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Product Demo

Anytown Cardiac Specialists, Inc.

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JOHNSON, VICTOR	DOB: 09/06/1938	January 24, 2012

INTRAVENOUS ADENOSINE MYOCARDIAL PERFUSION STUDY

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

Ordering Physician: Ed Wilson, MD, FACC

Clinical History: 73 year-old man with cardiac risk factors which include gender, age, known CAD, current smoking, and peripheral vascular disease. The patient has a history of coronary artery bypass graft surgery. Significant pre-test symptoms include chest pain. His last Beta-blocker was administered 26 hours prior to the study. His height is 70 inches and weight is 148 lbs, with a BMI of 21 (BSA: 1.8 m^2).

Indications for study: Chest pain, known CAD (diagnostic and prognostic assessment), coronary artery bypass graft surgery, and pre-operative evaluation. **Pharmacologic indication:** Physician request.

ADENOSINE PHARMACOLOGIC STRESS

BASELINE ECG: Sinus bradycardia at 54 bpm. PR: 0.210, QRS: 0.080, QT: 0.400, and Axis: -30. No arrhythmias. ST: non-specific ST-T changes were noted. T waves: non-specific T wave changes were noted. QRS (Q waves): normal. Conduction: normal. INTERPRETATION: Abnormal ECG as described.

Adenosine was infused over 5 minutes at a maximum rate of 140 mcg/kg/min (total dose 47.1 mg) to a peak heart rate of 104 bpm (71% MPHR). BP decreased from 136/80 to 114/64 at peak stress. STRESS ECG: Sinus tachycardia. No arrhythmias during stress or recovery. No ischemic ST-T changes. Conduction: normal. Testing was supervised and interpreted by Ed Wilson, MD, FACC.

IMPRESSION:

1. Appropriate blood pressure response to intravenous adenosine.
2. Appropriate heart rate response to intravenous adenosine.
3. Patient reported dyspnea and headache.
4. Negative ECG for ischemia.
5. No arrhythmias during adenosine infusion.

MYOCARDIAL PERFUSION IMAGING

30 minutes following the intravenous administration of 6.80 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, adenosine was infused and 36.00 mCi of ^{99m}Tc sestamibi was injected intravenously. 70 minutes later, post-infusion 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.

Myocardial Perfusion: **NORMAL**

Summed stress score (SSS) = **0.** Summed rest score (SRS) = **0.** Summed difference score (SDS) = **0**, a negative study for reversible perfusion abnormality.

The overall technical quality of the study is good.

IMPRESSION:

1. No evidence of adenosine-induced reversible perfusion abnormality.
2. No evidence of prior myocardial infarction.
3. Gated SPECT wall motion study at rest demonstrates mild global hypokinesis with EF = 46% and mildly enlarged ESV = 76 cc. Gated SPECT wall motion study at 70 minutes post-stress demonstrates similar wall motion with EF = 45% and mildly enlarged ESV = 72 cc.
4. The probability of a hemodynamically significant coronary artery stenosis is considered to be low (<10% probability). This negative study for reversible perfusion abnormality combined with a mildly reduced post-stress EF and mildly enlarged post-stress ESV predicts a low risk of cardiac mortality over the next 1-2 years. Clinical correlation is required.

Ed Wilson, MD, FACC
(01/25/2012)

FIGURE 1: Myocardial Perfusion Defects

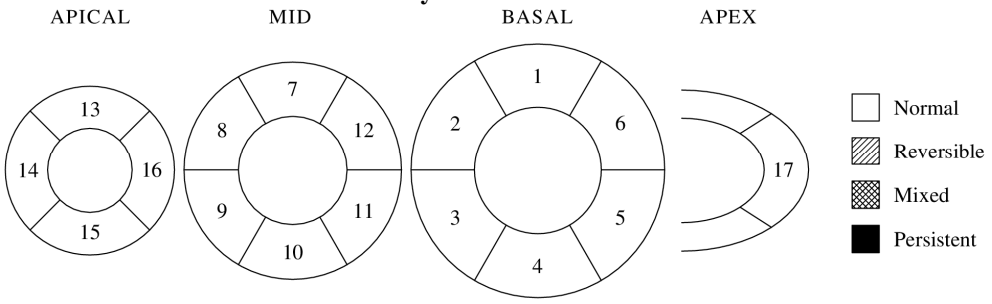


TABLE 1: Perfusion Scores (17-segment model)

