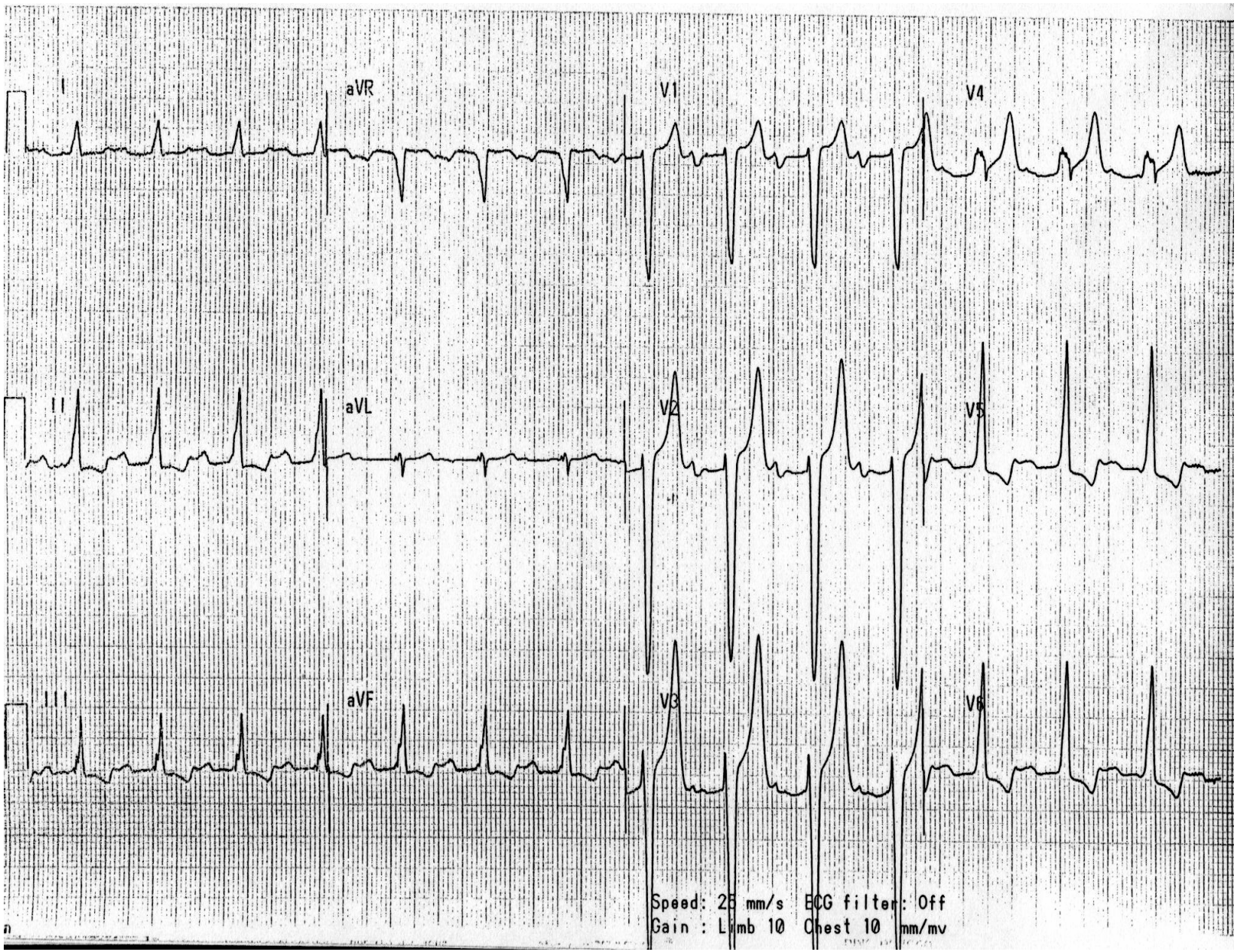
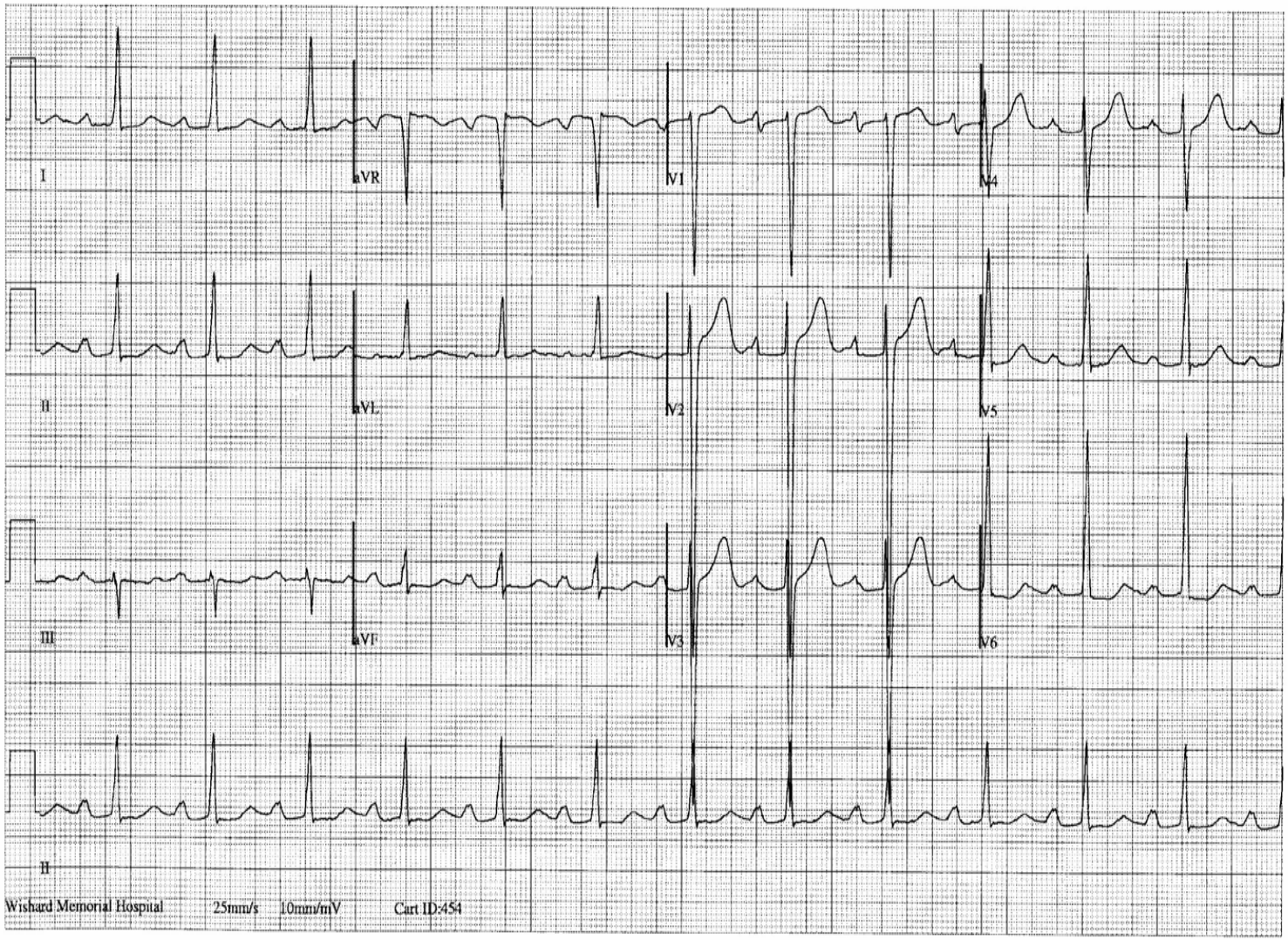
Case I

A 48 yo man presented to the ER complaining of severe 10/10 CP. He has ESRD and receives HD three days a week. He just used cocaine about 4 hours ago. His current EKG and a comparison tracing from two days prior are shown.

Case I: Admission



Case I: Baseline



Question 1

Which of the following is the most appropriate immediate treatment for him?

