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Product Demo

Anytown Cardiac Specialists, Inc.

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JONES, NORBERT	DOB: 08/14/1948	January 24, 2012
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INTRAVENOUS DIPYRIDAMOLE MYOCARDIAL PERFUSION STUDY

(rest/pharmacologic stress SPECT with gated SPECT wall motion studies at rest and post-stress)

Ordering Physician: Tom Smith, MD, FACC

Clinical History: 63 year-old man with cardiac risk factors which include gender, age, hyperlipidemia, hypertension, and obesity. The patient has a history of abnormal ECG and ventricular arrhythmias. His last Beta-blocker was administered 72 hours prior to the study. His height is 75 inches and weight is 228 lbs, with a BMI of 28 (BSA: 2.4 m²).

Indications for study: Abnormal ECG, abnormal treadmill test, and ventricular arrhythmias.
Pharmacologic indication: Arthritis.

DIPYRIDAMOLE PHARMACOLOGIC STRESS

BASELINE ECG: Atrial fibrillation at 78 bpm. PR: n/a, QRS: 0.100, QT: 0.440, and Axis: +10. No arrhythmias. ST: normal. T waves: biphasic in leads I and AVL. QRS (Q waves): normal. Conduction: normal. INTERPRETATION: Abnormal ECG as described.

Dipyridamole was infused over 4 minutes and 1 second (total dose 58.0 mg) to a peak heart rate of 96 bpm (61% MPPHR). 125.0 mg aminophylline was administered as a chemical antidote to dipyridamole beginning 10:00 into stress. BP decreased from 148/74 to 128/60 at peak stress. STRESS ECG: Atrial fibrillation. No arrhythmias during stress or recovery. The stress ECG revealed 1.0 mm downsloping ST-segment depression in leads II, III, and AVF. Conduction: normal. Testing was supervised and interpreted by Tom Smith, MD, FACC.

IMPRESSION:

1. Appropriate blood pressure response to intravenous dipyridamole.
2. Appropriate heart rate response to intravenous dipyridamole.
3. Patient reported chest pain, general malaise, and nausea.
4. Positive ECG for ischemia.
5. No arrhythmias during dipyridamole infusion.

MYOCARDIAL PERFUSION IMAGING

45 minutes following the intravenous administration of 8.50 mCi of ^{99m}Tc sestamibi, resting gated SPECT myocardial perfusion imaging was performed from the RAO to LPO positions, with the patient placed in the supine position. Subsequently, dipyridamole was infused and 37.20 mCi of ^{99m}Tc sestamibi was injected intravenously. 65 minutes later, post-infusion

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gated SPECT myocardial perfusion imaging was performed from the RAO to LPO positions, with the patient placed in the supine and (non-gated) prone positions.

TABLE 1: Myocardial Perfusion Defects

Location	Type	Extent	Severity	CV Territory
anterior / anteroseptal / apex / septal	reversible	medium	moderate	LAD

Summed stress score (SSS) = **8 (12%)**. Summed rest score (SRS) = **0**. Summed difference score (SDS) = **8**, a large amount of reversible perfusion abnormality (**12% of total myocardium is reversibly ischemic based on SDS = 8**).

There is evidence of transient ischemic dilation (the TID ratio is 1.40). The overall technical quality of the study is good.

IMPRESSION:

1. Moderate degree of reversible perfusion abnormality in the mid anteroseptal, apical anterior, and apical septal segments, and the apex, affecting a medium amount of myocardium in the LAD territory.
2. No evidence of prior myocardial infarction.
3. Gated SPECT wall motion study at rest demonstrates normal wall motion with EF = 59% and normal ESV = 57 cc. Gated SPECT wall motion study at 65 minutes post-stress demonstrates similar wall motion with EF = 58% and normal ESV = 60 cc.
4. The presence of transient ischemic dilation is most often associated with severe multivessel disease and/or proximal LAD disease.
5. The probability of a hemodynamically significant coronary artery stenosis is considered to be high ($\geq 90\%$ probability). These findings are most consistent with a moderate to severe stenosis in the LAD coronary circulation. The large amount of reversible perfusion abnormality combined with TID, a normal post-stress EF, and normal post-stress ESV predicts a high risk of cardiac mortality over the next 1-2 years. Clinical correlation is required.

