway: No

Block Cycle Lengths and Refractory Periods

Structure: Atrium
 Pacing site: HRA

Atrium Refractory Periods

Pacing (HRA) CL (ms)	ERP (ms)
600	<280
500	<280
400	

Structure: Anterograde AV Node
 Pacing site: HRA
 Block cycle length (ms): 380

Anterograde AV Node Refractory Periods

Pacing (HRA) CL (ms)	ERP (ms)
600	280
500	280
400	

Structure: Retrograde Conduction
 Pacing site: RV apex
 Block cycle length (ms): <400

Retrograde Conduction Refractory Periods

Pacing (RV apex) CL (ms)	ERP (ms)
600	
500	
400	

Arrhythmias:

Arrhythmia	CL (ms)	Morphology	Site	Induction	Termination	Comment
AV nodal echoes				A2	spontaneous	single AVN echo

Mapping Results: Slow pathway sites were identified in the region of the tricuspid annulus, anterior to the coronary sinus os, based on anatomic positioning, suitable AV ratios, and fractionated atrial electrograms consistent with slow pathway potentials.

Catheter Ablation

Ablation Target: Slow Pathway (AVNRT)
 Location: Tricuspid Annulus Region P2
 Anterograde Conduction: Present
 Retrograde Conduction: Present
 Transseptal Approach: No
 Linear Ablation: No
 Site of Successful Ablation: NA
 Number of Ablations: 1
 Duration of Successful Ablation (sec): 60
 Time to Block/Termination (sec): NA
 Time to Accelerated Junctional Rhythm (sec): 2.5
 Maximum Volts: NA
 Maximum Watts: 40
 Maximum Temperature: NA
 Success: Yes
 Comments: none

Summary: Abnormal study.

Detailed Results:

1. Dual AV node physiology manifested by anterograde "jump" in the AH interval, AV nodal reentrant echoes, retrograde AV nodal echoes and AVNRT.
2. Successful selective RF ablation of the slow pathway of the AV node.
3. No further inducible tachycardia, even in the presence of isoproterenol.

A. Fellow, MD
 Cardiac Electrophysiology Fellow

B. Fellow, MD
 Cardiac Electrophysiology Fellow

General Hospital

A. EPDoc, MD
Professor of Medicine
Date Signed:

Jane Doe Catheter Ablation 3/25/2003

Date Typed: 5/21/2003 6:06:33 PM

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