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Mock Written Exam

Adult Cardiology Trainee Review Program

Supported by the Canadian Cardiovascular Society Academy

2021

BOOKLET 2

2021 Adult Cardiology Trainee Review Program

Practice Short Answer Written Exam

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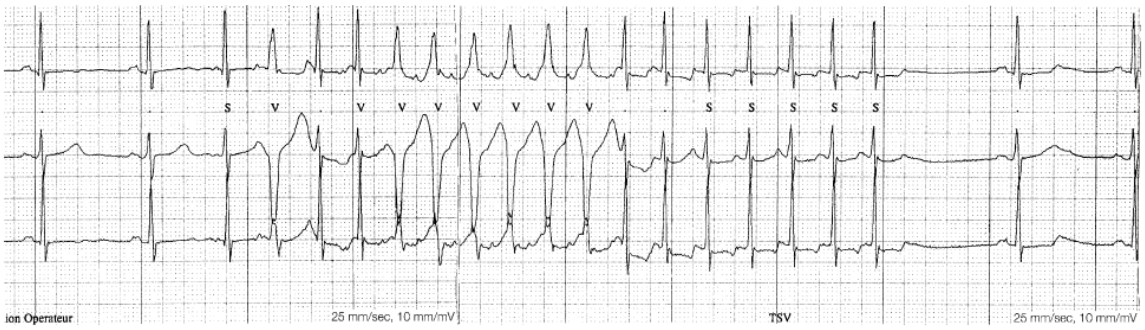
1. a) Draw the simultaneous left ventricular and aortic pressure tracings of a patient with obstructive hypertrophic cardiomyopathy at baseline and post-PVC. (4)

b) What features are characteristic of the post-PVC response in the cath lab and at the bedside? (2)

c) List the two most commonly affected genes and mode of inheritance in hypertrophic cardiomyopathy. (4)

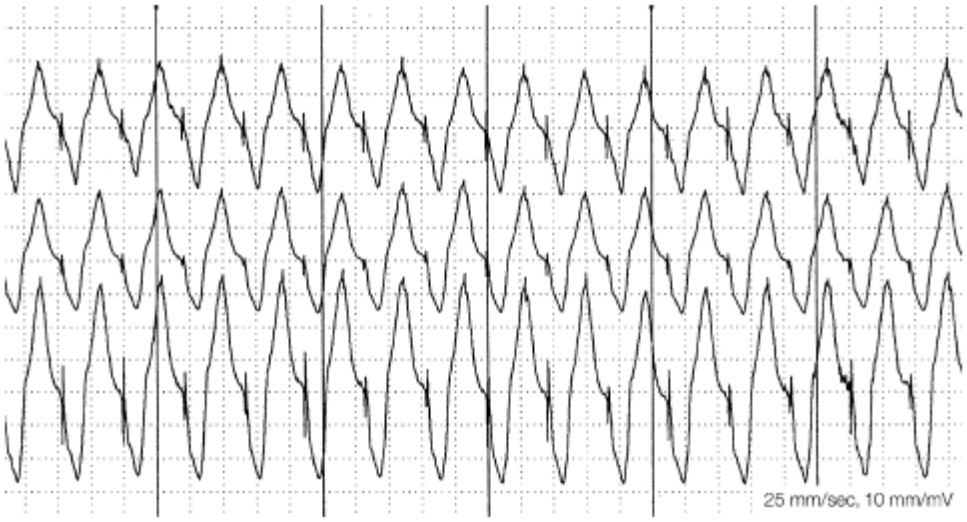
2. A 32-year-old woman complains of episodic palpitations over the last 6 months. They are felt as a “fast heart beat” and last seconds to at most two minutes. There are no associated symptoms, and there has been no pre-syncope or syncope. No aggravating or alleviating factors are identified. There is no family history of sudden cardiac death. The patient is healthy except for a moderately-severe depression which has been well controlled with venlafaxine (her only medication) for the last three years. The family physician ordered a 24-hour Holter during which the patient reported one episode of her typical palpitations, which correlated with the strip below.



a) You are the cardiologist responsible for reading the above Holter. Write a report summarizing the results. (7)

b) Now, you are the cardiologist seeing the patient in prompt consultation. Outline your management plan (as you would in the consultation note to the family physician). (3)

3. A 68-year-old man complains of intermittent fatigue (described as decreased energy) during the past three months. He denies presyncope or syncope. He had a permanent pacemaker implanted for premature conduction system degeneration two years earlier. A 24-hour Holter is performed during which no symptoms are reported. The maximum heart rate occurred at 16:00, during a work-out on a stationary bicycle; the corresponding rhythm strip is depicted below:

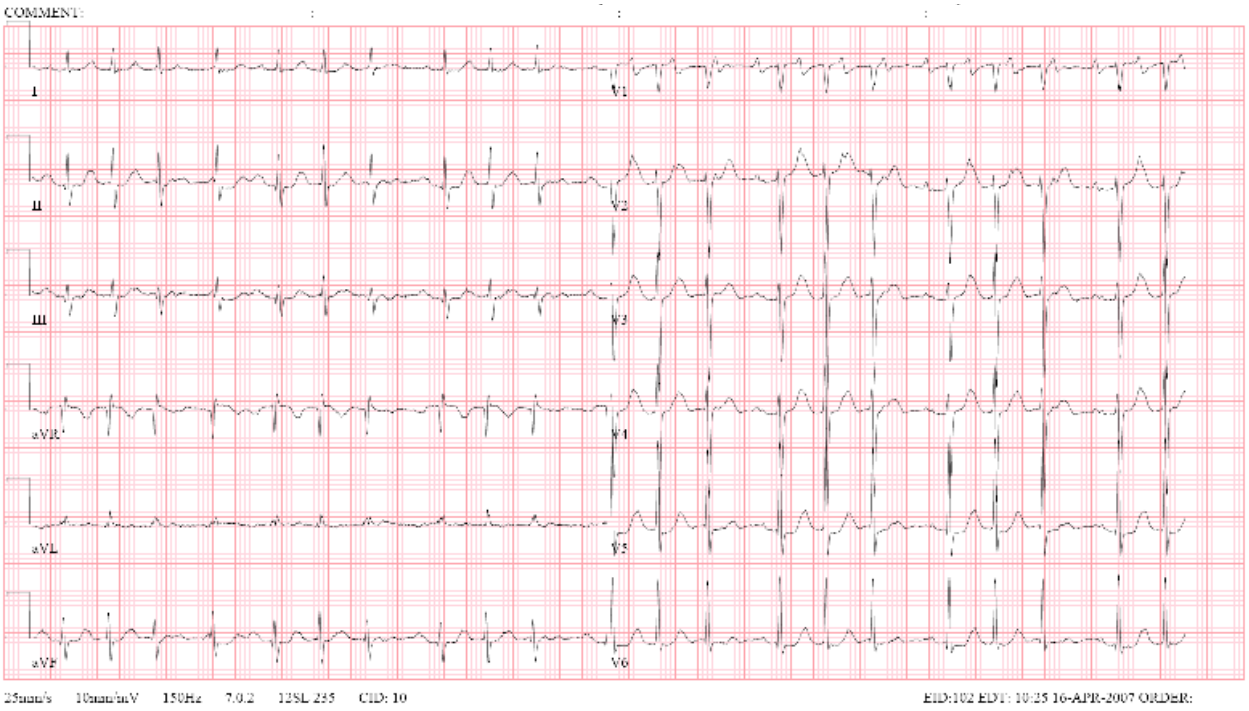


a) Using the five position NASPE/BPEG code, identify the pacemaker type. (5)

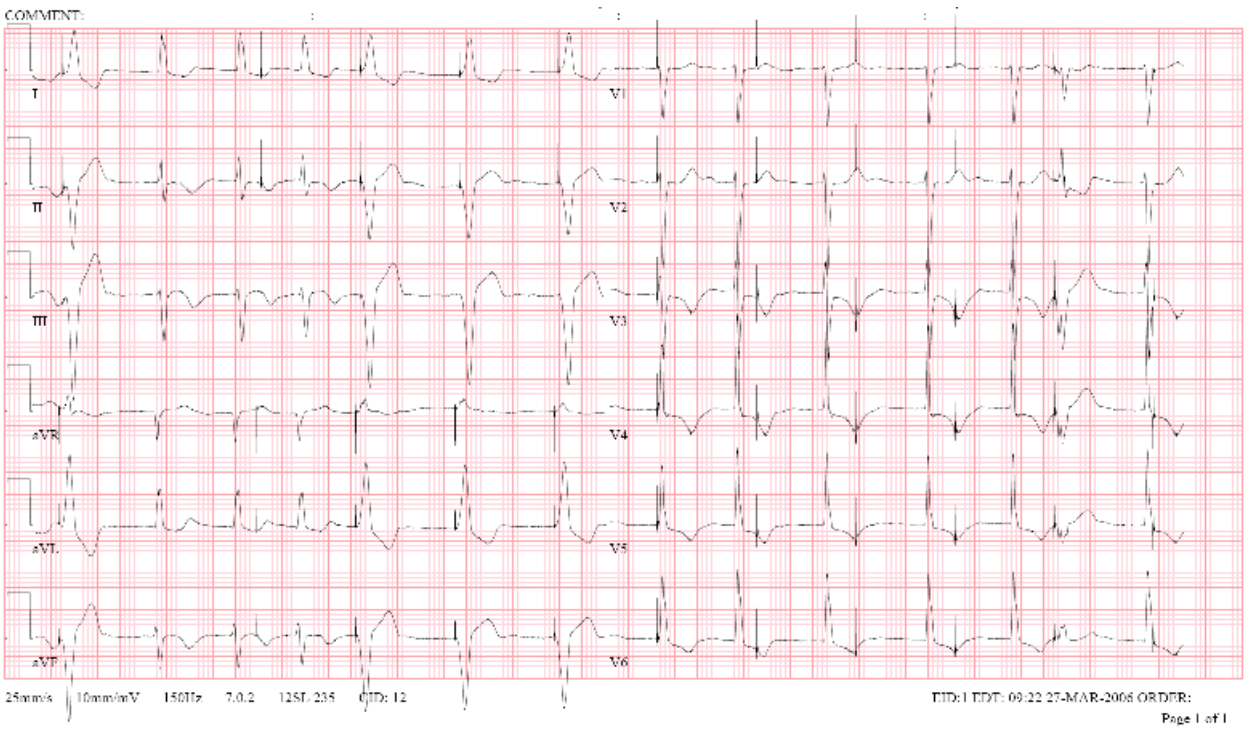
b) Describe what the pacemaker is doing. (3)

4. Interpret the following two ECGs and answer any additional questions:

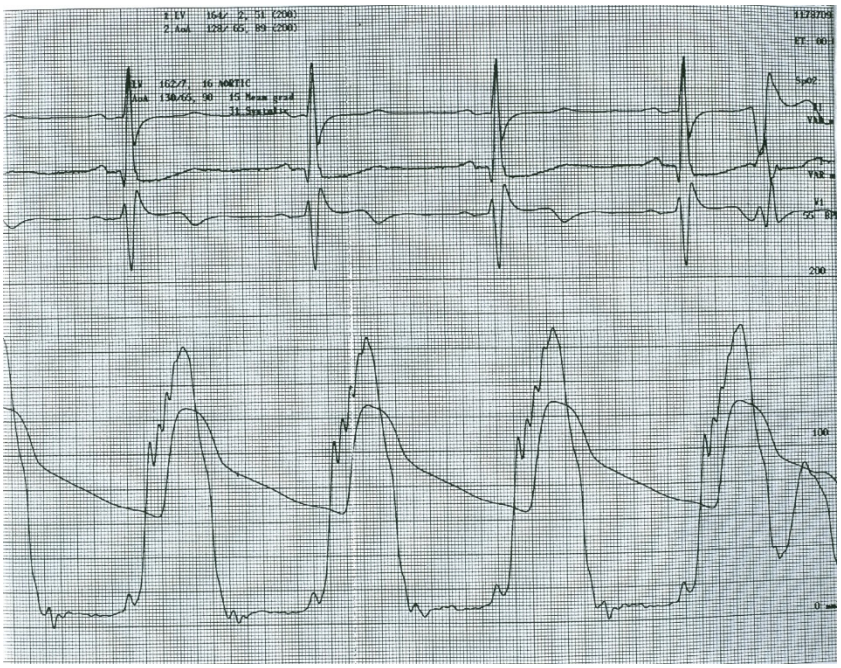
a)

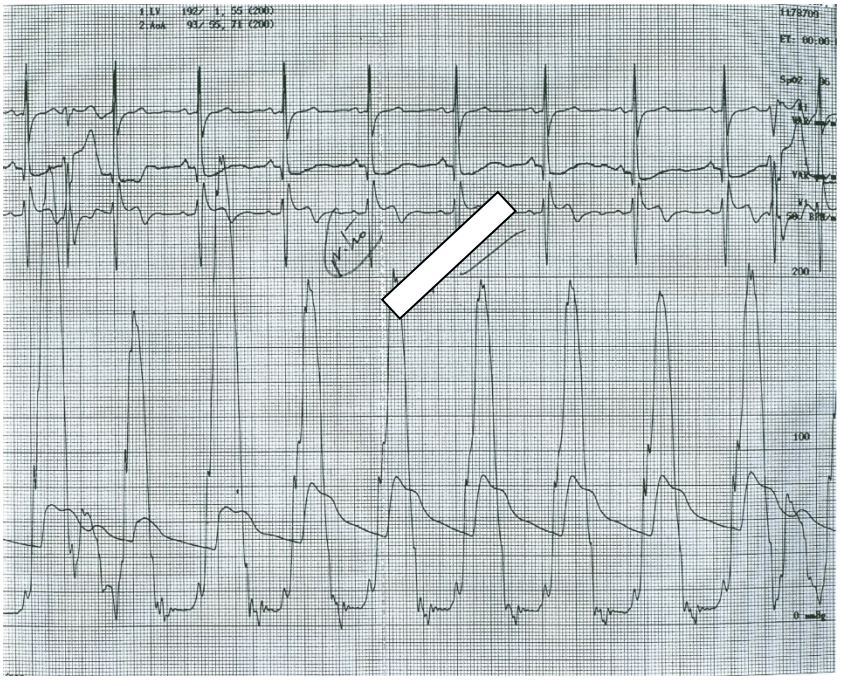


b) What is the phenomenon depicted in QRS #8 called?



5. A 47-year-old woman undergoes a left heart catheterization. The top tracing is baseline, the bottom after administration of intravenous nitroglycerin. What is the diagnosis? (5) Explain your answer, beginning with the mechanism of action of nitroglycerin (5).





6. A 57-year-old man is sent for a Holter. Indication is listed as “atrial fibrillation/flutter.” Medications are listed as warfarin and atorvastatin. No event markers are recorded, and no symptoms are reported. Interpret the Holter. Graphics are on two pages. (10)

Heart Rate Data	
Total Beats	: 169869
Min HR	: 38 BPM at 16:00:28
Avg HR	: 59 BPM
Max HR	: 94 BPM at 08:48:06

Heart Rate Variability	
ASDNN 5	: 156.6 msec
SDANN 5	: 97.6 msec
SDNN	: 272.6 msec

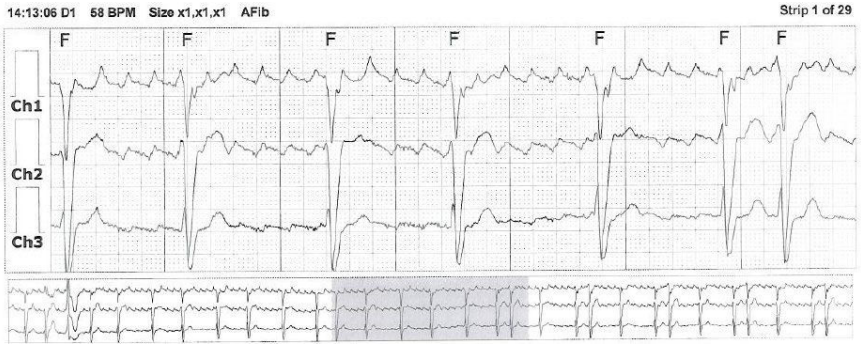
ST Episode Analysis	Ch1	Ch2	Ch3
Min ST Level	-2.7	-1.0	-0.9
Max ST Level	0.9	2.5	0.7
ST Episodes	0	1	0

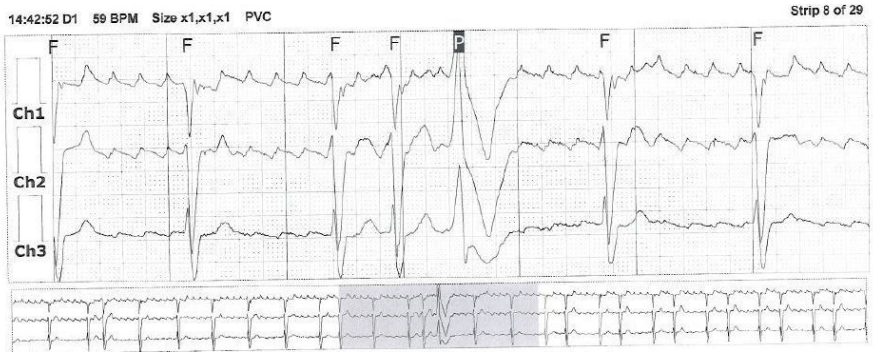
Pacer Analysis	
Single Paced Beats	: -
Dual Paced Beats	: -
Fusion Beats	: -

Atrial Fibrillation		
AFib Beats	: 167619 (98.7%)	
Duration	: 2822.3 min	Events : 4

Ventricular Ectopy	
Total VE Beats	: 2186 (1.3%)
Vent Runs	: 38
Beats	: 232
Longest	: 22 Beats at 12:54:02
Fastest	: 148 BPM at 12:54:02
Triplets	: 27 Events
Couplets	: 157 Events
Single/Interp PVC	: 1152/0
R on T	: 0
Single/Late VE's	: 167/73
Bi/Trigeminy	: 15/152 Beats

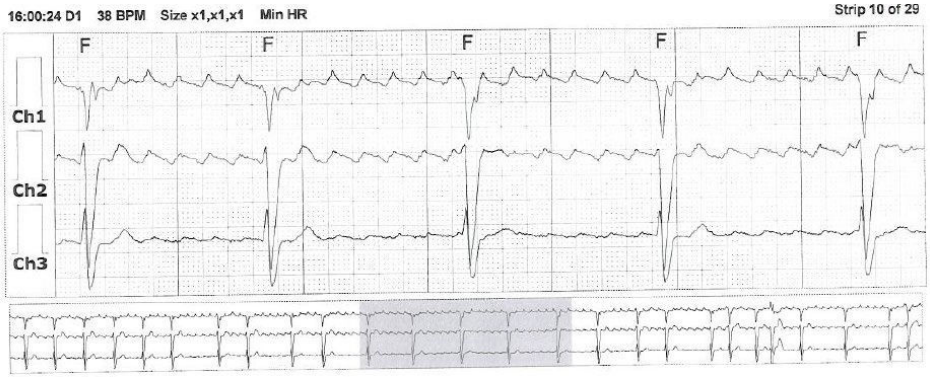
Supraventricular Ectopy	
Total SVE Beats	: 0 (0.0%)
Atrial Runs	: 0
Beats	: 0
Longest	: 0
Fastest	: 0 BPM
Atrial Pairs	: 0 Events
Drop/Late	: 1/0
Longest N-N	: 2.1 sec at 06:14:59
Single PAC's	: 0
Bi/Trigeminy	: 0/0 Beats





16:00:24 D1 38 BPM Size x1,x1,x1 Min HR

Strip 10 of 29

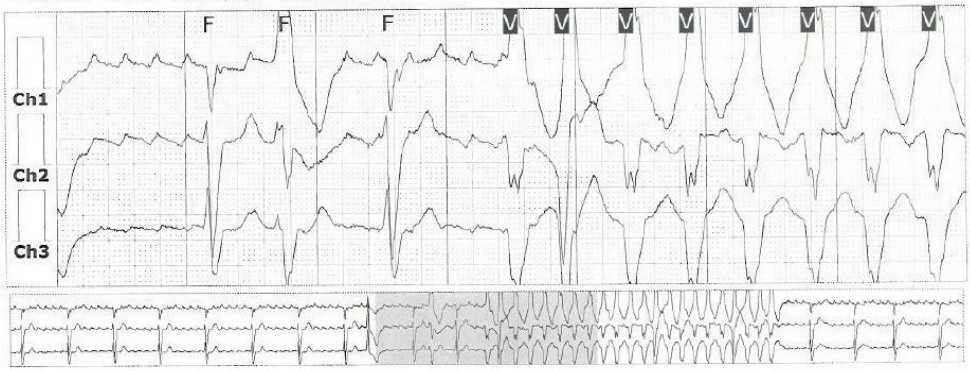


11:07:45 D1 54 BPM Size x1,x1,x1 Ventricular Run

Strip 19 of 29

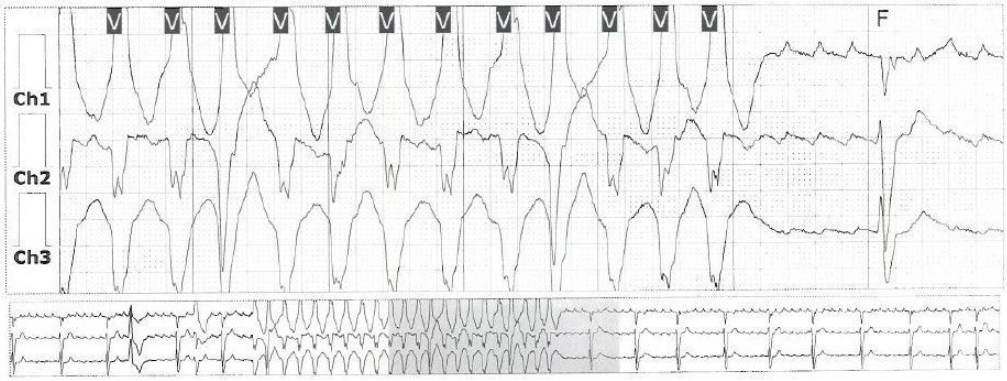
12:53:59 D2 148 BPM Size x1,x1,x1 Ventricular Run

Strip 27 of 29

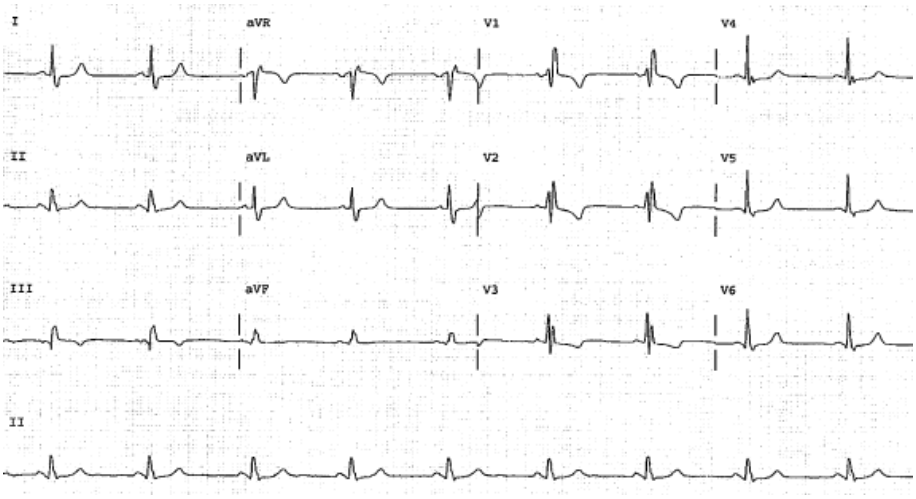


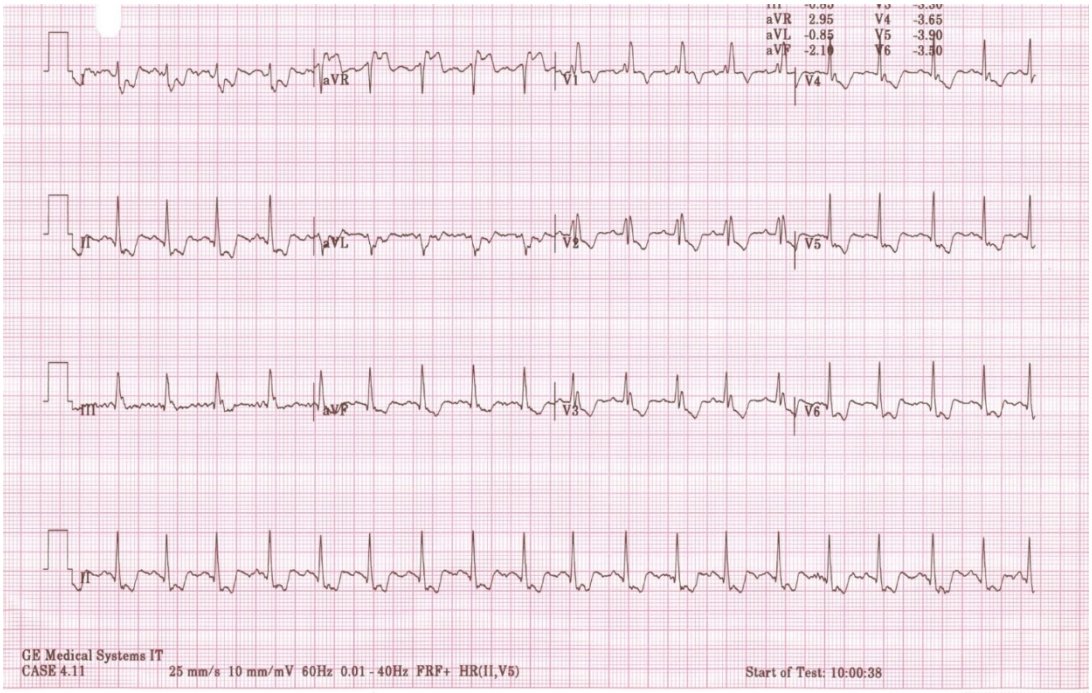
12:54:06 D2 128 BPM Size x1,x1,x1 Ventricular Run

Strip 28 of 29



7. A 55-year-old woman describes an epigastric burning when she walks her dog after dinner. She is obese, dyslipidemic and hypertensive; she does not have diabetes, nor does she smoke. She is on pravastatin and hydrochlorothiazde. Below is her resting ECG. An exercise ECG is ordered. The patient exercises for one minute into stage 2 of a Bruce protocol before stopping due to epigastric burning. Her ECG at peak stress is reproduced.

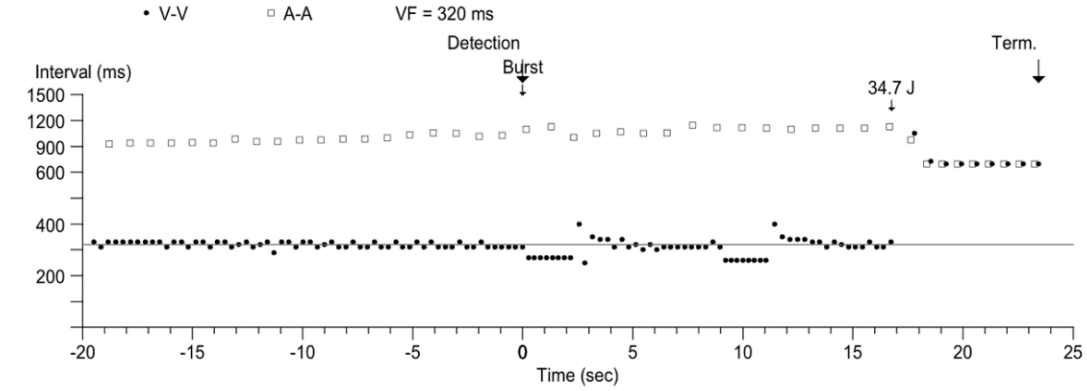


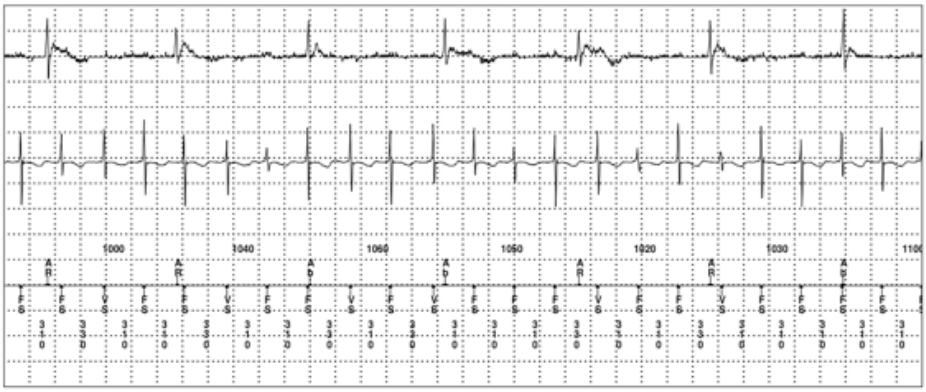


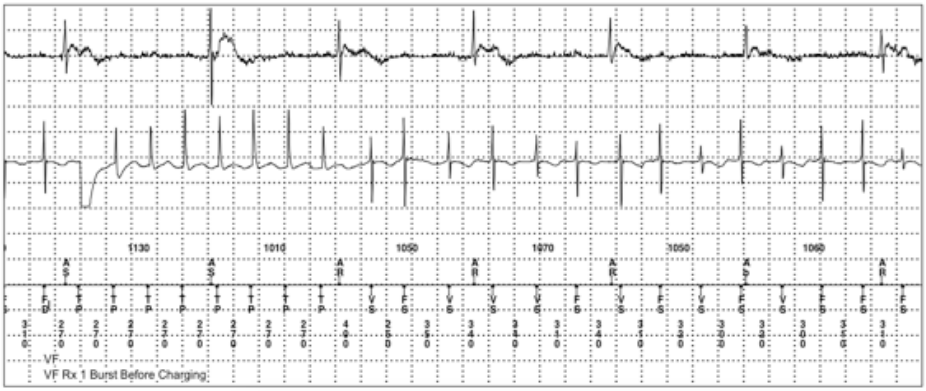
Is an exercise ECG an appropriate test in this patient? Justify your response. What other test details are required to interpret this test? With the information that is provided, document an interpretation of this test:

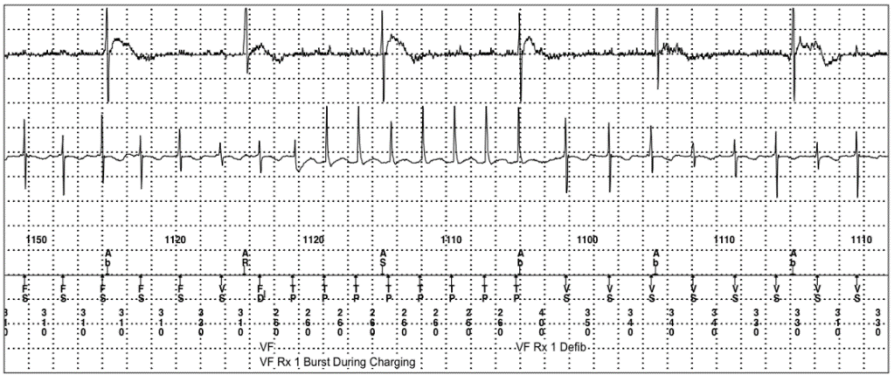
8. A 41-year-old woman presents to the emergency department because she felt a strong jolt in her chest. She was drinking cold water after a work-out with her husband when she describes a shock in her chest. Her past medical history is notable for a diagnosis of cardiac sarcoid 18 months earlier. This manifested as intermittent complete heart block and was managed with a dual chamber ICD. She has been well since. Heart function was previously documented normal. She is on no medications. She is back to her usual state of well being in the ED. A physical examination is unremarkable. You interrogate her device:

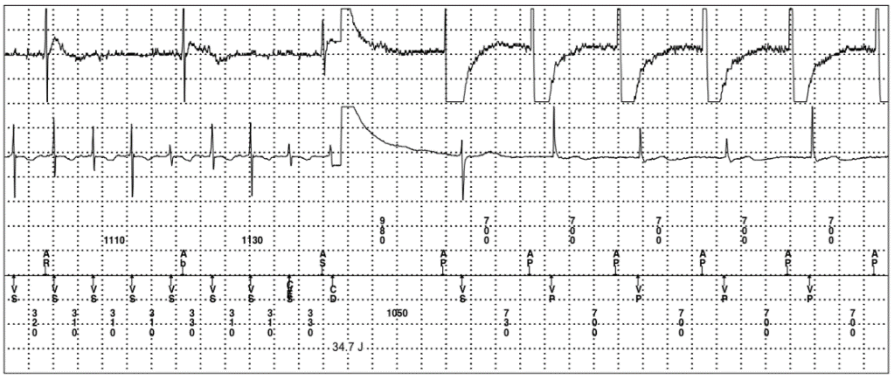
Type	ATP Seq	Shocks	Success	ID#	Date	Time hh:mm	Duration hh:mm:ss	Avg bpm A/V	Max bpm A/V	Activity at Onset
VF	2	35J	Yes	32	18-Oct-2012	07:31	:54	58/194	---/194	Active





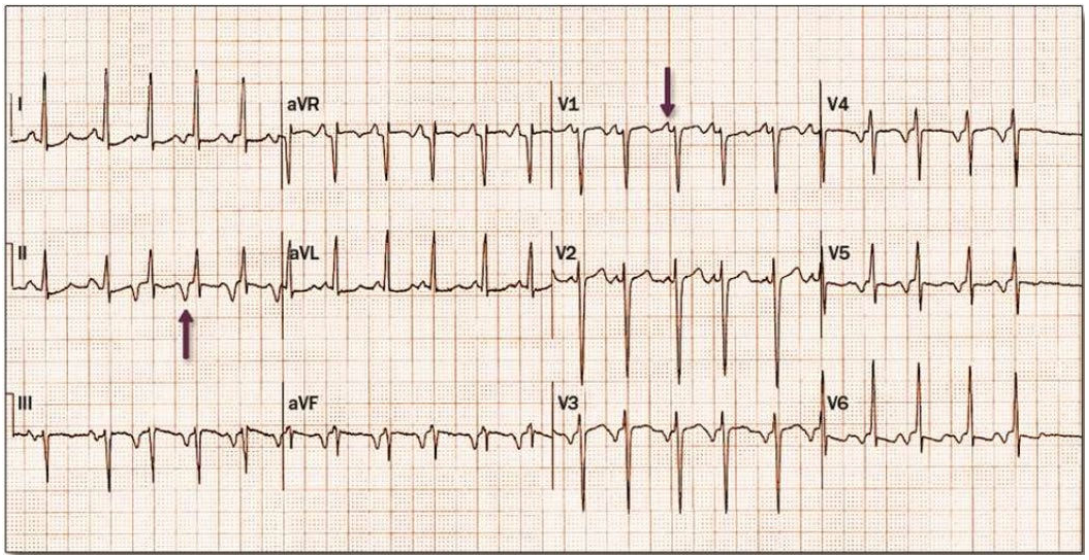

VF
VF Rx 1 Burst Before Charging


VF
VF Rx 1 Burst During Charging
VF Rx 1 Defib

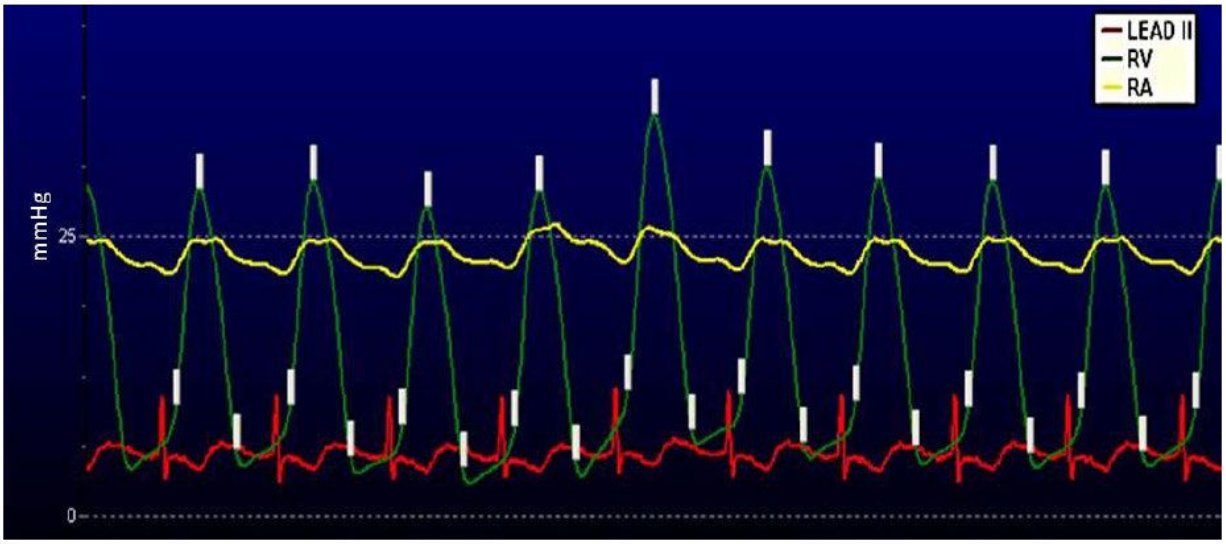

34.7 J

Interpret the data obtained from device interrogation. How would you manage the patient? (Assume you are the cardiology consultant in the emergency department; write out your plan for this patient for the referring physician.)

9. A 33-year-old woman presents to the emergency department with very frequent palpitations in the preceeding 48 hours. The following ECG is performed during an episode of palpitations. Concerned about sinus tachycardia, the emergency physician orders a CTPA which is negative for PE. He then refers the patient to you “re: inappropriate sinus tachycardia.” What three arrhythmias can account for this ECG? (6)



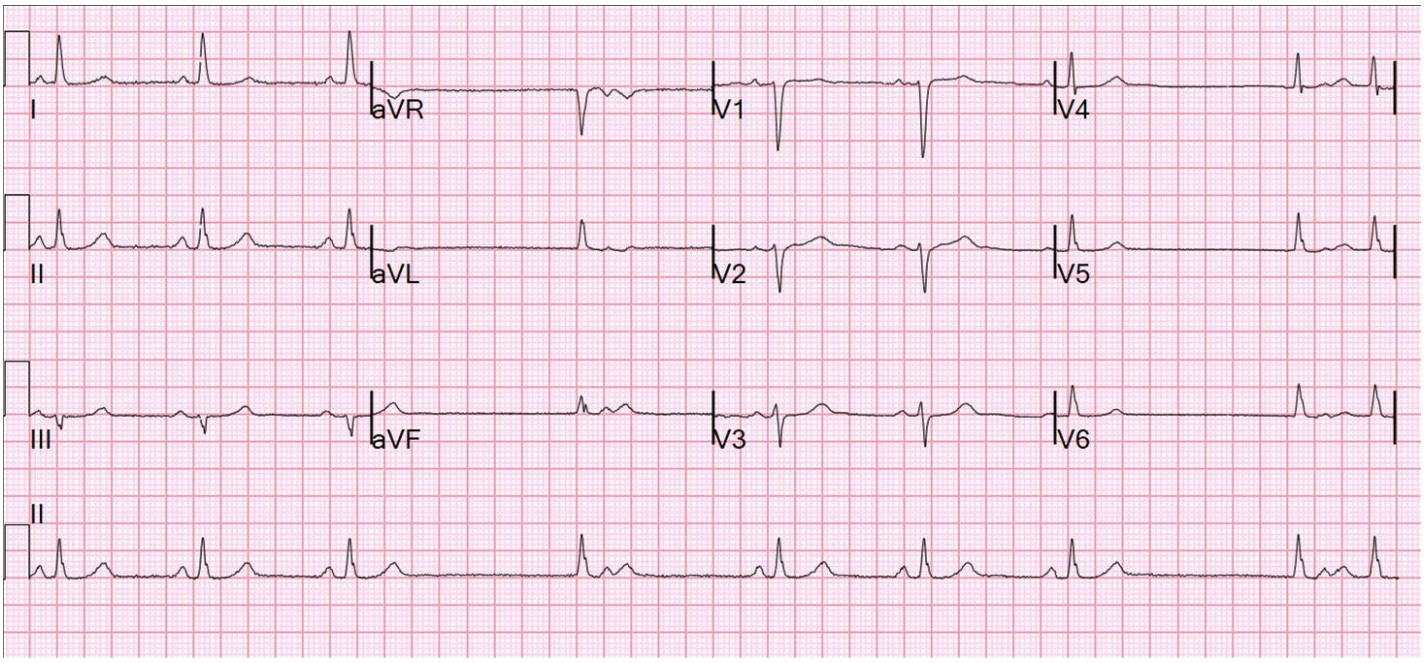
10. A 53-year-old woman presents with fatigue and anorexia. Her coronary arteries are normal.



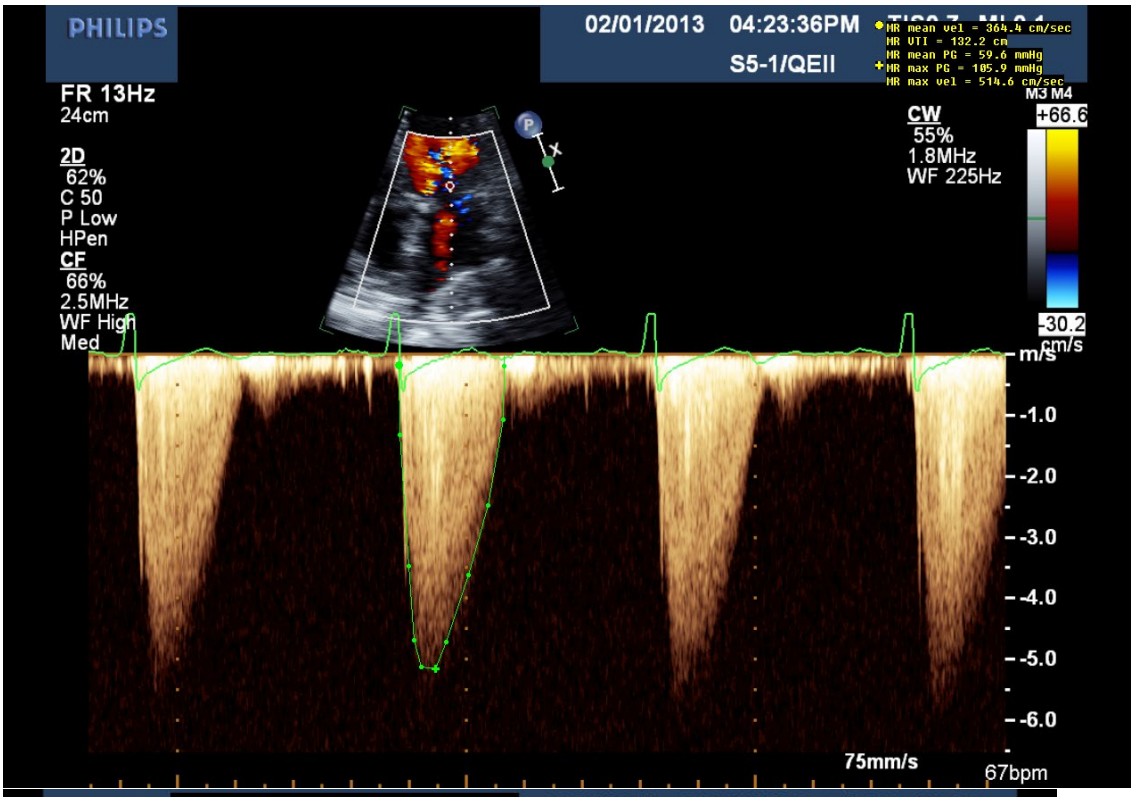
List the two MAJOR abnormal hemodynamic findings present on this tracing. (2)

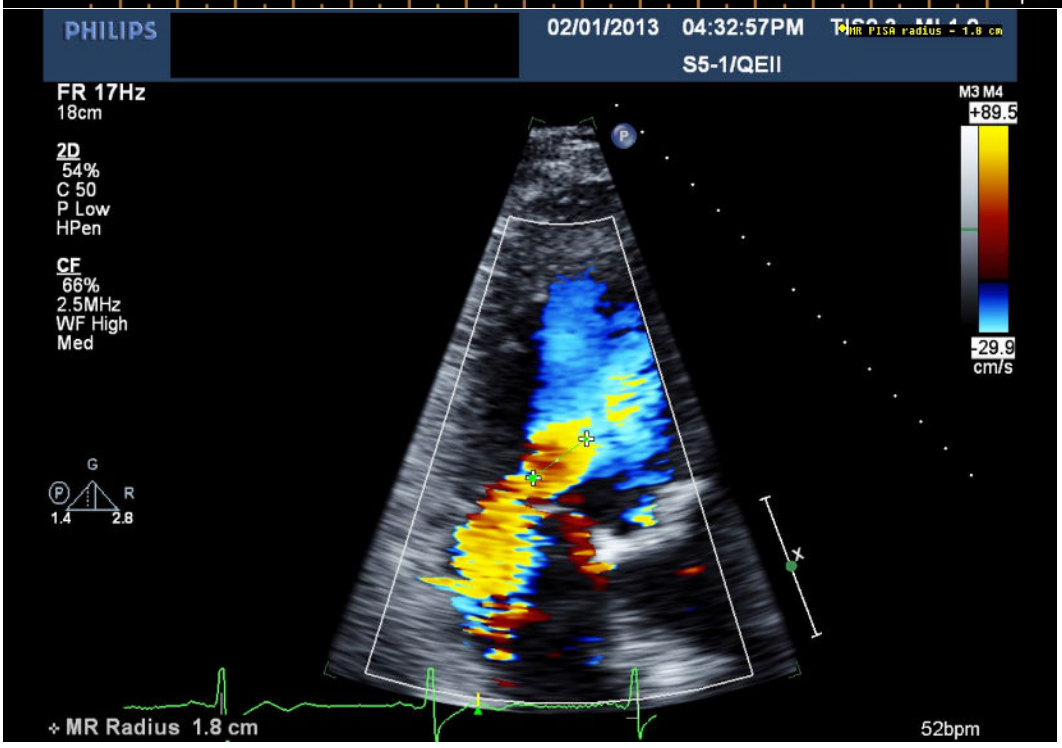
What is the diagnosis? (2)

11. Interpret the following ECG (2)



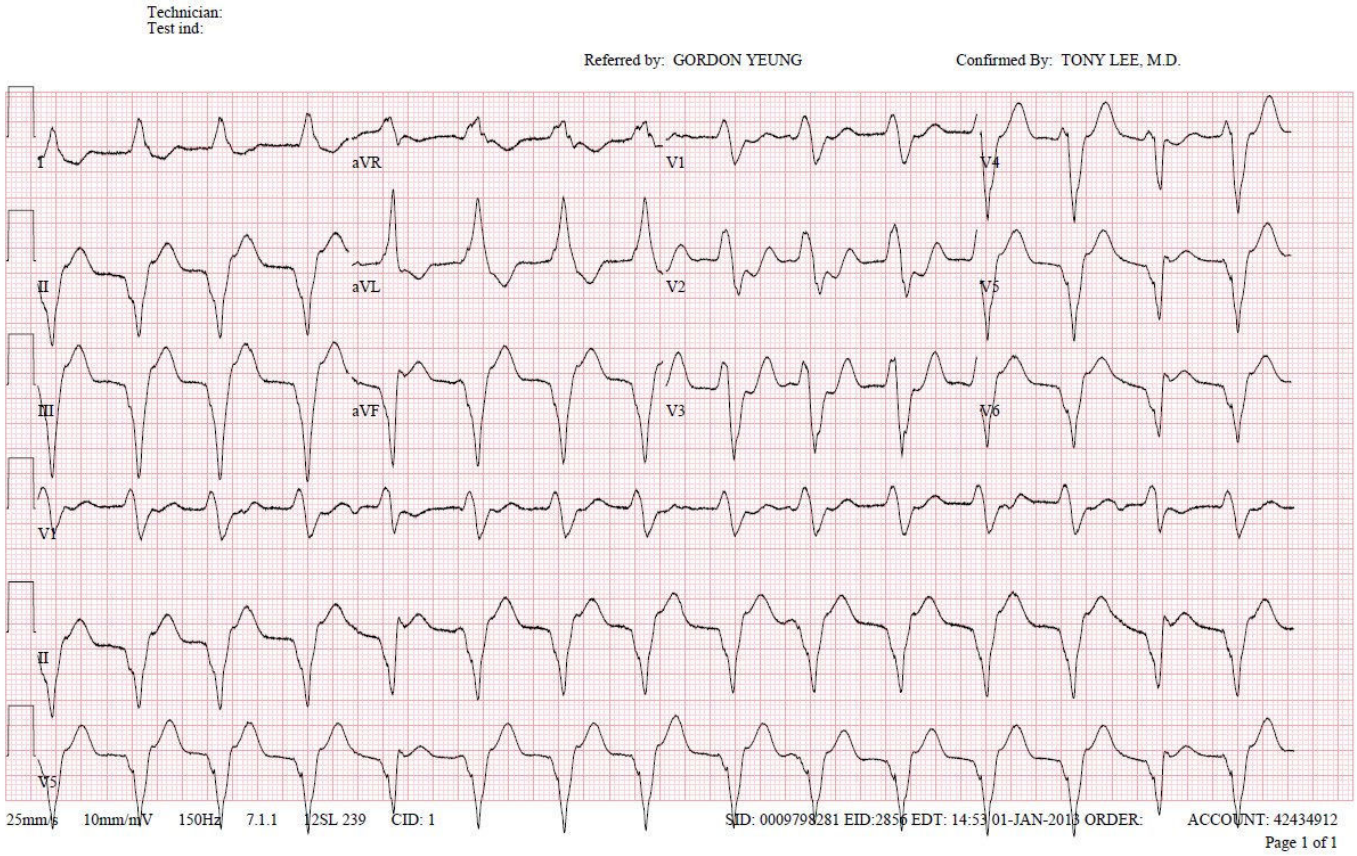
12. Calculate the Effective Regurgitant Orifice (ERO) in this patient with severe MR (2)



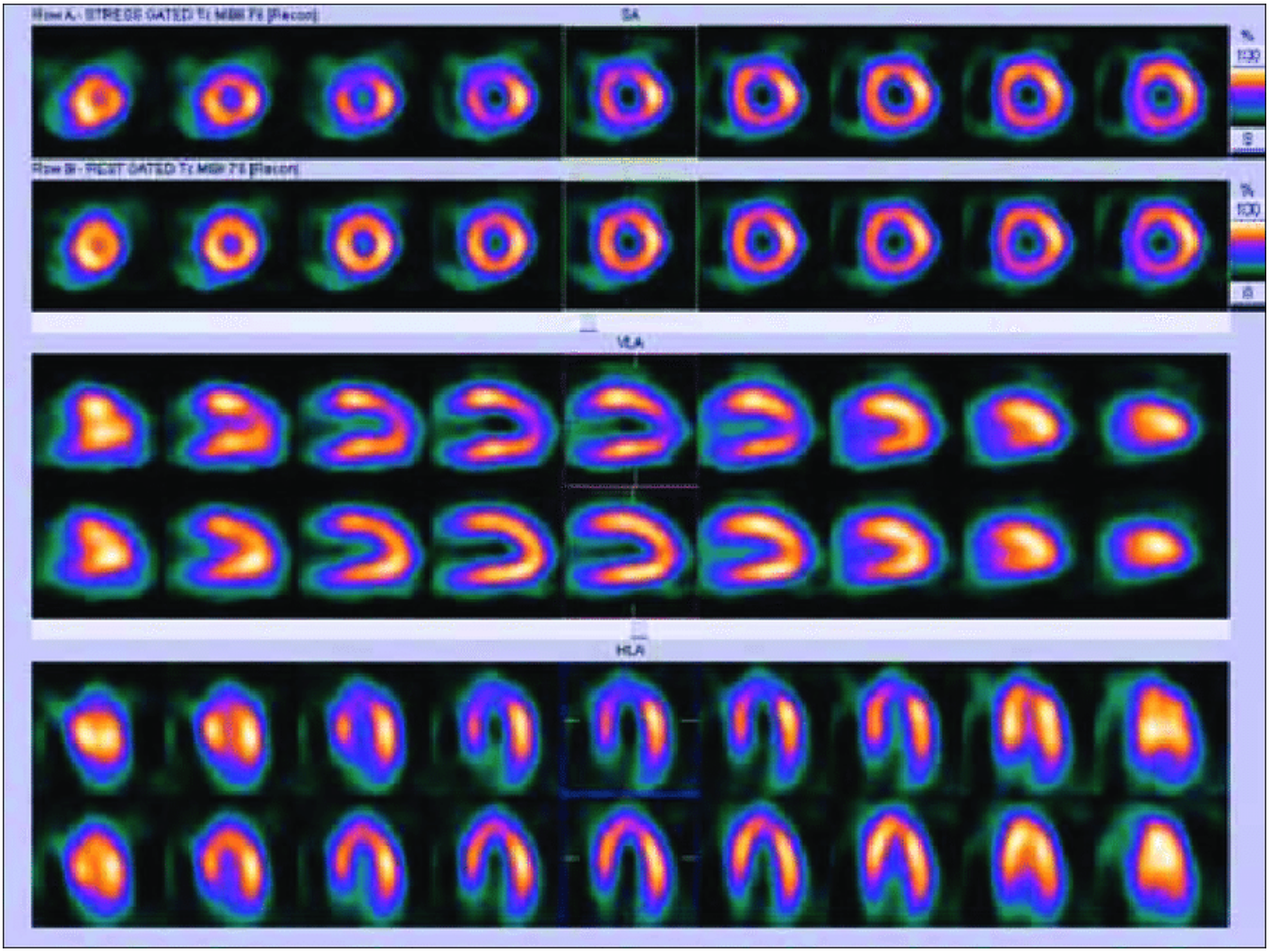


*PISA radius 1.8 cm. MR mean vel – 364.4 cm/2, VTI 132.2 cm, MR mean PG 59.6, MR max PG 105.9, MR max vel 514.6 cm/s.

13. Interpret this ECG (2)

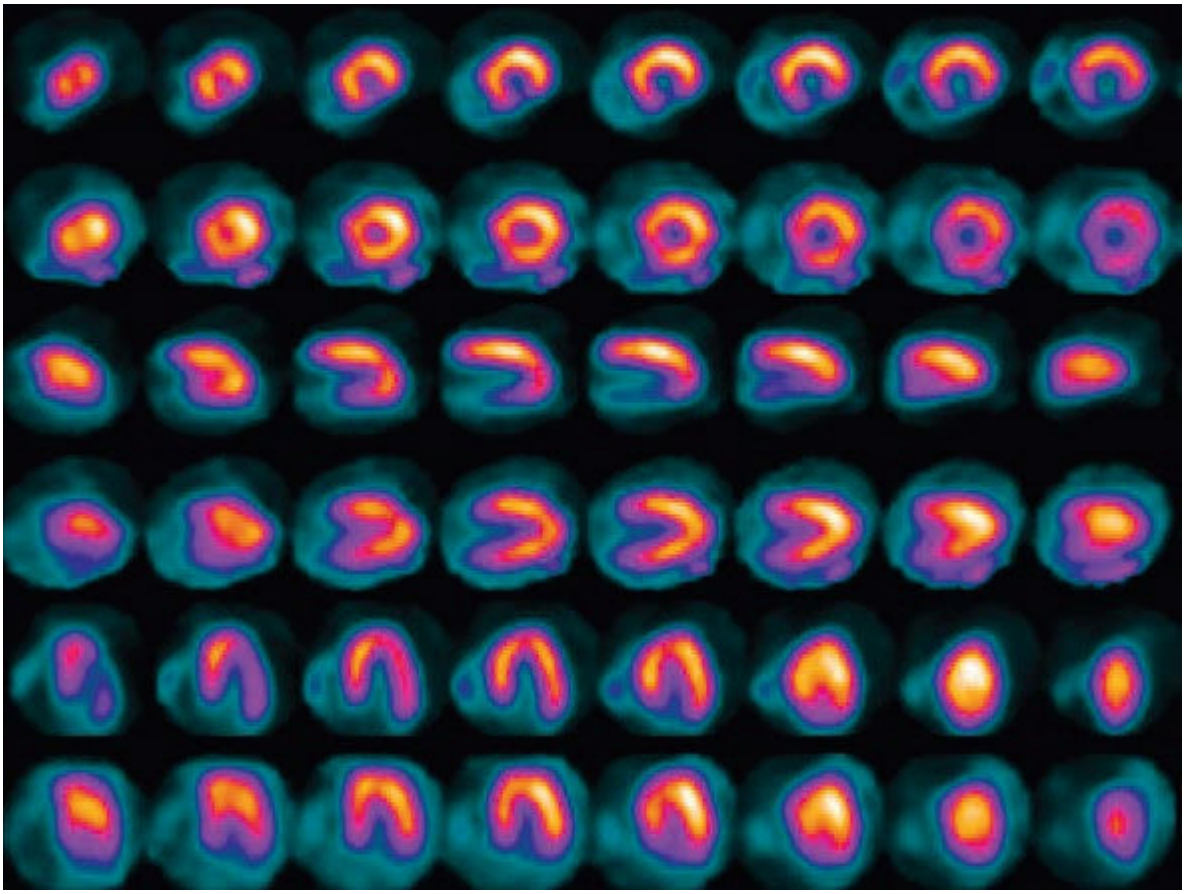


14. Interpret this MIBI scan (3)



Resting images on bottom, stress images on top.

15. Interpret this MIBI scan:



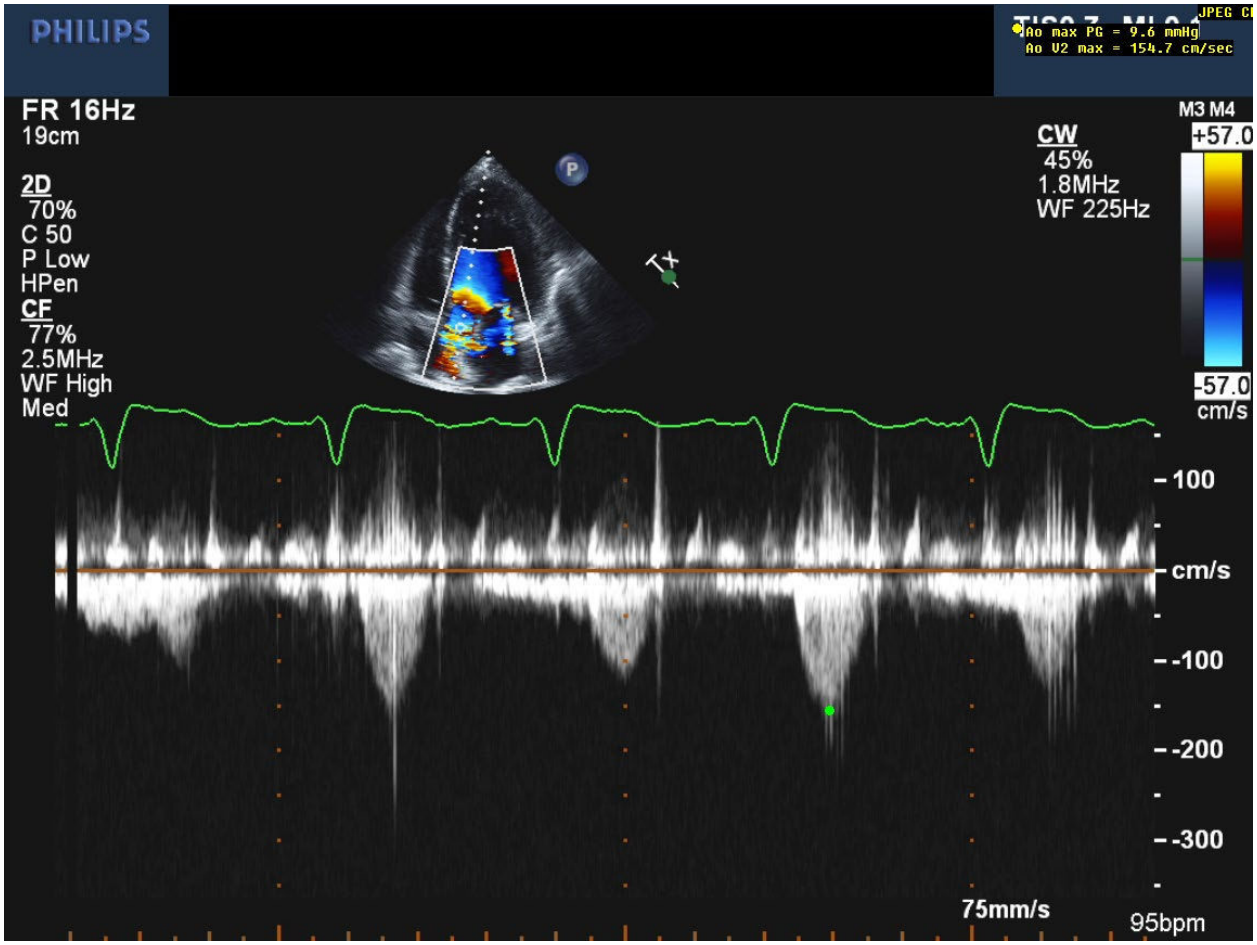
Resting images on bottom, stress images on top

16. A 23 year old woman is referred with recurrent syncope. She has had spells since she was a teenager. She describes a prodrome of sweating, pallor, and tunnel vision. If she is able to lay down she can generally avoid overt syncope. You order a holter monitor. This is recorded at 3 am (according to diary patient is sleeping).

a) What is the rhythm (1)

b) Outline your management plan for this patient (2).

17. The following finding is noted on CW of the aortic valve in a patient with severe LV dysfunction. What would be the associated physical exam finding? (1)



18. The following is a CW tracing from the suprasternal notch of a patient with hypertension. Describe four associated physical exam findings (4)