Janet Jones, MD

Janet Jones, MD, FACC

Tom Smith, MD, FACC

(01/24/2012)

cc: J. Tull, MD

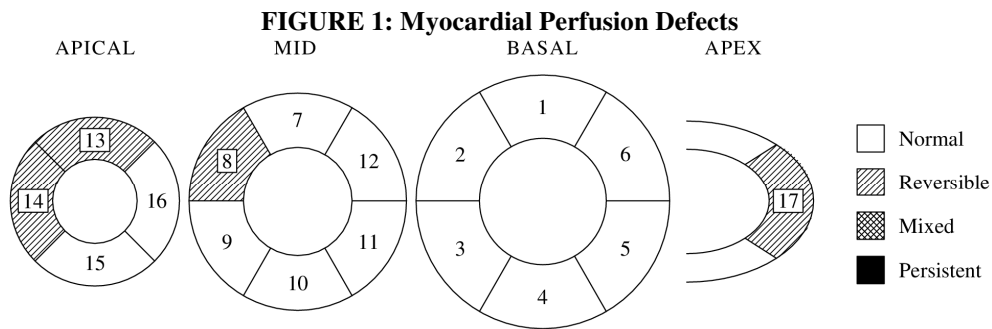


TABLE 2: Perfusion Scores (17-segment model)

SAX APICAL				SAX MID			SAX BASAL			APEX					
	#	S	R	#	S	R	#	S	R	APX	#	S	R		
ANT	13	2	0	ANT	7	0	0	ANT	1	0	0	APX	17	2	0
SEP	14	2	0	A-S	8	2	0	A-S	2	0	0				
INF	15	0	0	I-S	9	0	0	I-S	3	0	0				
LAT	16	0	0	INF	10	0	0	INF	4	0	0				
				I-L	11	0	0	I-L	5	0	0				
				A-L	12	0	0	A-L	6	0	0				

TABLE 3: Perfusion Score Legend

Score	Meaning
0	Normal
1	Mildly Reduced/Equivocal
2	Moderately Reduced
3	Severely Reduced
4	Absent Uptake

TABLE 4: Observed vs. Expected Volumes and EF

	Observed (STRESS)	Expected (STRESS)
EDV	142 cc	<= 177 cc (75 cc/m ²)
ESV	60 cc	<= 92 cc (39 cc/m ²)
EF	58%	>= 50%

NAME: JONES NORBERT
 DOB: 08/14/48
 Study Date: 1/29/12
 MRN: _____
 Cardiologist/ Ordering MD: T. SMITH.
 Primary MD: J. TULL
 CC TO: _____
 ID VERIFIED BY: JM

I.V. Dipyridamole

MYOCARDIAL PERFUSION STUDY PHYSICIAN WORKSHEET

- Risk Factors**
- CAD, Known
 - CAD, Family History
 - Diabetes
 - ED
 - Hyperlipidemia
 - Hypertension
 - Metabolic Syndrome
 - Obesity
 - PAD
 - Renal Failure
 - Smoking, Current
- Special Conditions**
- Asthma
 - Inhalers
 - Defibrillator
 - Pacemaker

- Cardiac History Study Indications**
- Abnormal ECG
 - Abnormal Stress Echo
 - Abnormal Treadmill
 - Arrhythmias, Atrial
 - Arrhythmias, Ventricular
 - Cardiomyopathy
 - CHF
 - CAD, Known
 - Prior MI
 - Prior PCI-Stent
 - Prior CABG
 - Viability Study

- Pre-Test Symptoms Study Indications**
- Chest Pain NOS
 - Angina, Typical
 - Angina, Atypical
 - Anginal Equivalent
 - Non-anginal Chest Pain
 - Dyspnea
 - Syncope
- Other Indications**
- Pre-Op Eval
- Pharm. Indication**
- ARTHRITIS

Last β -blocker: 72 hrs ago
 Height: 75 inches Gender: M F
 Weight: 228 lbs

Age: 63; MPHR is _____ bpm; 85% of MPHR is _____ bpm.