SAX APICAL				SAX MID				SAX BASAL				APEX			
	#	S	R		#	S	R		#	S	R		#	S	R
ANT	13	0	0	ANT	7	0	0	ANT	1	0	0	APX	17	0	0
SEP	14	0	0	A-S	8	0	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 2: Perfusion Score Legend

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

TABLE 3: Observed vs. Expected Volumes and EF

	Observed (STRESS)	Expected (STRESS)
EDV	130 cc	<= 136 cc (75 cc/m^2)
ESV	72 cc	<= 71 cc (39 cc/m^2)
EF	45%	>= 50%

I.V. Adenosine

MYOCARDIAL PERFUSION STUDY
PHYSICIAN WORKSHEET

NAME: JOHNSON, VICTOR
DOB: 09/06/1938
Study Date: 11/24/12
MRN:
Cardiologist/ Ordering MD: E. WILSON
Primary MD:
CC TO:
ID VERIFIED BY: WW

Last β-blocker: 26 hrs ago
Height: 70 inches Gender: ☒ M ☐ F
Weight: 148 lbs

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
- ☐ _____

DATA

Age: 73; MPHR is ____ bpm; 85% of MPHR is ____ bpm.

STRESS	BP	HR	RECOVERY	BP	HR
0 min.	136/80	84	immed.	118/74	102
1 min.	128/82	90	2 min.	122/70	94
2 min.	124/76	92	4 min.	130/68	82
3 min.	118/70	98	6 min.	134/70	80
4 min.	114/64	104			
5 min.					
6 min.					

BP PEAK STRESS: 114/64
HR PEAK STRESS: 104

Infusion rate: 140 µg/kg/minute
Total dose: 47.1 mg (≤ 90mg)
Total infusion time: 05:00
Isotope injected at 02:35 @ 94 bpm

The patient:
- ☐ exercised at ____ mph and ____ % grade for ____ minutes
- ☒ did not exercise

Baseline ECG

S. B rhythm at 54 bpm
PR: .21 seconds QRS: .08 seconds
QT: .40 seconds Axis: −30 degrees
☐ normal
Arrhythmias:
ST: ☐ normal
- ☐ depressed in leads
- ☐ elevated in leads
- ☒ Non-Specific ST Abnormality
- ☐ Early Repol

T waves: ☐ normal
- ☐ biphasic in leads
- ☐ inverted in leads
- ☒ Non-Specific T Abnormality
- ☐ Flat
- ☐ Tall

QRS: ☒ normal
Ⓐ Conduction Abnormalities:
Ⓑ Q Waves:

Baseline ECG Interpretation
- ☐ Normal ECG
- ☒ Abnormal ECG due to:
- ☐ Borderline ECG due to:

Stress ECG

Rhythm S.T. Arrhythmia
- ☒ No ischemic ST-T changes
- ☐ ST segment depression up to ____ mm with:
  - ☐ upsloping
  - ☐ horizontal configuration in leads
  - ☐ downsloping
- ☐ ST segment elevation of ____ mm in leads
- ☐ New Conduction ABNL:
- ☐ New T Wave ABNL:

Recovery ECG

Comments:

Test Terminated Due To:

- ☐ Infusion Complete
- ☐ _____
- ☐ _____
- ☐ _____

IMPRESSION

1. ☒ Appropriate ☐ Paradoxical Increased ☐ Blunted ☐ Hypotensive — BP response
2. ☒ Appropriate ☐ Exaggerated Increased ☐ Blunted — HR response
3. ☒ Negative ☐ Equivocal ☐ Positive ☐ Uninterpretable — ECG for ischemia.
4. ☒ No arrhythmias ☐ V. couplets ☐ PAC's ☐ PVC's ☐ V. tach. (____ beats) ☐ during ☐ after adenosine infusion.
5. Patient Noted:
   - ☐ No symptoms
   - ☐ Chest pain/discomfort
   - ☐ General malaise
   - ☐ Nausea
   - ☒ Dyspnea
   - ☒ Headache
   - ☐ Lightheadedness
   - ☐ _____
6. ☐ Aminophylline ____ mg administered starting ____:____ after isotope injection.
7.