- IV thrombolytics
- Emergent left heart catheterization with coronary angiography
- Aspirin, IV heparin, clopidogrel, and IV eptifibatide
- Calcium gluconate, intravenously

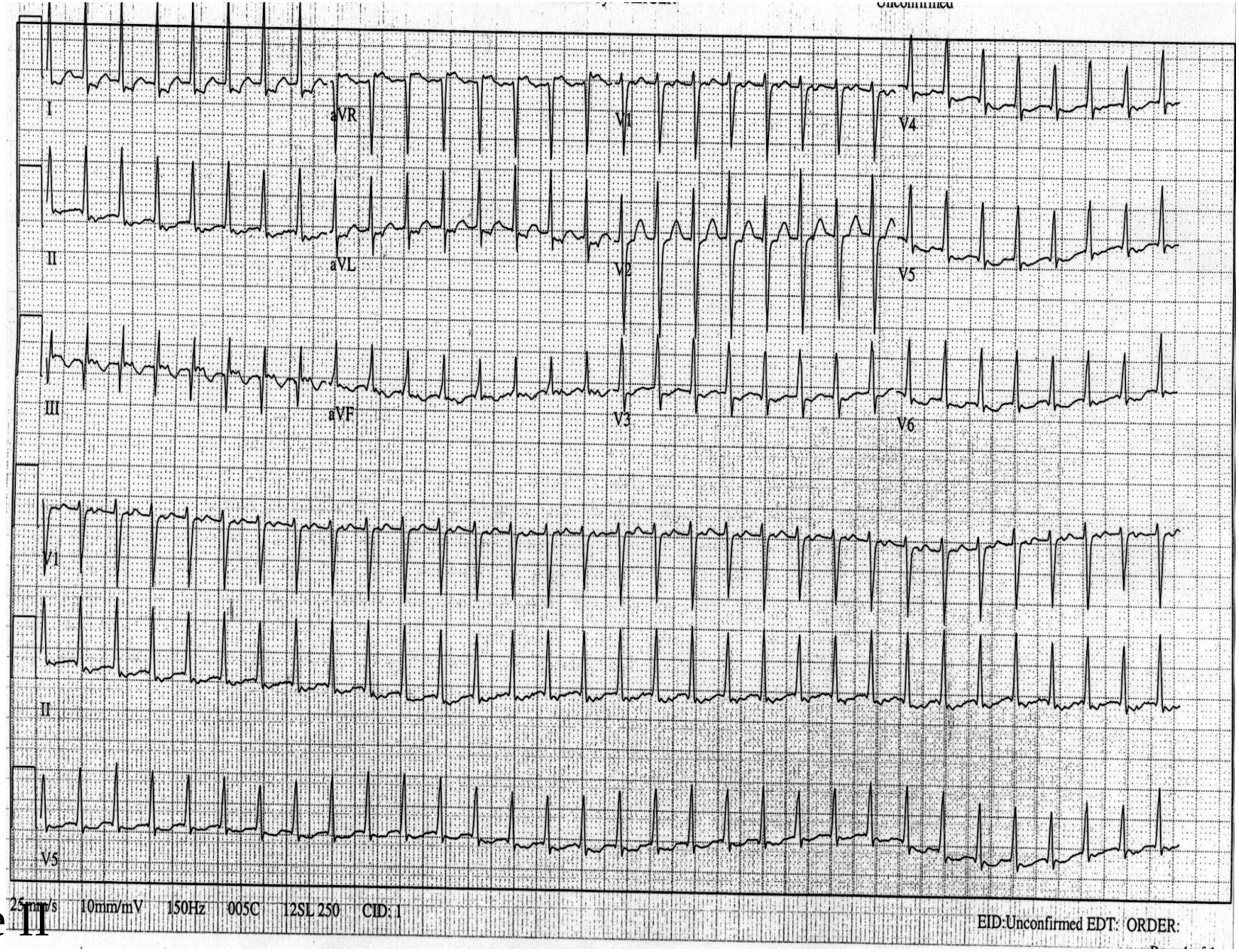
Question 2

What should be the ultimate therapeutic management plan for this patient's current problem, especially if the above measures are unsuccessful?

Case II

A 22 yo man without any known CAD presents with palpitations and anxiety. His BP is 120/72, and he appears relatively comfortable.

CASE 2



Case II

Question 3

Which of the following is the most appropriate next step in his care?

- No therapy needed other than reassurance
- Direct current (DC) cardioversion after adequate sedation is achieved
- Digoxin, intravenously
- Carotid sinus massage or Valsalva maneuvers

Question 4

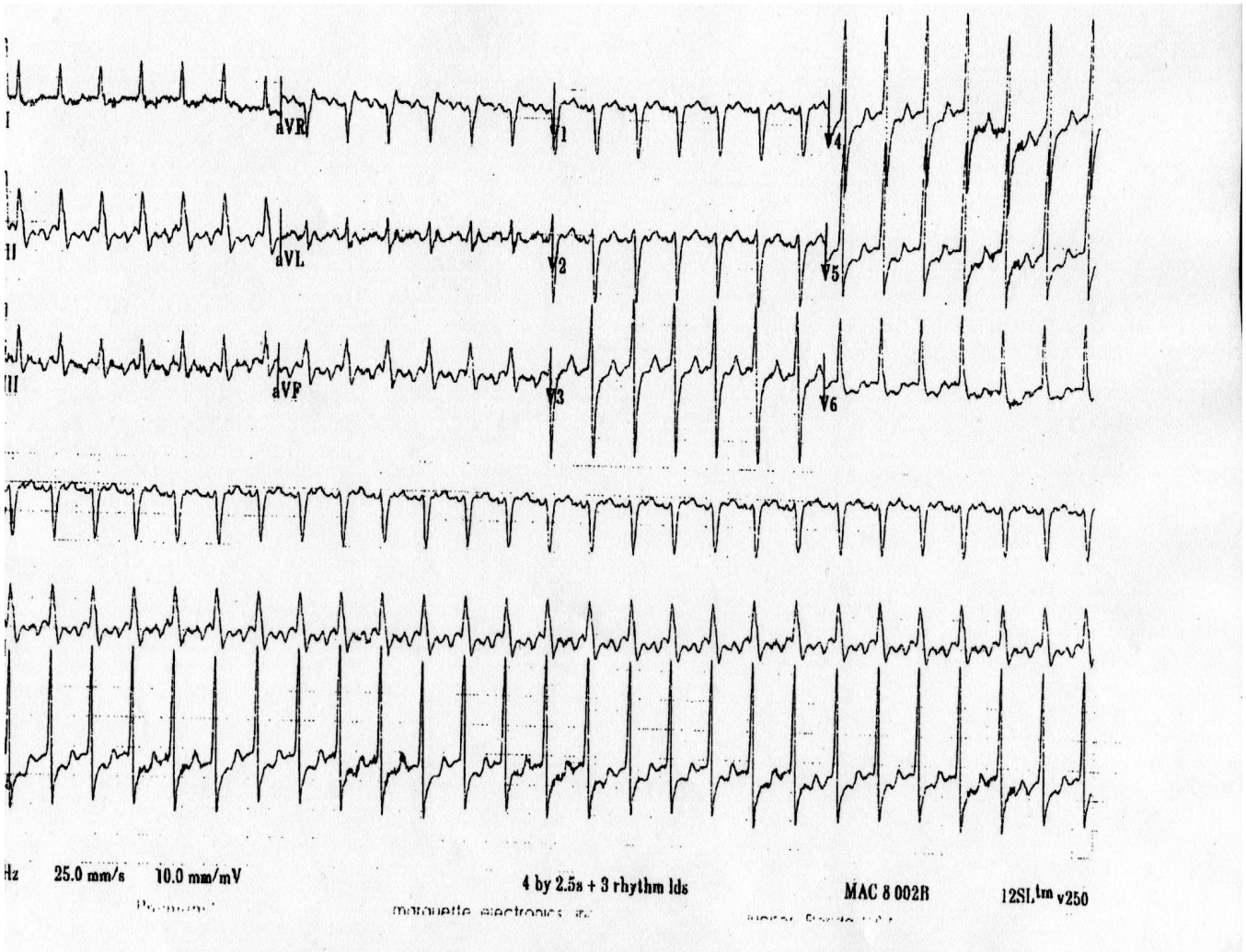
If the above therapeutic measure is unsuccessful, what is the next appropriate management step?

Case IIIA

A 70 yo man with long-standing HTN presented with symptoms of CHF including DOE, orthopnea, PND, and dependent edema. These symptoms have progressively worsened over the past 3 weeks. He has had no CP, palpitations, cough, or fever/chills. He never smoked.

A recent cholesterol level was 158, and he has no known hx of diabetes or coronary artery disease.

CASE IIIA



CASE IIIA

Question 5

What is the rhythm?

- Sinus tachycardia
- Multifocal atrial tachycardia (MAT)
- Atrial flutter with 3:1 AV conduction
- Atrial flutter with 2:1 AV conduction
- Atrial fibrillation with rapid ventricular response

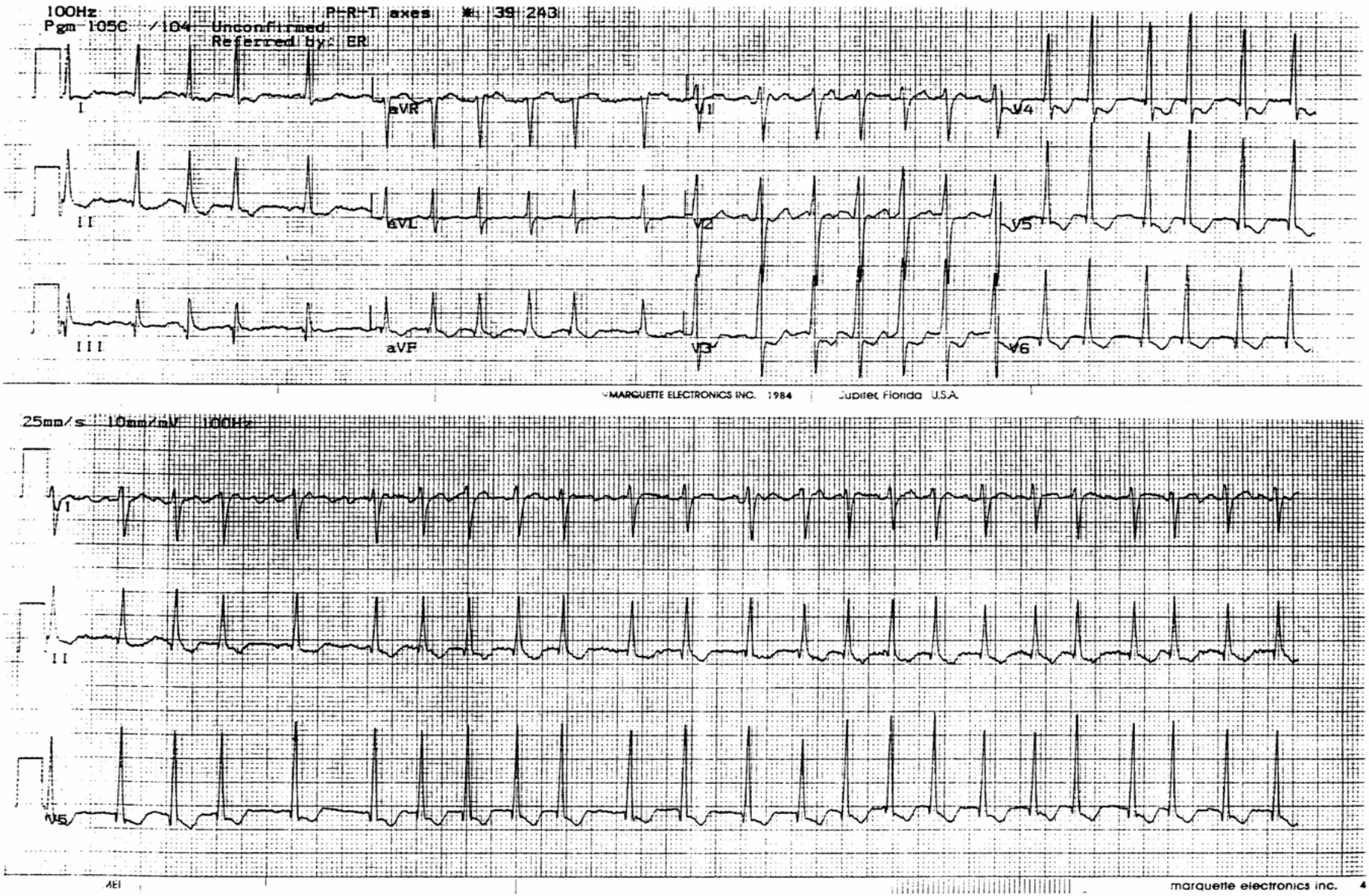
Question 6

For the patient above, which of the following is the most likely cause of his congestive heart failure?

- Viral cardiomyopathy
- Tachycardia-induced cardiomyopathy
- Toxin-mediated cardiomyopathy (e.g., alcohol/cocaine/adriamycin)
- Ischemic cardiomyopathy

Case IIIB

68 yo man who presented with dyspnea and palpitations. He has a long hx of HTN and mild CHF (LV systolic dysfunction). His current BPis 150/90. Physical examination reveals no JVD, an irregularly irregular cardiac rhythm with no audible third heart sound, and clear lungs.


100Hz
Pgm-105C
P-R-T axes
39 243
Unconfirmed
Referred by: ER
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
MARQUETTE ELECTRONICS INC. 1984
Jupiter, Florida U.S.A.
25mm/s
10mm/mV
100Hz
V1
II
V5
AEI
marquette electronics inc.

Case IIIB

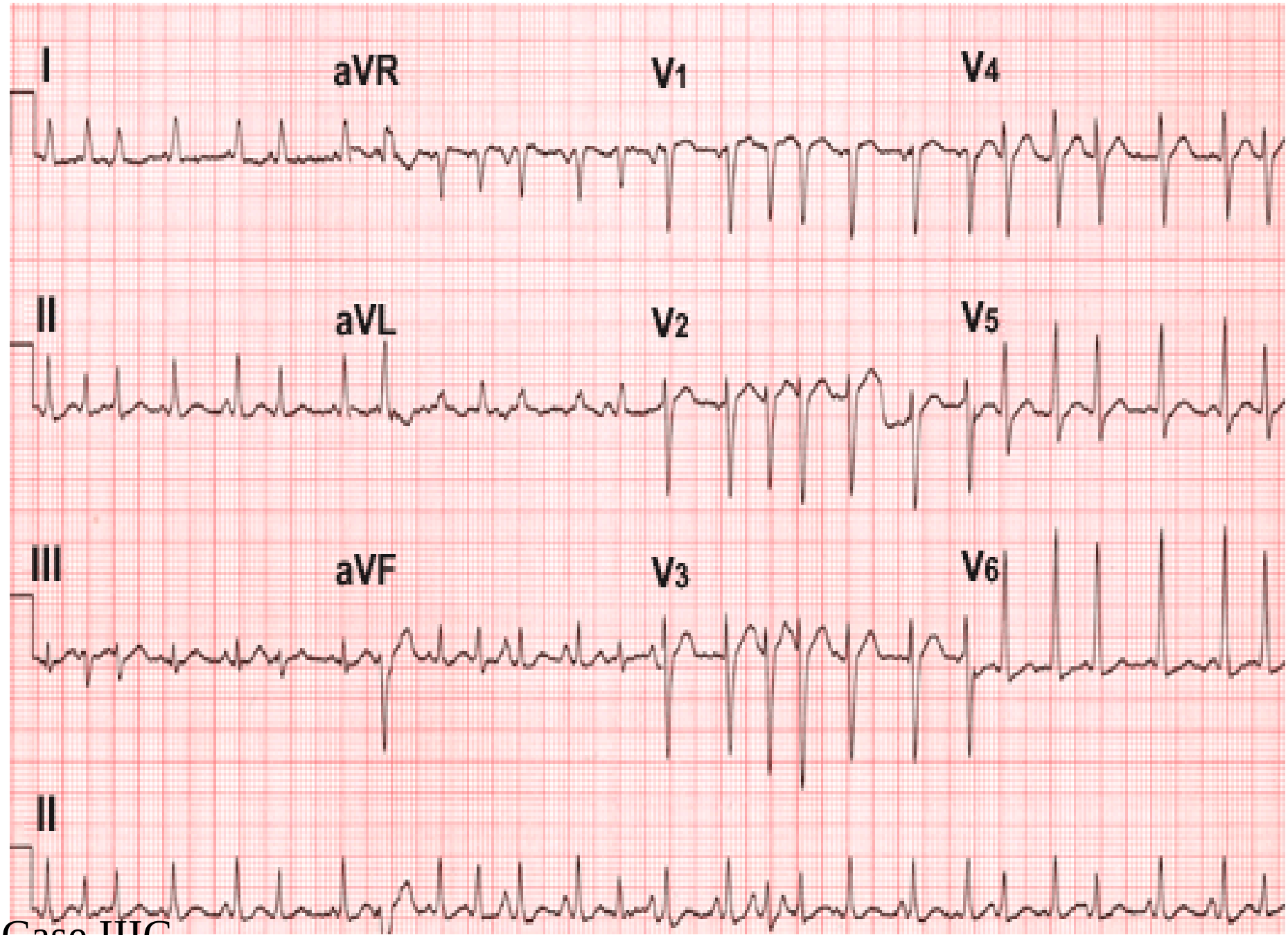
Question 7

All of the following are appropriate management options for this rhythm EXCEPT:

- Digoxin
- Diltiazem
- Verapamil
- Nifedipine
- Metoprolol

Case IIIC

This rhythm strip was obtained from a 71 yo man with COPD who presented with severe dyspnea and palpitations. Physical examination revealed labored breathing with bilateral expiratory wheezing and tachycardia.



Case IIIC

Question 8 & 9

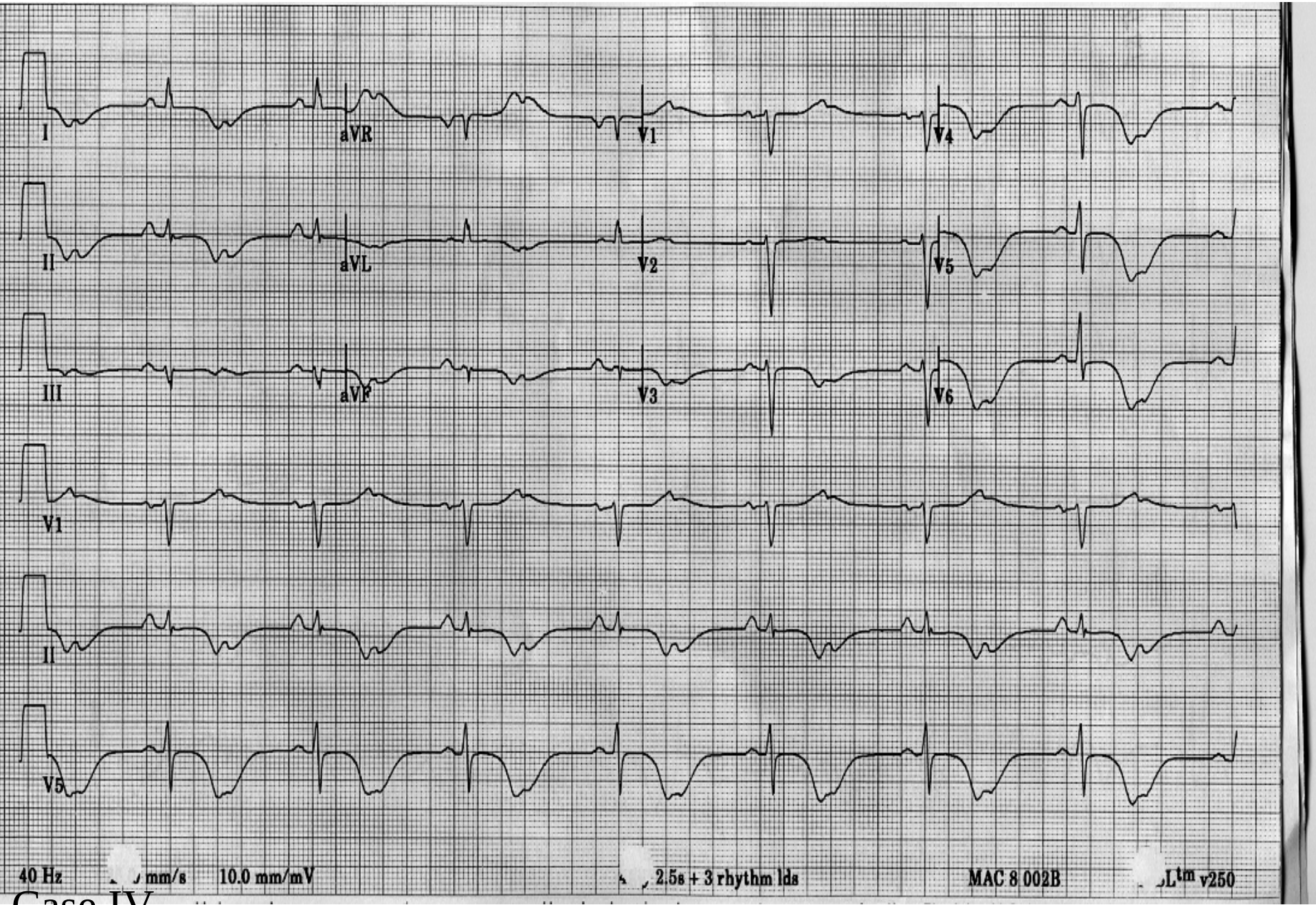
8. **Which of the following is the most appropriate therapy?**
   - Beta blockade
   - Adenosine, intravenously
   - Beta-2 adrenergic agonist, inhaled
   - Direct current (DC) cardioversion
   - Heparin, intravenously

9. If the rate was less than 100 bpm, what is the rhythm then called?

Question 10

All of the following medications could be responsible for the marked prolongation of the QT interval in this 48 year-old woman EXCEPT:

- Azithromycin
- Amiodarone
- Itraconazole
- Calcium
- Amitriptyline

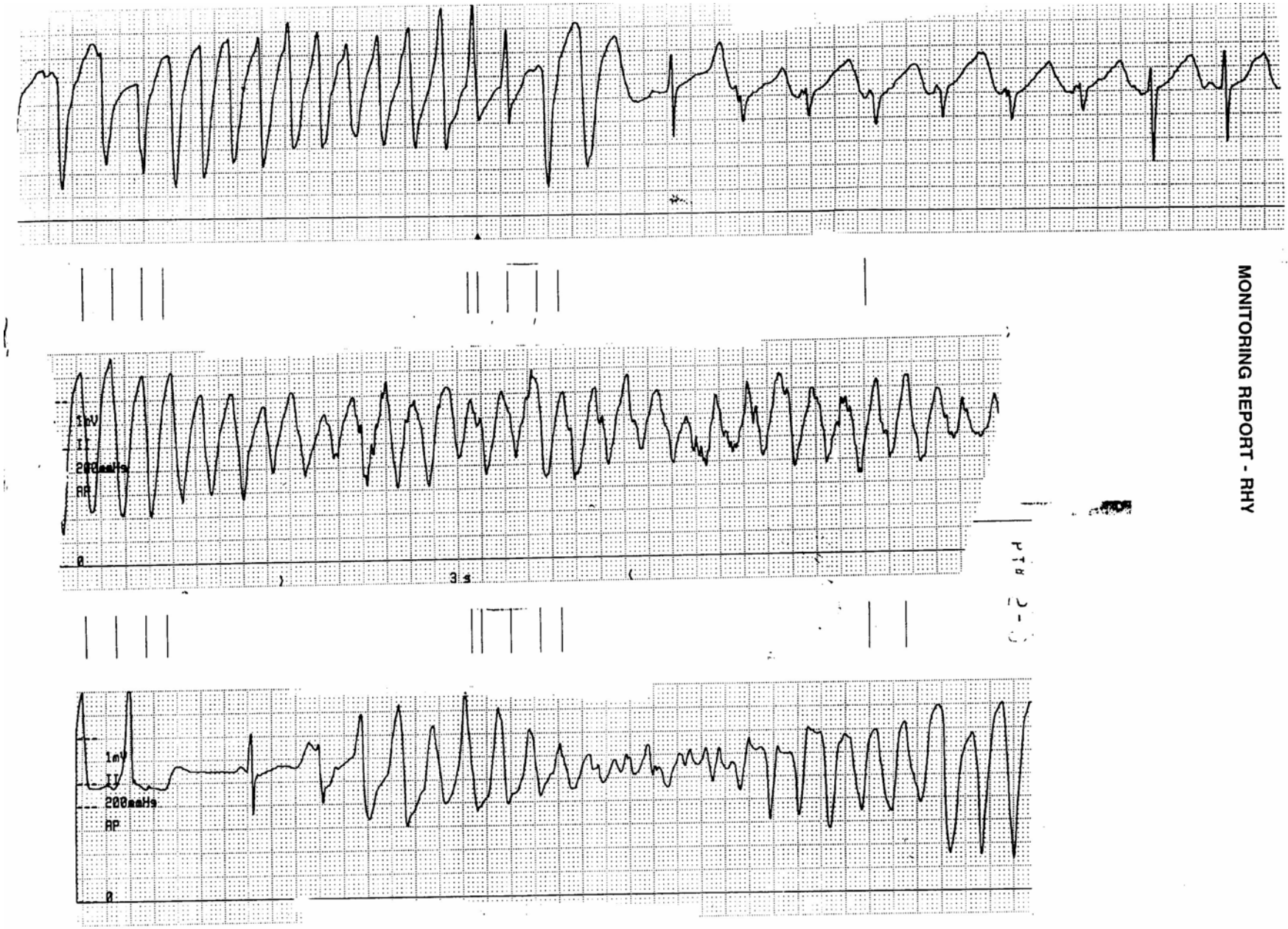

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5
40 Hz
10.0 mm/mV
2.5s + 3 rhythm lds
MAC 8 002B
v250

Case IV

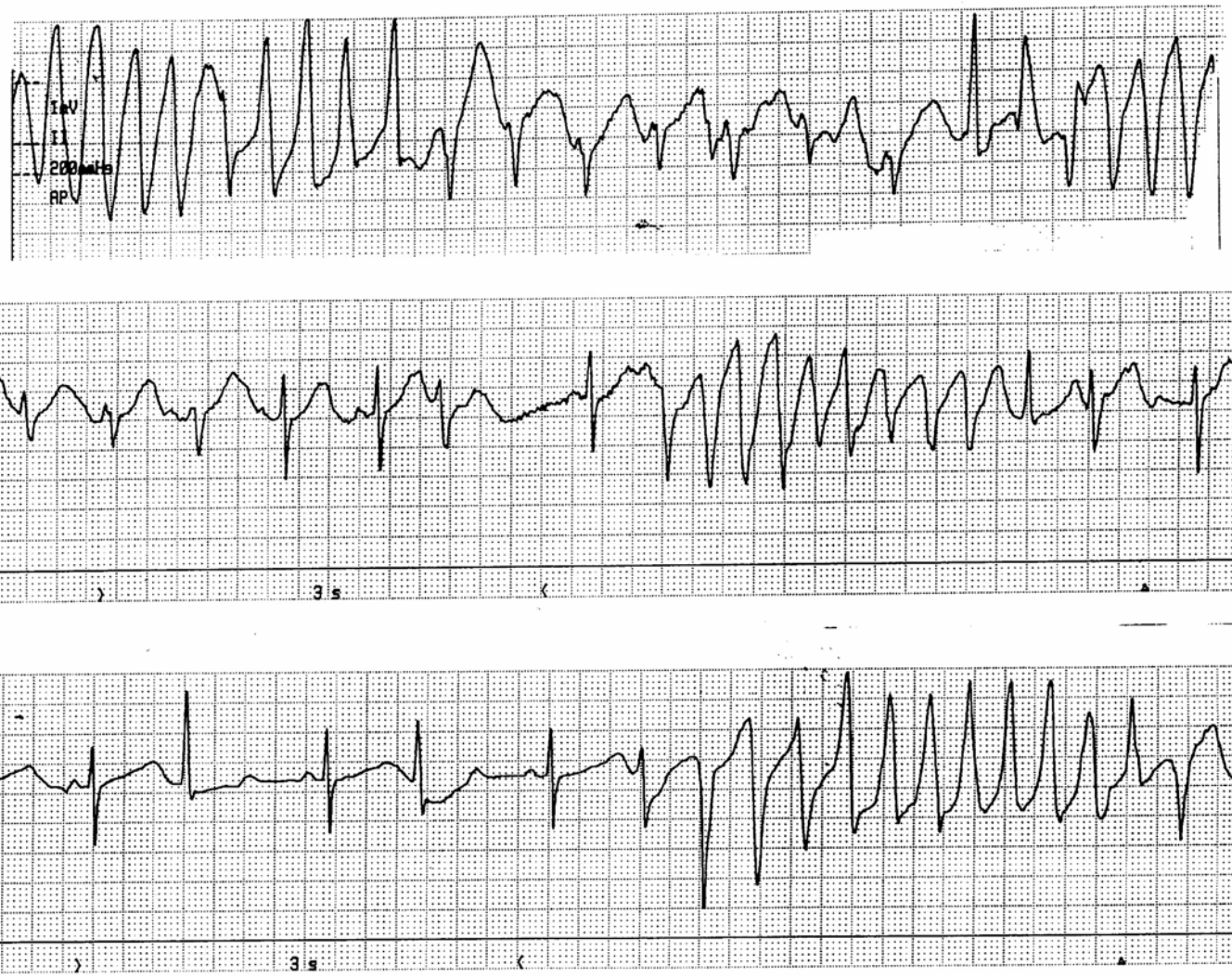
Question 11

This rhythm strip is taken from the patient in question #10 above. What is the most appropriate next management step?

- Amiodarone, intravenously
- Lidocaine, intravenously
- Precordial thump
- No therapy required. This represents artifact.
- Magnesium, intravenously


MONITORING REPORT - RHY
1mV
II
200mmHg
AP
0
3 s
1mV
II
200mmHg
AP
0

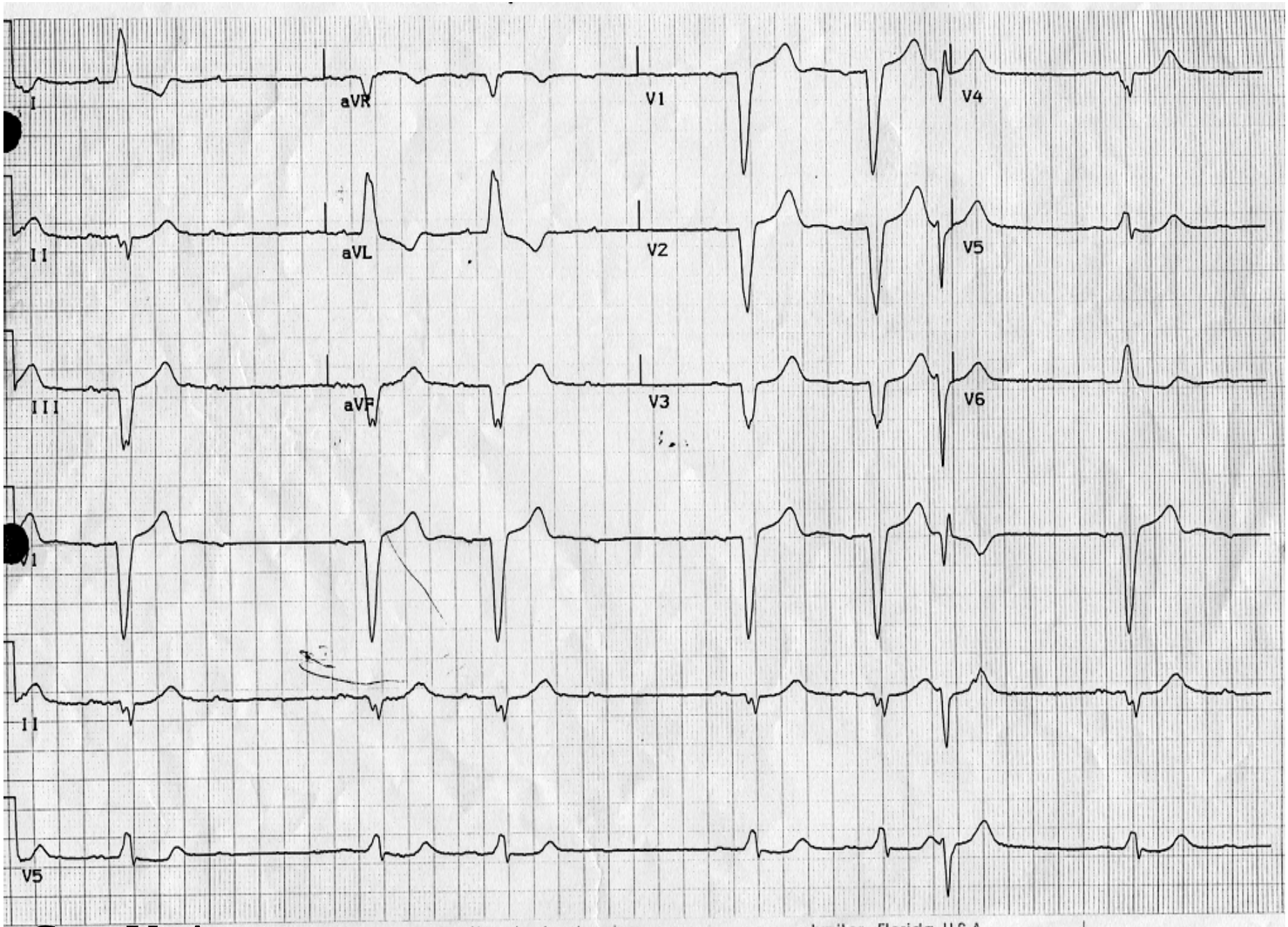
Case IV



Case IV

Case V: A

A 66 yo woman presents to the ER with an orbital blow out fracture following a syncopal episode on her stairs at home. This is her 3rd syncopal episode in the last two weeks. This ECG was obtained.



Case V: A

Questions 12 & 13

12) What is the underlying rhythm?

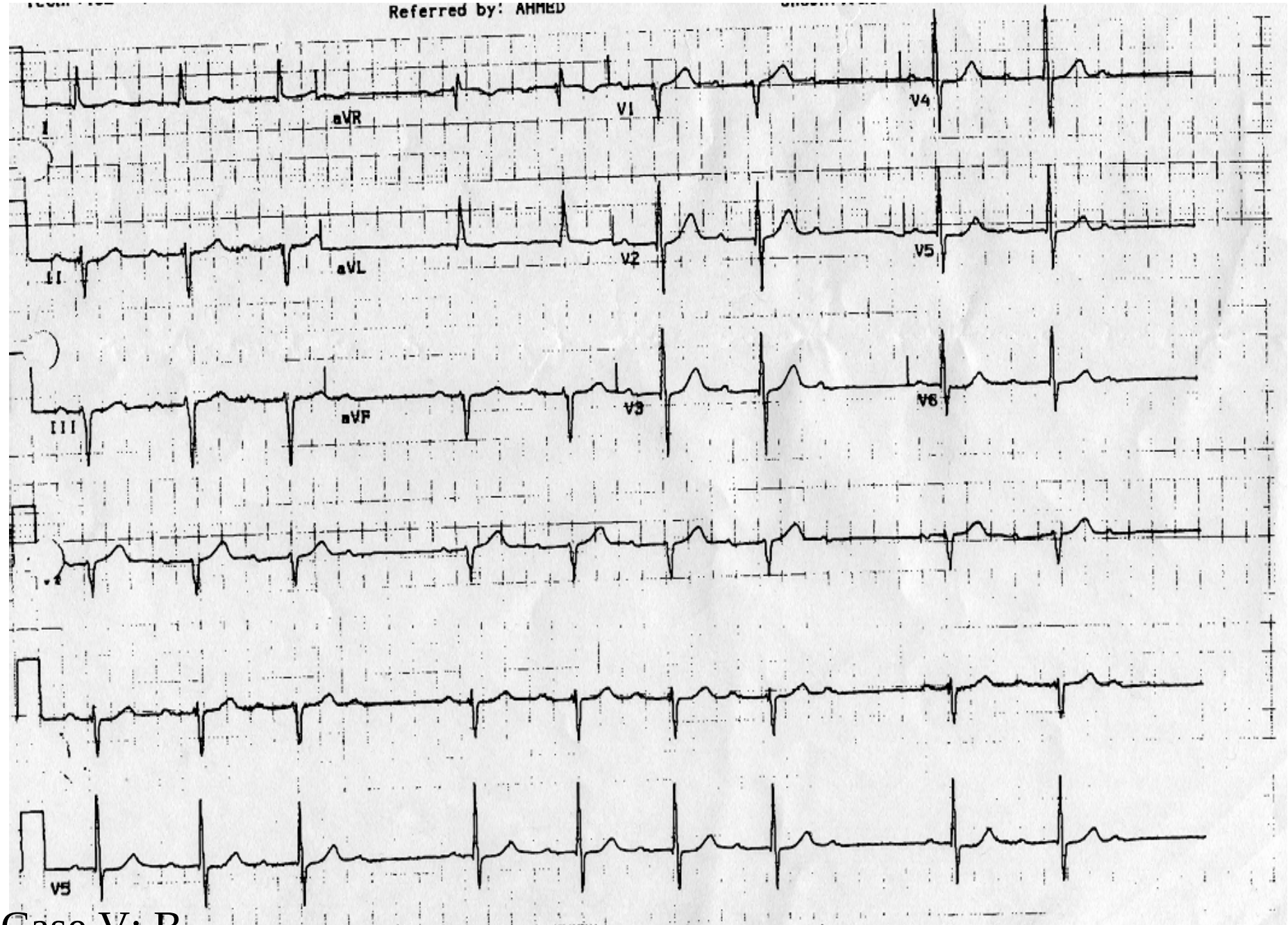
- Sinus bradycardia with 1st degree AV block and occasional PAC's
- Sinus bradycardia with 2nd degree AV block, Mobitz type I (Wenckebach)
- Sinus bradycardia with 2nd degree AV block, Mobitz type II
- Third-degree AV block (complete heart block with AV dissociation)
- Junctional rhythm

13). What is the most appropriate next management step?

Case V: A

Case V: B

A 58 yo male veteran with a long hx of tobacco use as well as HTN that has been difficult to control. He is now on diltiazem, metoprolol, and HCTZ with improvement in his BP which was measured as 144/78 today in your clinic. On cardiac auscultation, you hear dropped beats periodically and so you obtain this ECG.



Case V: B

Question 14

What is the rhythm?

- Sinus bradycardia with non-conducted PAC's
- Sinus bradycardia with 2nd degree AV block, Mobitz type I (Wenckebach)
- Sinus bradycardia with 2nd degree AV block, Mobitz type II
- Third-degree AV block (complete heart block with AV dissociation)
- Sinus bradycardia with sinus arrhythmia

Case V: B

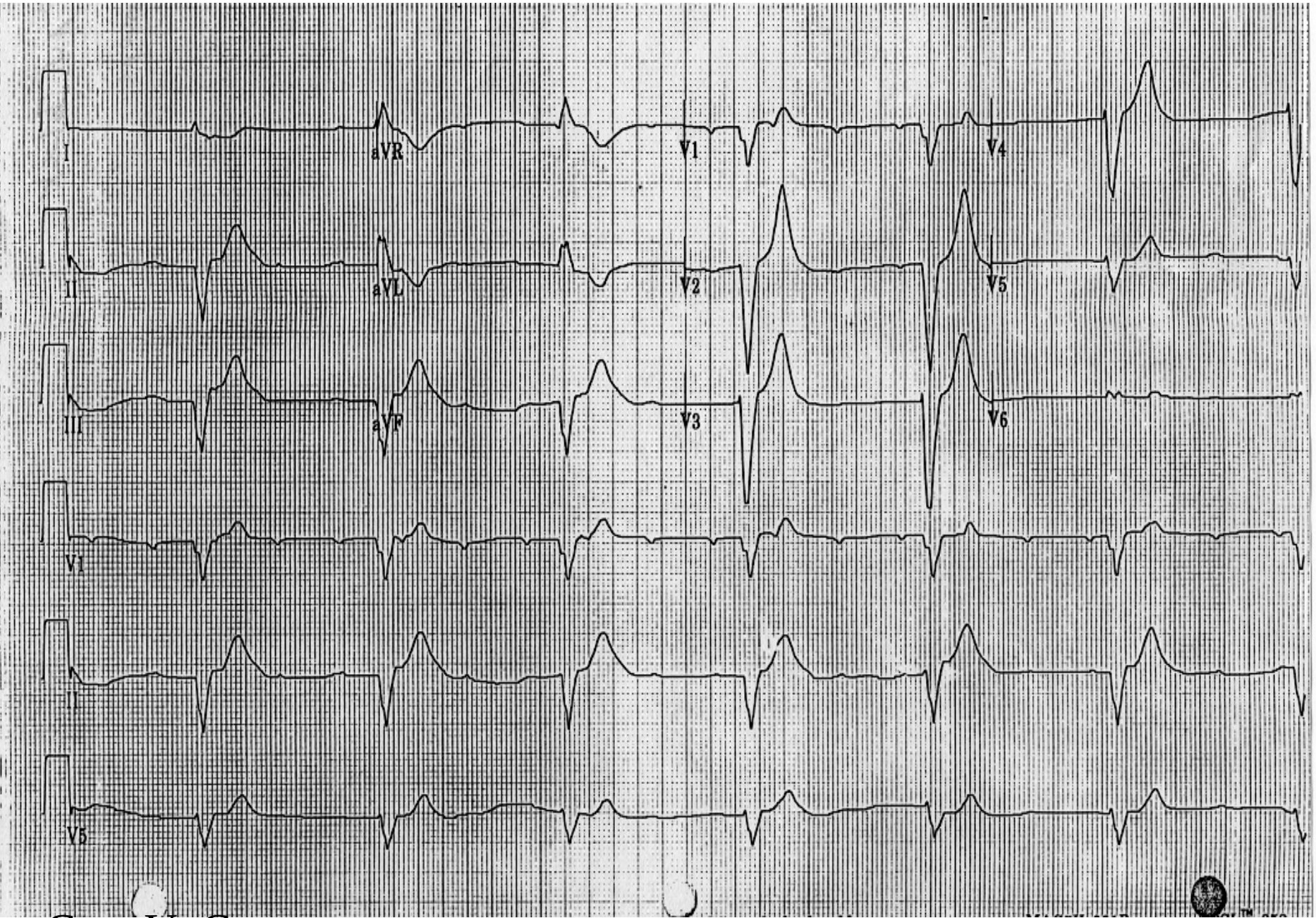
Question 15

What's the most appropriate next step in the treatment of this patient?

- Avoid caffeine and other stimulants
- Refer to electrophysiologist to urgently place a pacemaker
- Reduce the dose of his diltiazem and/or metoprolol
- No treatment necessary; this is sinus arrhythmia which is a normal variant

Case V: C

A 60 yo man presents to your office complaining of feeling excessively fatigued, worsening DOE, and lightheadedness over the past several days. He has a long-standing hx of severe ischemic cardiomyopathy. His BP today is 100/60 and has bibasilar crackles on lung auscultation. You obtained this EKG.



Case V: C

Question 16

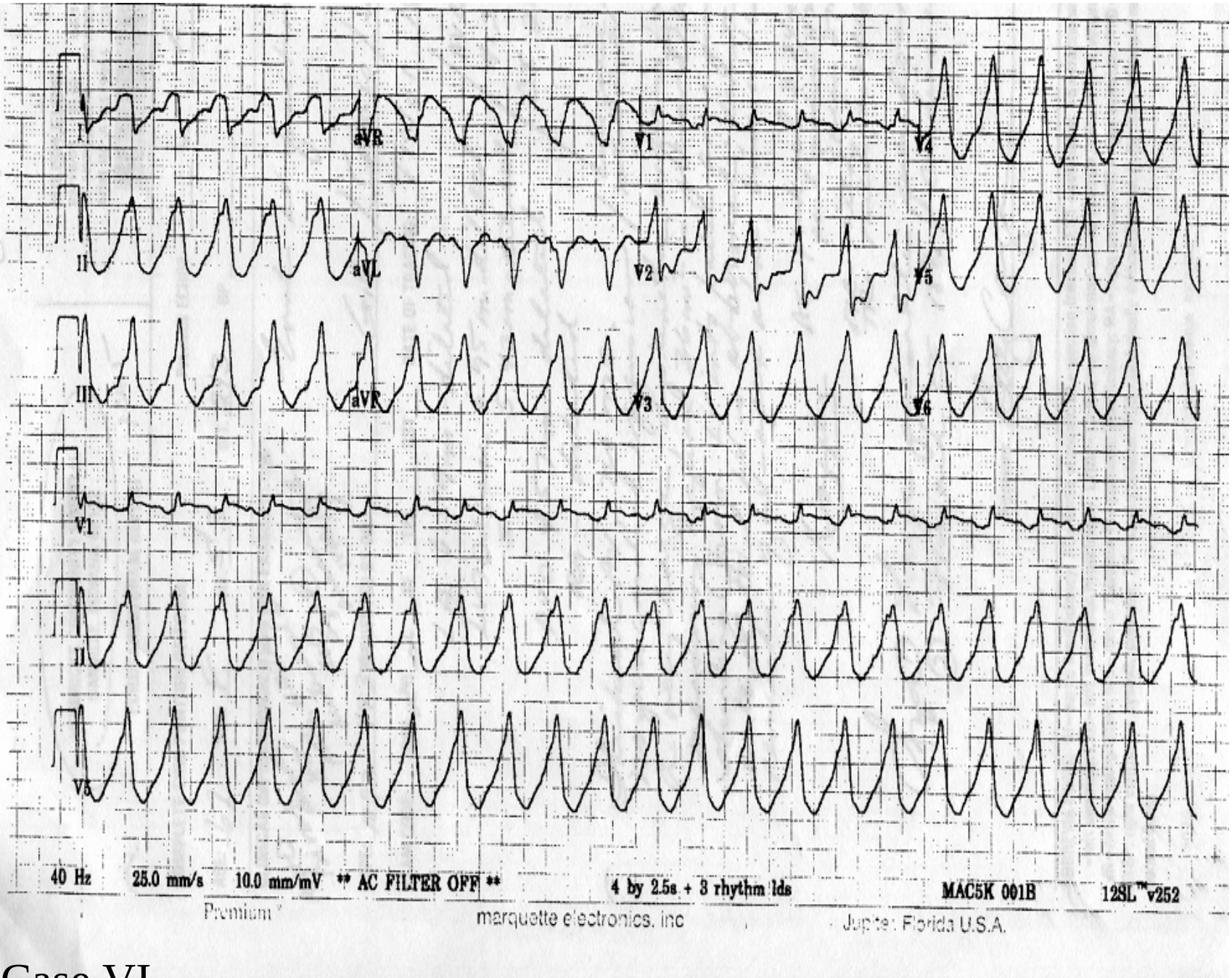
Which of the following is the best treatment for his symptoms?

- Dual chamber permanent pacemaker
- Carvedilol 3.125mg po bid after euvolemic state has been achieved
- Increase in furosemide dose to achieve euvolemia
- Increase ACE inhibitor dose
- Decrease ACE inhibitor dose

Case V: C

Case VI

A 67 yo woman has known CAD with a prior MI. She presented with CP, dyspnea, and palpitations. She is in mild discomfort. Her BP is 115/60.


I
aVR
V1
V4
II
aVL
V2
V5
III
aVR
V3
V6
V1
II
V5
40 Hz
25.0 mm/s
10.0 mm/mV
** AC FILTER OFF **
4 by 2.5s + 3 rhythm lds
MAC5K 001B
12SL™v252
Premium
marquette electronics, inc
Jupiter, Florida U.S.A.

Case VI

Question 17

What is this rhythm?

- Ventricular tachycardia
- Pre-excited supraventricular tachycardia (such as one with WPW may have)
- Supraventricular tachycardia with aberrancy
- None of the above

Questions 18 & 19

What is the most appropriate next step in management?

Amiodarone, intravenously

Lidocaine, intravenously

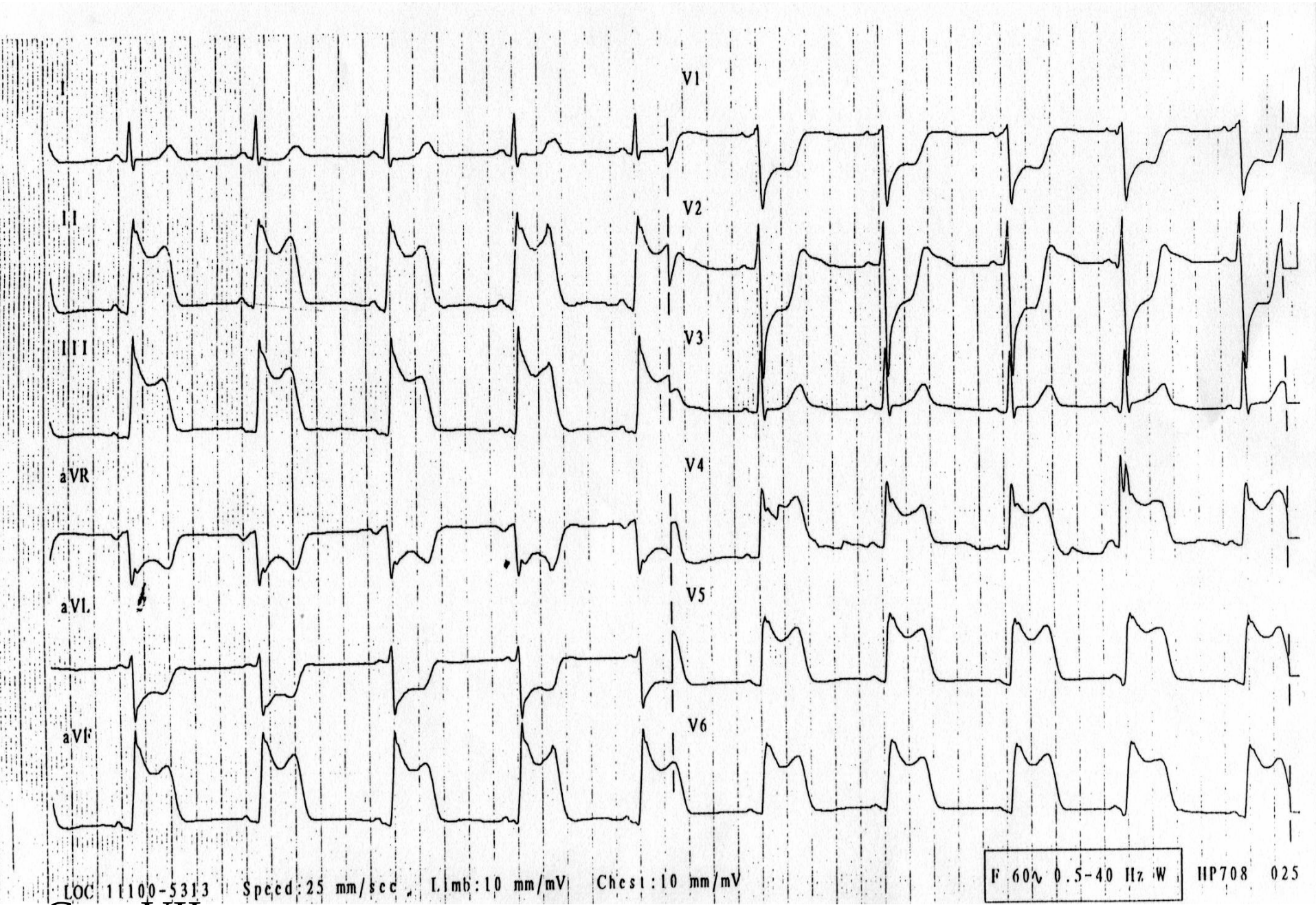
Adenosine, intravenously

Direct current (DC) cardioversion

What would be the most appropriate management step if this patient's BP was 80/40?

Case VII

A 41 yo man presented to the ER with severe CP, dyspnea, nausea, and diaphoresis—these symptoms began 2 hours ago while he was eating dinner. His past medical hx is unremarkable. You obtain the following ECG.


I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
LOC 11100-5313 Speed:25 mm/sec Limb:10 mm/mV Chest:10 mm/mV
F 60∿ 0.5-40 Hz W HP708 025

Case VII

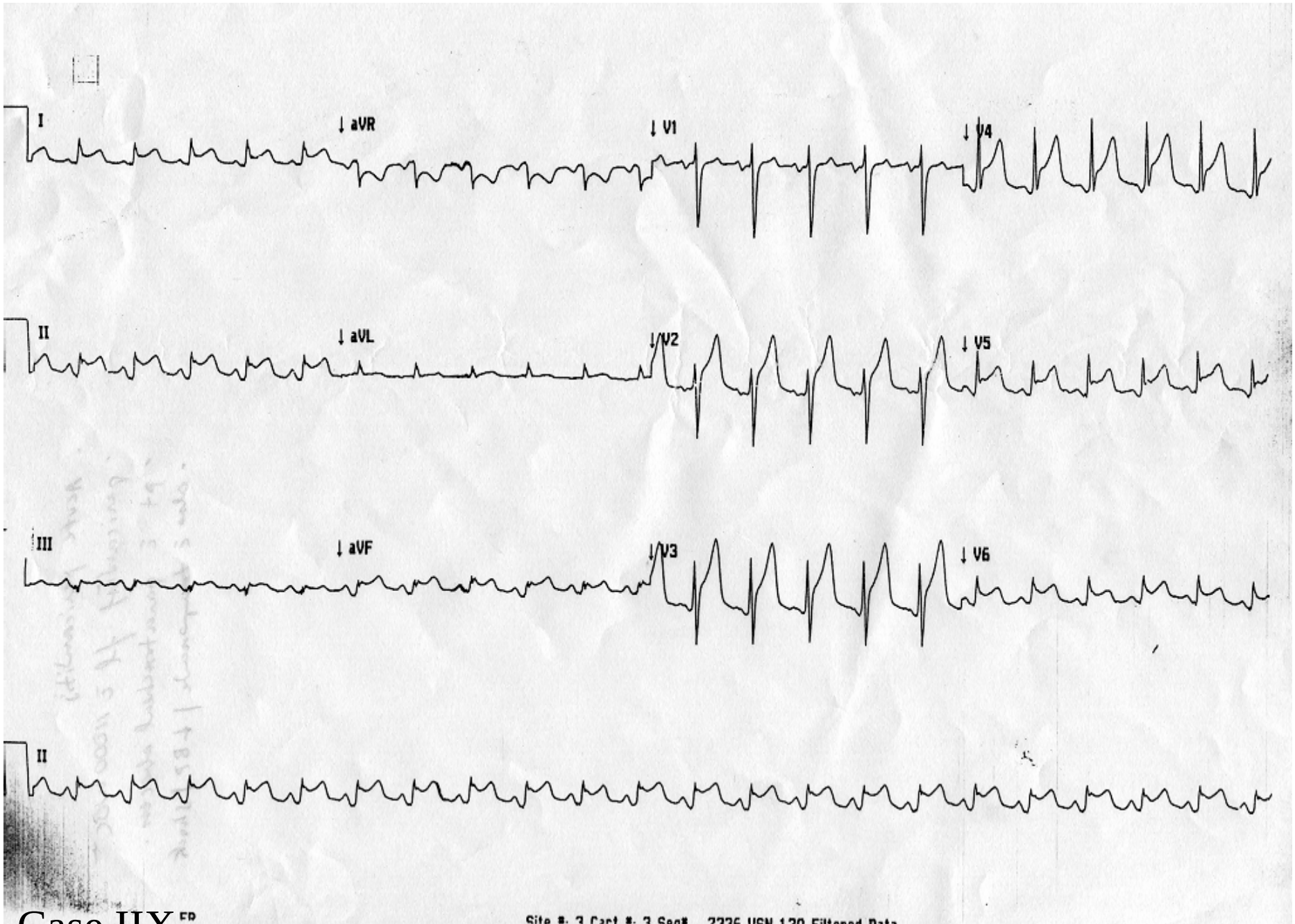
Question 20

In addition to aspirin and IV heparin, what is the most appropriate next step in management?

- Administer IV glycoprotein IIb/IIIa inhibitor with cath planned for the AM or sooner if you cannot get him pain-free in 60-90 minutes
- Administer IV thrombolytic therapy such as with tenectaplase
- Administer clopidogrel (Plavix) and IV NTG, followed by admission to the CCU.
- Insert a transvenous pacemaker immediately for 3rd degree AV block

Case IIX

A 68 yo man who underwent surgical resection for esophageal CA and now presents with severe CP. He appears acutely ill. His heart rate is 132/minute and BP is 90/70. He has prominent elevation of his JVP and is severely dyspneic and orthopneic.



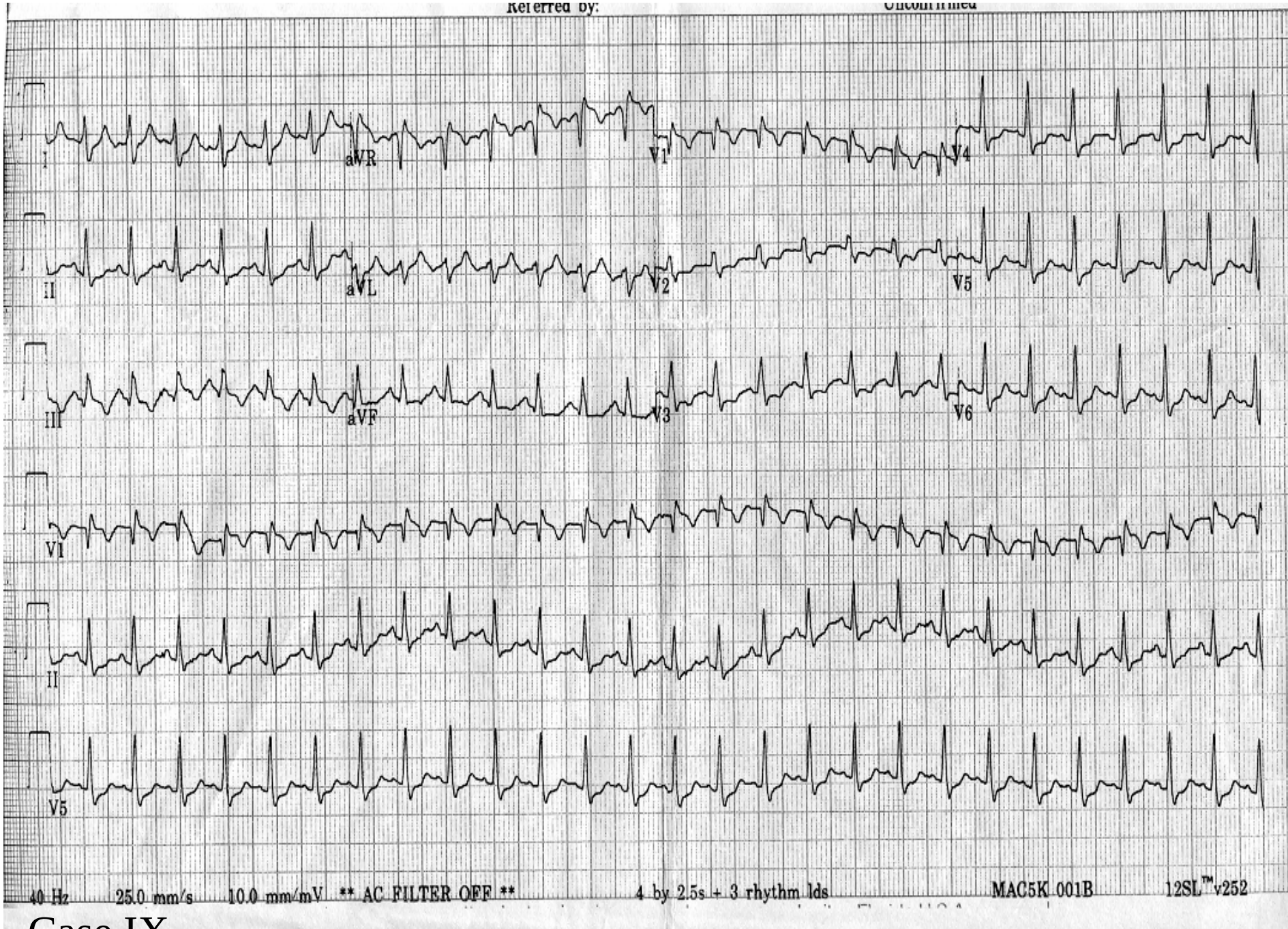
Case IIX

Question 21

- **Which of the following is indicated next?**
  - Tenectaplase (IV thrombolytic therapy), aspirin, and IVheparin
  - Enoxaparin & eptifibatide prior to going emergently to the heart catheterization lab
  - Aspirin, clopidogrel (Plavix), IV heparin, and eptifibatide prior to going emergently to the heart catheterization lab
  - Aspirin, IV heparin, abciximab (Reopro) prior to going emergently to the cardiac catheterization lab
  - None of the above

Case IX

A 31 yo woman with fibromyalgia developed sudden onset of CP which awakened her from sleep. She also developed concomitant dyspnea and appears very anxious when you meet her 45 minutes later in the emergency department. She is a non-smoker and does not take birth control pills. Of note, she severely sprained her ankle about 2 weeks ago and has been using crutches. Her heart rate is as shown, and her BP is 80/60.


Referred By:
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
VI
II
V5
40 Hz
25.0 mm/s
10.0 mm/mV
** AC FILTER OFF **
4 by 2.5s + 3 rhythm lds
MAC5K 001B
12SL™v252

Case IX

Question 22

- **What is the most likely diagnosis?**
  - Acute ST-elevation MI
  - Acute pulmonary thromboembolism
  - Acute non-ST-elevation MI
  - Cardiac tamponade from pericarditis
  - Anxiety/panic attack

Questions 23 & 24

- **23) What causes the classic S1, Q3, T3 pattern seen on EKG of a patient who presents with an acute pulmonary thromboembolus?**

- **24). If the thromboembolus is only a small one that occludes more distally in the pulmonary arterial tree (i.e., segmental or even subsegmental branch), what is a more common EKG finding in these cases?**