DATA	STRESS	RECOVERY	
	BP	HR	
0 min.	<u>148/74</u>	<u>80</u>	immed. <u>124/70</u> <u>90</u>
1 min.	<u>142/70</u>	<u>84</u>	2 min. <u>132/74</u> <u>82</u>
2 min.	<u>134/68</u>	<u>90</u>	4 min. <u>138/80</u> <u>76</u>
3 min.	<u>130/66</u>	<u>92</u>	6 min. <u>140/76</u> <u>70</u>
4 min.	<u>128/60</u>	<u>96</u>	

Total dose: 58 mg (0.56mg/kg; \leq 60mg)
 Total infusion time: 04:01
 Isotope injected at 07:00 @ 76 bpm

The patient: exercised at _____ mph and _____ % grade for _____ minutes
 did not exercise

BP PEAK STRESS: 128/60
 HR PEAK STRESS: 96

Baseline ECG

ATRIAL FIB rhythm at 78 bpm
 PR: _____ seconds QRS: .10 seconds
 QT: .44 seconds Axis: +10 degrees

normal
 Arrhythmias: _____
 ST: normal
 depressed in leads _____ Early Repol
 elevated in leads _____
 Non-Specific ST Abnormality

T waves: normal
 biphasic in leads I, AVL Flat _____
 inverted in leads _____ Tall _____
 Non-Specific T Abnormality

QRS: normal **Baseline ECG Interpretation**
 (A) Conduction Abnormalities: Normal ECG
 Abnormal ECG due to: _____
 (B) Q Waves: _____ Borderline ECG due to: _____

Test Terminated Due To:

Infusion Complete _____
 _____ _____

- IMPRESSION**
- Appropriate Paradoxical Increased
 Blunted Hypotensive **BP response**
 - Appropriate Exaggerated Increased
 Blunted **HR response**
 - Negative Equivocal **ECG for ischemia.**
 Positive Uninterpretable
 - No arrhythmias V. couplets
 PAC's PVC's V. tach. (____ beats)
 during after dipyridamole infusion.

Stress ECG Rhythm A FIB Arrhythmia

No ischemic ST-T changes
 ST segment depression up to 1 mm with:
 upsloping
 horizontal configuration in leads II, III, F
 downsloping
 ST segment elevation of _____ mm in leads _____
 New Conduction ABNL: _____
 New T Wave ABNL: _____

5. Patient Noted:
- No symptoms Dyspnea
 - Chest pain/discomfort Headache
 - General malaise Lightheadedness
 - Nausea _____
6. Aminophylline 125 mg administered starting 10:00 after isotope injection.
7. _____

Recovery ECG Comments: _____

MD/PA/NP signature _____

TECHNOLOGIST WORKSHEET

Name: JONES, NORBERT DOB: 08 / 14 / 1948

Study Date: 01 / 24 / 2012
MM DD YYYY

Patient ID on Modality: _____

Study Type: DIPYRID. MPI

Female patient bra/cup size: _____ / _____

Breast Surgery: YES / NO

Location: LEFT / RIGHT

Patient's Height: 75 inches

Describe: _____

Weight: 228 lbs

Gender: Male Female

REST IMAGING

REST DOSE: 8.5 mCi

INJECTION TIME: 09 HH : 15 MM

SCAN START TIME: 10 HH : 00 MM

Pharmaceutical: Sestamibi
 Tetrofosmin
 Rubidium-82
 Thallium

Rejected / Total Beats: 1 / 130

Basketball Motion: YES / NO

Upward Creep: YES / NO

Acq. Gating Failure: YES / NO

MoCo estimate from review of raw REST data:

NONE MODERATE*
 MILD SEVERE*

STRESS IMAGING

STRESS DOSE: 37.2 mCi

INJECTION TIME: 11 HH : 05 MM

SCAN START TIME: 12 HH : 10 MM

Pharmaceutical: Sestamibi
 Tetrofosmin
 Rubidium-82
 Thallium

Rejected / Total Beats: 0 / 140

Basketball Motion: YES / NO

Upward Creep: YES / NO

Acq. Gating Failure: YES / NO

MoCo estimate from review of raw STRESS data:

NONE MODERATE*
 MILD SEVERE*

* Note: Moderate or Severe cardiac motion requires IMMEDIATE repeat imaging.

Stress prone imaging performed: NO / YES

Notes: _____

Attenuation correction: _____

Repeat imaging start times:

_____ HH : _____ MM REST / STRESS

_____ HH : _____ MM REST / STRESS

X _____

Technologist initials

FUNCTION RESULTS

Name: JONES, NORBERT DOB: 08, 14, 1948

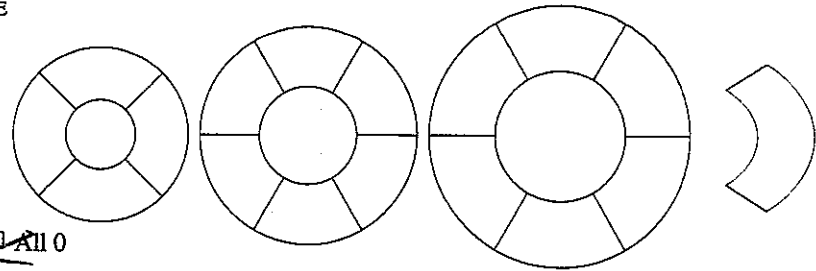
EDV: 142
 ESV: 60
 EF: 58

STRESS

GATING NOT DONE

APICAL MID BASAL APEX

- Global Hypokinesis { MILD
- MODERATE
- SEVERE
- Stunning
- Dyssynchronous { CABG
- PACED
- LBBB

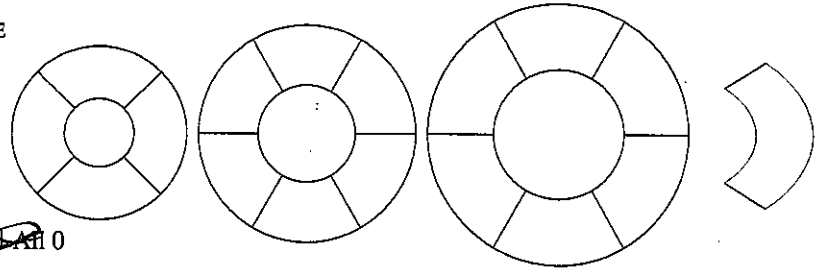


EDV: 138
 ESV: 57
 EF: 59

REST

GATING NOT DONE

- Global Hypokinesis { MILD
- MODERATE
- SEVERE
- Dyssynchronous { CABG
- PACED
- LBBB



ISCHEMIC CARDIOMYOPATHY NON-ISCHEMIC CARDIOMYOPATHY

Current probability of a hemodynamically significant coronary artery stenosis: < 10% ≥ 90% ≥ 99%
 60% - 89% ≥ 95%

PREDICTED STENOSES

A	UNSPECIFIED	LAD	C	UNSPECIFIED	LAD
	MILD to MODERATE	DIAGONAL		MILD to MODERATE	DIAGONAL
	MODERATE to SEVERE	LCX		MODERATE to SEVERE	LCX
	SEVERE to CRITICAL	RCA/PDA		SEVERE to CRITICAL	RCA/PDA
B	UNSPECIFIED	LAD	D	UNSPECIFIED	LAD
	MILD to MODERATE	DIAGONAL		MILD to MODERATE	DIAGONAL
	MODERATE to SEVERE	LCX		MODERATE to SEVERE	LCX
	SEVERE to CRITICAL	RCA/PDA		SEVERE to CRITICAL	RCA/PDA

OVERRIDE AUTOMATIC CALCULATIONS:

STRESS		REST	
ESV	EF	ESV	EF
NORMAL	NORMAL	NORMAL	NORMAL
ELEVATED	REDUCED	ELEVATED	REDUCED
MARKEDLY ELEVATED	SEVERELY REDUCED	MARKEDLY ELEVATED	SEVERELY REDUCED

Add to impression:

Risk of cardiac mortality within next 1 to 2 years:

Very Low Intermediate
 Low High