Ed Wilson
MD/PA/NP signature

TECHNOLOGIST WORKSHEET

Name: JOHNSON, VICTOR DOB: 09/06/1938

Study Date: 01 / 24 / 2012 (MM / DD / YYYY)

Study Type: ADENO MPI

Patient's Height: 70 inches

Weight: 148 lbs

Gender: ☒ Male ☐ Female

Patient ID on Modality: _____

Female patient bra/cup size: _____ / _____

Breast Surgery: YES / NO

Location: LEFT / RIGHT

Describe: _____

REST IMAGING

REST DOSE: 6.8 mCi

INJECTION TIME: 11 HH : 10 MM

SCAN START TIME: 11 HH : 40 MM

Pharmaceutical:
- ☒ Sestamibi
- ☐ Tetrofosmin
- ☐ Rubidium-82
- ☐ Thallium

Rejected / Total Beats: 0 / _____

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: 36.0 mCi

INJECTION TIME: 12 HH : 40 MM

SCAN START TIME: 13 HH : 50 MM

Pharmaceutical:
- ☒ Sestamibi
- ☐ Tetrofosmin
- ☐ Rubidium-82
- ☐ Thallium

Rejected / Total Beats: _____ / _____

Basketball Motion: YES / NO

Upward Creep: (YES) / NO

Acq. Gating Failure: YES / NO

MoCo estimate from review of raw STRESSdata:

☐ NONE ☐ MODERATE*

☒ MILD ☐ SEVERE*

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

Stress prone imaging performed: (YES) / NO

Attenuation correction: _____

Repeat imaging start times:

_____ HH : _____ MM REST / STRESS

_____ HH : _____ MM REST / STRESS

Notes: _____

X _____

Technologist initials

PERFUSION RESULTS

Name: JOHNSON, VICTOR DOB: 09/06/1938

Prone performed: (YES) / NO

SSS: 0

SRS: 0

SDS: 0

TID ratio: 1.10

☐ TID is abnormal

Perfusion Results:

☑ **Normal**

☐ **Abnormal**

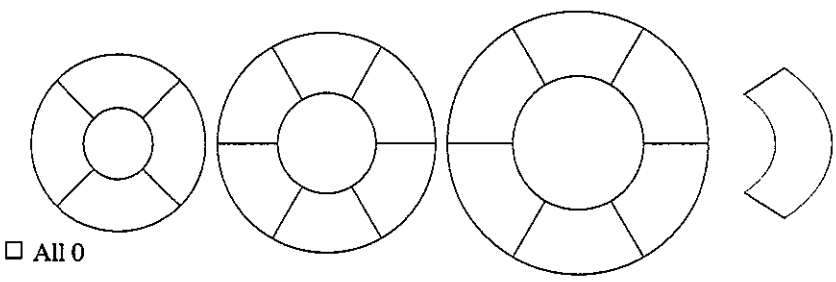
☐ LVH

☐ RVE

☐ RVH

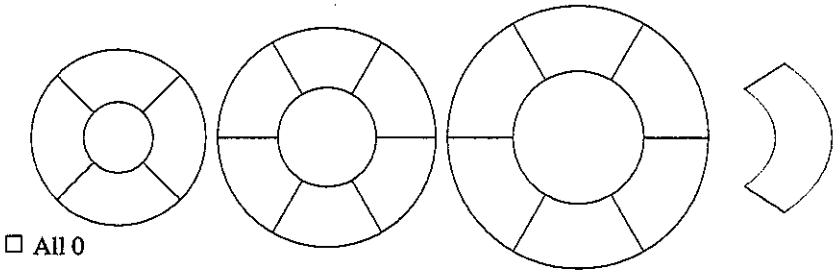
Attenuation ☐ BREAST ☐ INFERIOR

STRESS



☐ All 0

REST



☐ All 0

SEGMENTAL PERFUSION DEFECTS								TYPE	EXTENT	SEVERITY	CVT
A	BASAL	A	AS	IS	I	IL	AL	REVERSIBLE	SMALL	MILD	LAD
	MID	A	AS	IS	I	IL	AL	PERSISTENT	MEDIUM	MODERATE	DIAGONAL
	APICAL	A		S		I	L	MIXED	LARGE	SEVERE	LCX
	APEX				APEX						RCA/PDA
B	BASAL	A	AS	IS	I	IL	AL	REVERSIBLE	SMALL	MILD	LAD
	MID	A	AS	IS	I	IL	AL	PERSISTENT	MEDIUM	MODERATE	DIAGONAL
	APICAL	A		S		I	L	MIXED	LARGE	SEVERE	LCX
	APEX				APEX						RCA/PDA
C	BASAL	A	AS	IS	I	IL	AL	REVERSIBLE	SMALL	MILD	LAD
	MID	A	AS	IS	I	IL	AL	PERSISTENT	MEDIUM	MODERATE	DIAGONAL
	APICAL	A		S		I	L	MIXED	LARGE	SEVERE	LCX
	APEX				APEX						RCA/PDA
D	BASAL	A	AS	IS	I	IL	AL	REVERSIBLE	SMALL	MILD	LAD
	MID	A	AS	IS	I	IL	AL	PERSISTENT	MEDIUM	MODERATE	DIAGONAL
	APICAL	A		S		I	L	MIXED	LARGE	SEVERE	LCX
	APEX				APEX						RCA/PDA

FUNCTION RESULTS

Name: JOHNSON, VICTOR DOB: 09/06/1938

STRESS

EDV: 130
ESV: 72
EF: 45

Global Hypokinesis: ☒ MILD ☐ MODERATE ☐ SEVERE

☐ Stunning

Dyssynchronous: ☐ CABG ☐ PACED ☐ LBBB

REST

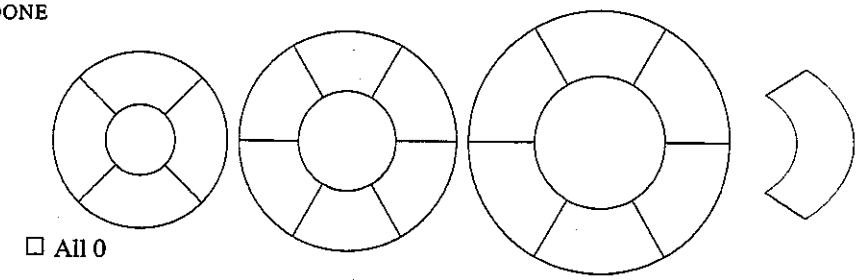
EDV: 140
ESV: 76
EF: 46

Global Hypokinesis: ☒ MILD ☐ MODERATE ☐ SEVERE

Dyssynchronous: ☐ CABG ☐ PACED ☐ LBBB

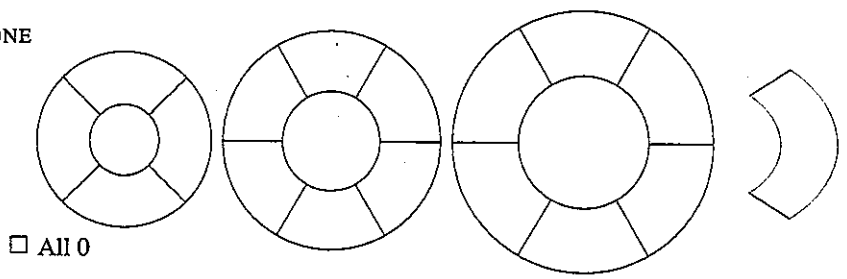
☐ GATING NOT DONE

APICAL MID BASAL APEX



☐ All 0

☐ GATING NOT DONE



☐ All 0

☐ ISCHEMIC CARDIOMYOPATHY ☐ NON-ISCHEMIC CARDIOMYOPATHY

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

PREDICTED STENOSES

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

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

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

D	UNSPECIFIED	LAD
	MILD to MODERATE	DIAGONAL
	MODERATE to SEVERE	LCX
	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

Risk of cardiac mortality within next 1 to 2 years:

☐ Very Low ☐ Intermediate
☒ Low ☐ High

Add to impression: