SHOW & TELL

Nouf alanazi

Case 1

- 35 y/o male not known to have any medical illness presented with hx of ***recurrent syncopal attacks.***
- Systemic review unremarkable apart from palpitations .
- (+) FHx of ***sudden death*** of his father while he was sleep at age of 40.

ECG

- ST segment elevation and TW inversion in V1 & V2 .
- The QRS is normal.
- The widened S wave in left lateral leads that is characteristic of RBBB is absent.

What is your DDX ???

DDX of ST elevation

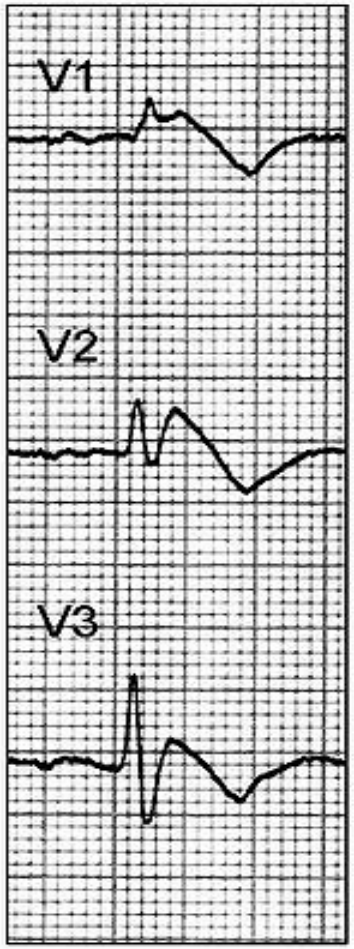
- Left Bundle-Branch Block
- LVH
- Early repolarization
- Acute Pericarditis and Myocarditis
- Hyperkalemia
- The Brugada Syndrome and Arrhythmogenic Right Ventricular Cardiomyopathy
- Pulmonary Embolism
- Transthoracic Cardioversion
- Prinzmetal's Angina

Brugada syndrome

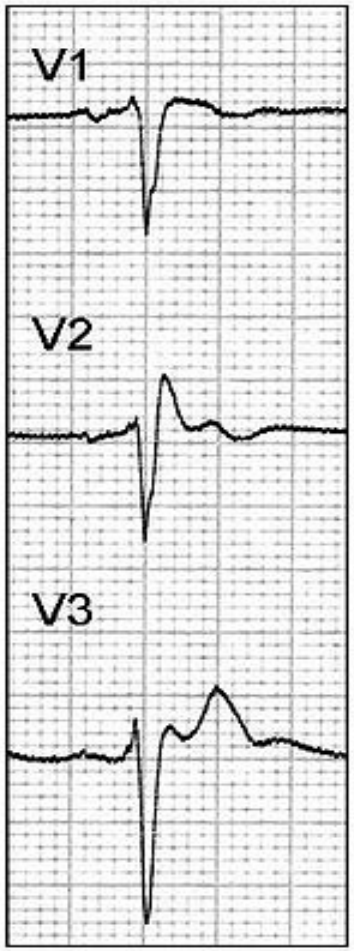
- Mutations in the cardiac ***Na channel*** gene
- The **most significant** clinical manifestations of BS are ***ventricular arrhythmias***.
- It is one of the most common causes of ***sudden death*** in young men w/o known underlying cardiac disease

Types

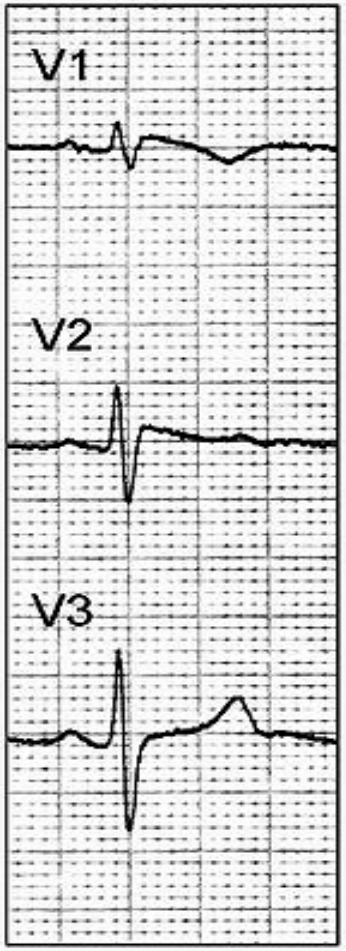
Type 1



Type 2



Type 3



- **Type 1:**

✓ Coved type ST elevation with at least 2 mm J-point elevation a gradually descending ST segment & (-) TW

- **Type 2:**

✓ a saddle back pattern with a least 2 mm J-point elevation & at least 1 mm ST elevation with (+) or biphasic TW.

- **Type 3 :**

✓ a saddle back pattern with < 2 mm J-point elevation & < 1 mm ST elevation with (+) TW.

NB: (J point is the junction b/w the end of the QRS & beginning of the ST segment)

Treatment

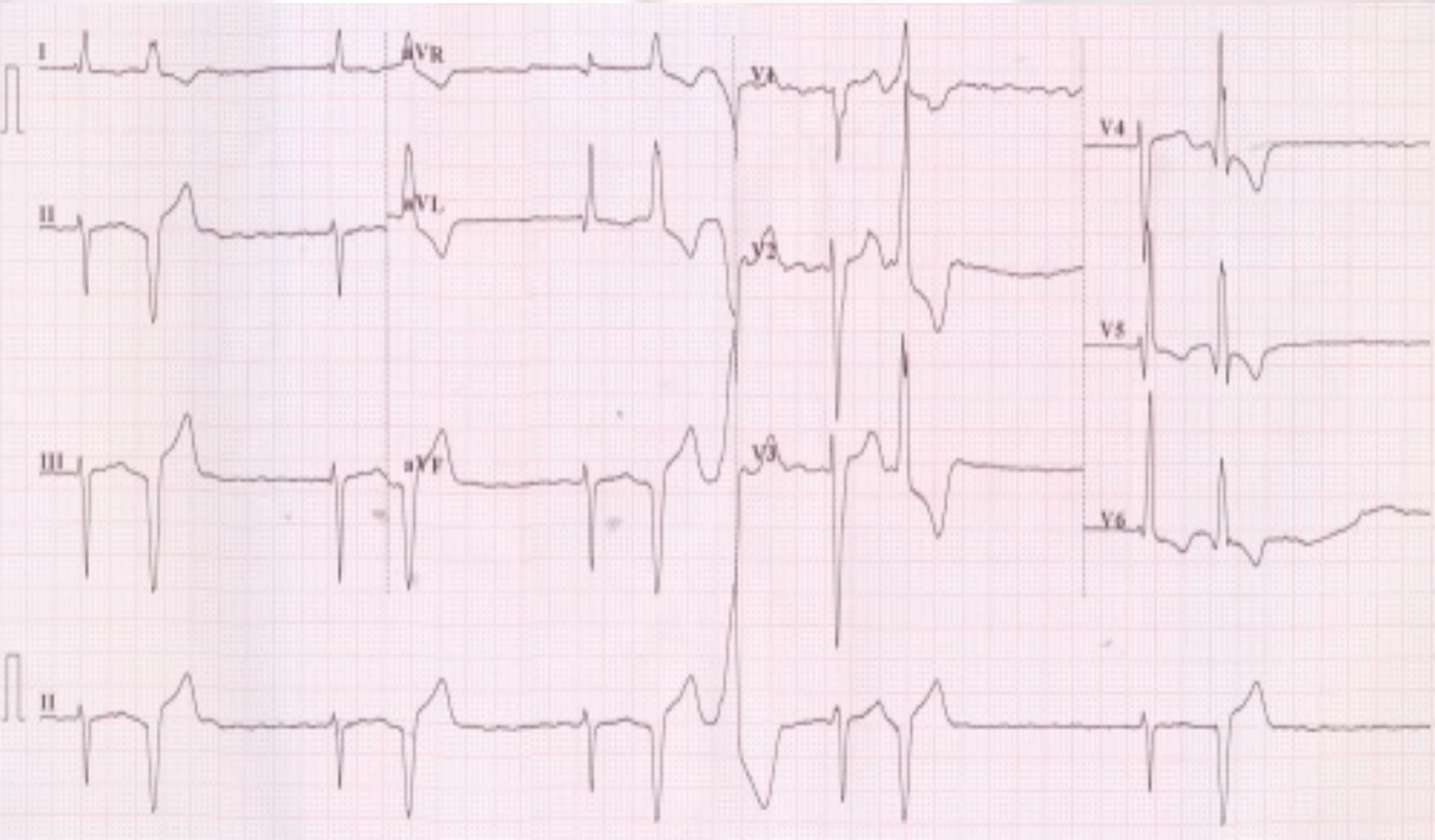
- ***Implantable cardioverter-defibrillator (ICD)***

Case 2

- 70 y/o lady k/c **of DM, HTN, AF &CHF** presented c/o nausea & vomiting associated with anorexia , fatigue dizziness & blurring of vision
- This was preceded by compylobacter gastroenteritis for which she received erythromycine.
- Systemic review unremarkable
- Medications : ASA, lisinopril, concor, digoxin & lipitor.

- **O/E:**
  - ✓confused
  - ✓**V/S:** BP 100/60 , HR: 58, RR 22, SPO2:95 % on RA.
  - ✓CVS : JVP not raised , S1+S2, mild pitting LL edema.
  - ✓Otherwise normal

ECG



ECG findings

AF with slow ventricular rate.

ventricular bigeminy.

bidirectional ventricular ectopy.

What is the most likely cause of her presentation??

Digoxin Toxicity

Next step ???

Digoxin Toxicity

- Almost any rhythm may be associated with digoxin toxicity **except** of *SVT with 1:1 conduction* through the AVN .
- The **earliest sign PVCS** .
- 2 rhythms are **pathognomonic**

  accelerated junctional rhythm
  bidirectional ventricular tachycardia
- relatively **specific** for digoxin toxicity, their presence should suggest this condition until proven otherwise.

Digoxin Toxicity

- **<u>Digoxin-specific Fab fragments are indicated in the following settings:</u>**

  - ✓HD instability .
  - ✓Life-threatening arrhythmias .
  - ✓Severe bradycardia. Even when bradycardia is responsive to atropine (to prevent recurrance).
  - ✓A K level > 5 meq/L in the setting of acute overdose.
  - ✓Digoxin level > 10 ng/mL (13 nmol/L).
  - ✓Ingestion of >10 mg of digoxin in adults or >4 mg in children.
  - ✓Presence of a digoxin-toxic rhythm in the setting of an elevated digoxin level.

Case 3

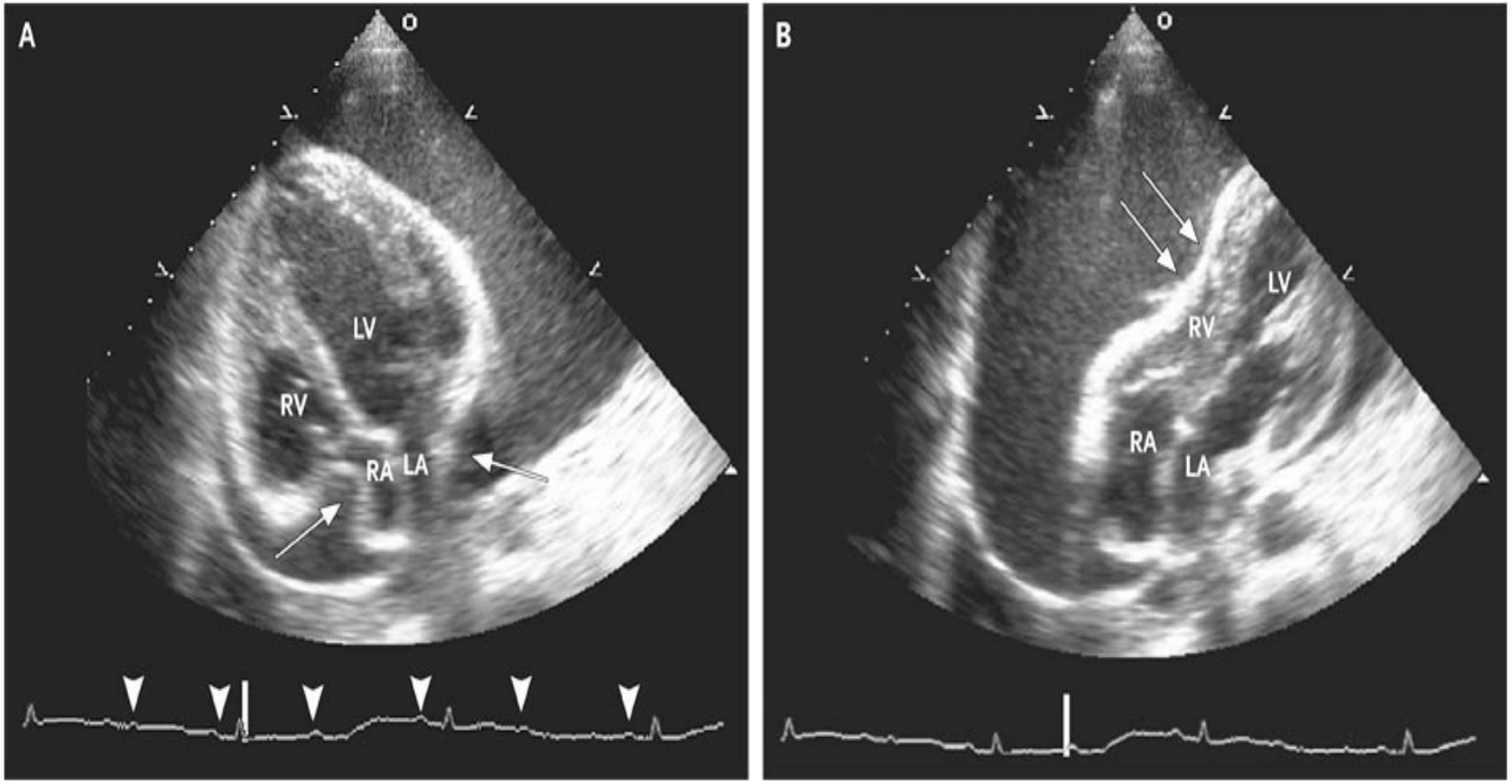
- A 39 y/o woman with a 1y hx of Stage IV melanoma s/p radiotherapy presented with progressive SOB, fatigue & edema in the legs.
- **O/E:**
  - ✓BP: 82/64 mm Hg, HR: 110 bpm, raised JVP, distant heart sounds & LL edema.

What is the next step ???

Call Cardiologist on call !!!!!

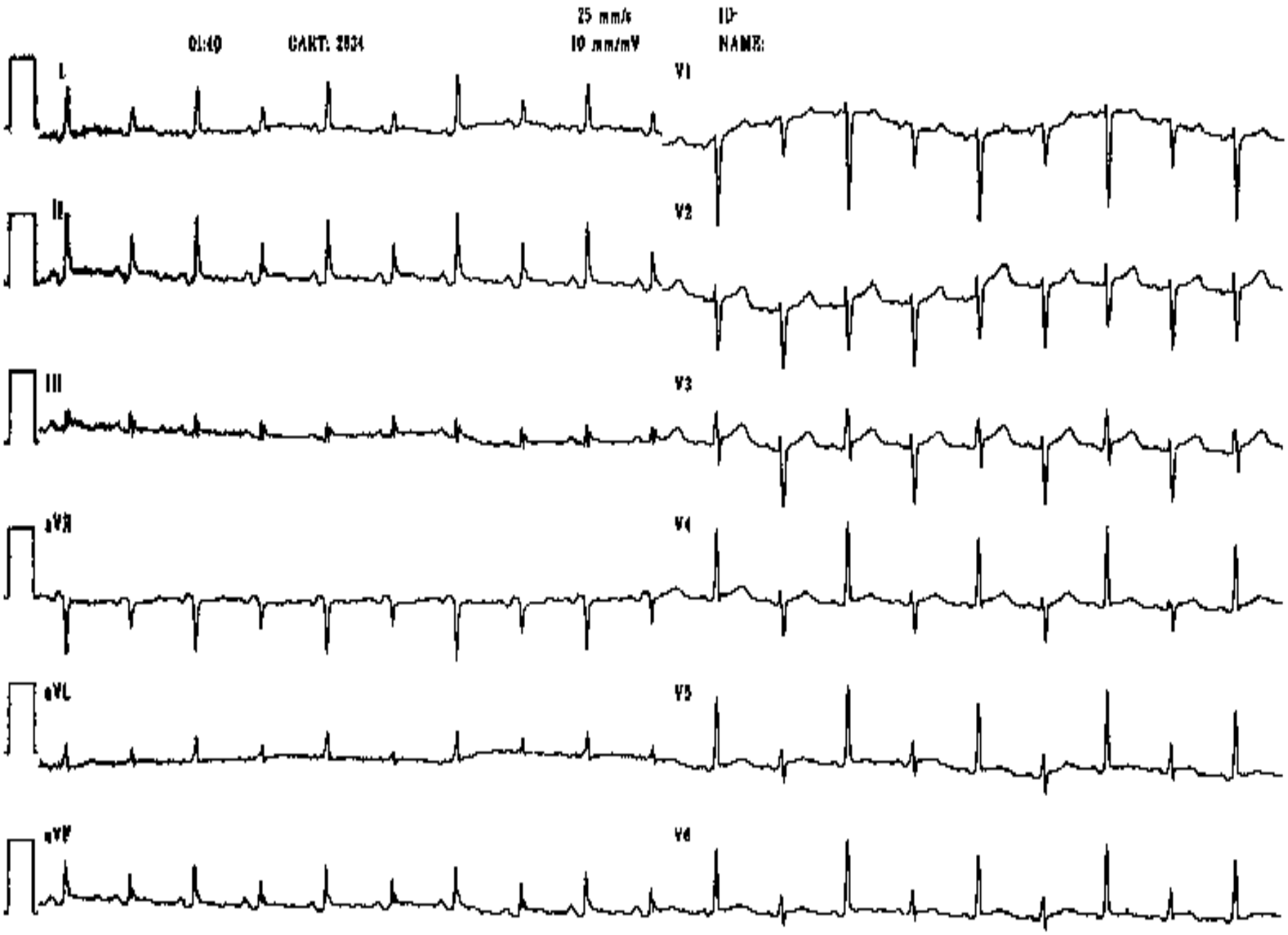
Da MEDICAL Ya doctoooorah !!!!!!!!!!!!!!!!!!!!!!!!!

Echocardiography



A large pericardial effusion with swinging of the heart & collapse of the (RA) & (LA) in end diastole (Panel A, arrows) , diastolic collapse of the (RV)

What is the expected finding in ECG ???

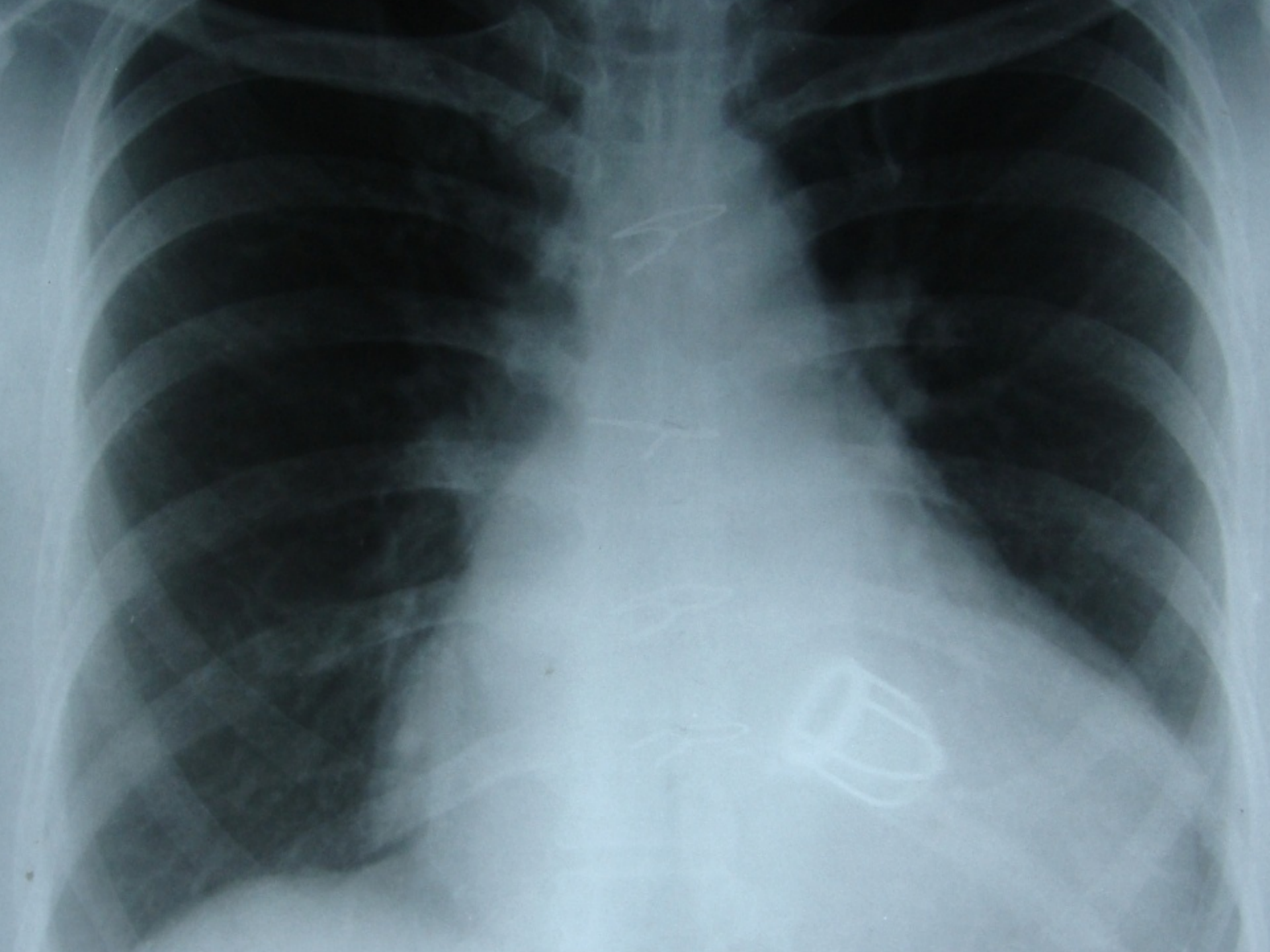

25 mm/s
10 mm/mV
ID:
NAME:
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

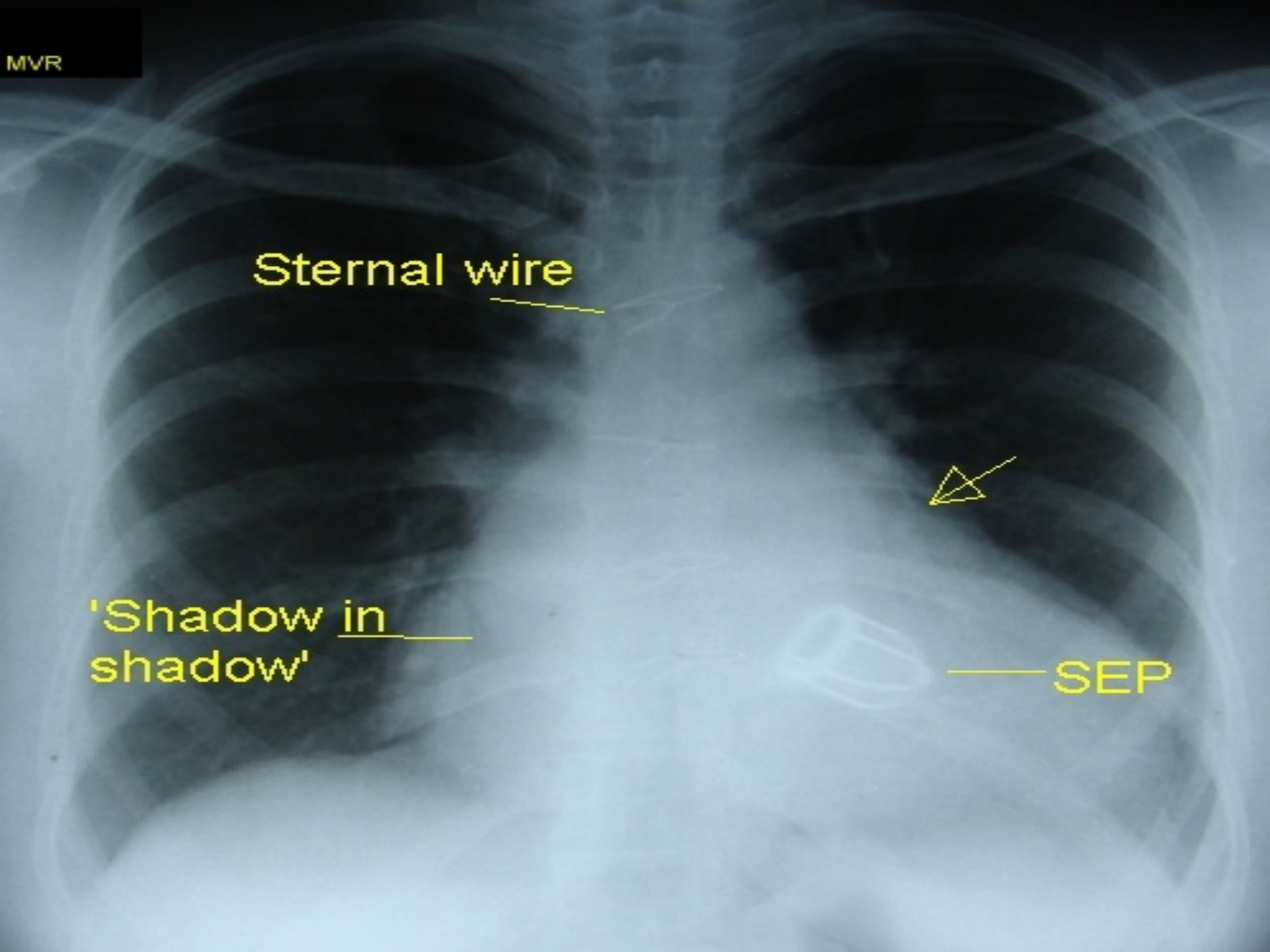
X-rays

Case 4

35 y/o female came to u with SOB & fever .

CXR showed :

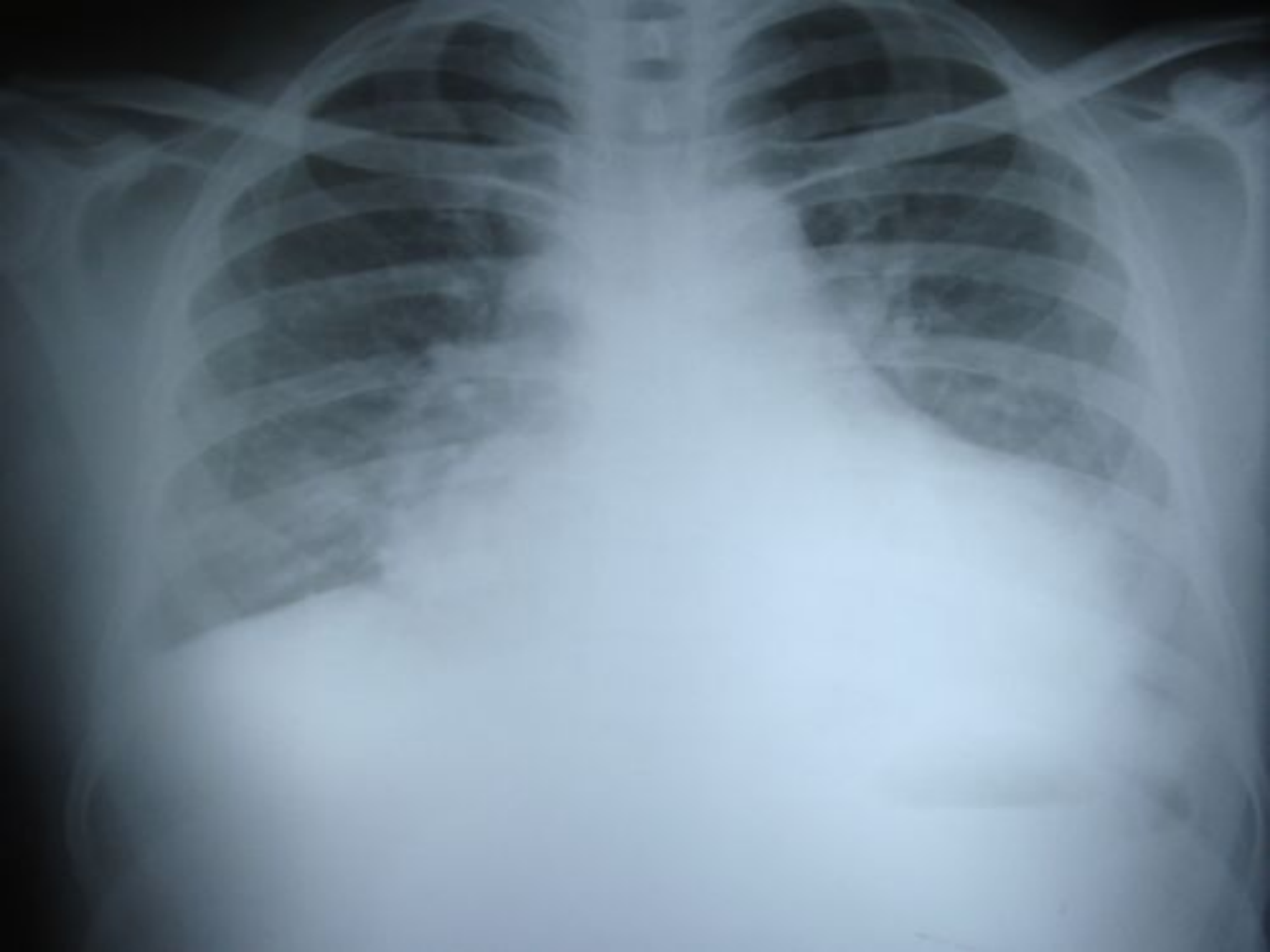



MVR
Sternal wire
'Shadow in shadow'
SEP

Examination

Case 5

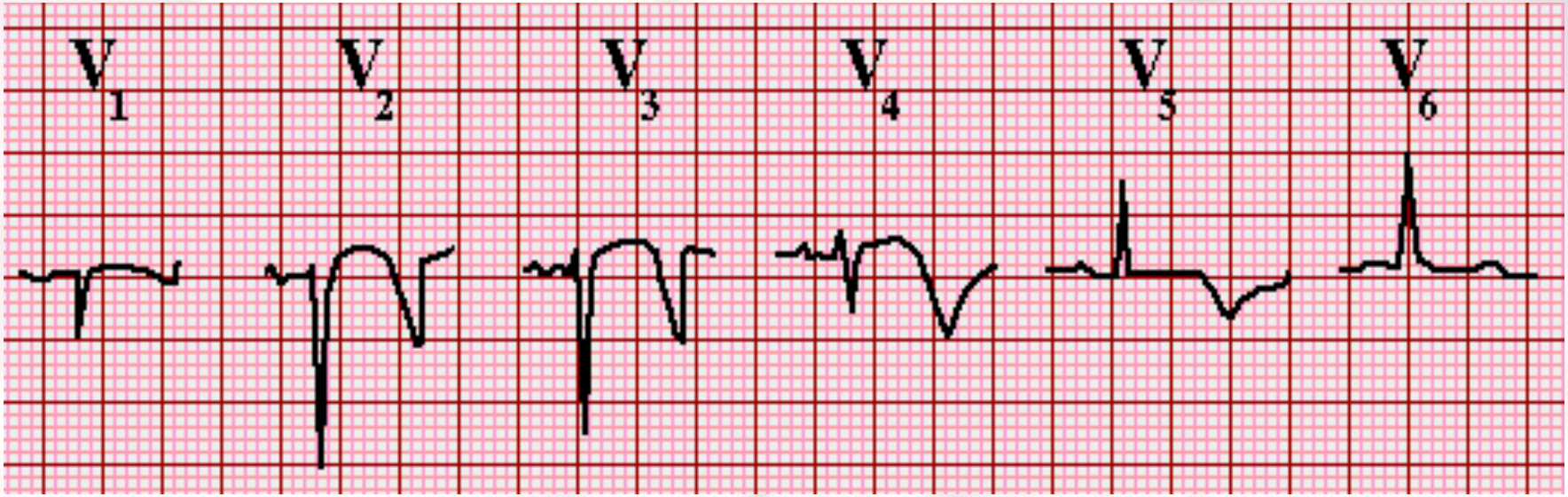
- 6o y/o male k/c of DM, HTN, S/P AMI 1 month back discharged on (ASA, concor, lisinopril & lipitor) presented with decreased LOC & found to have ***Stroke*** ….
- Routine workup was done …..
- **CXR showed :**



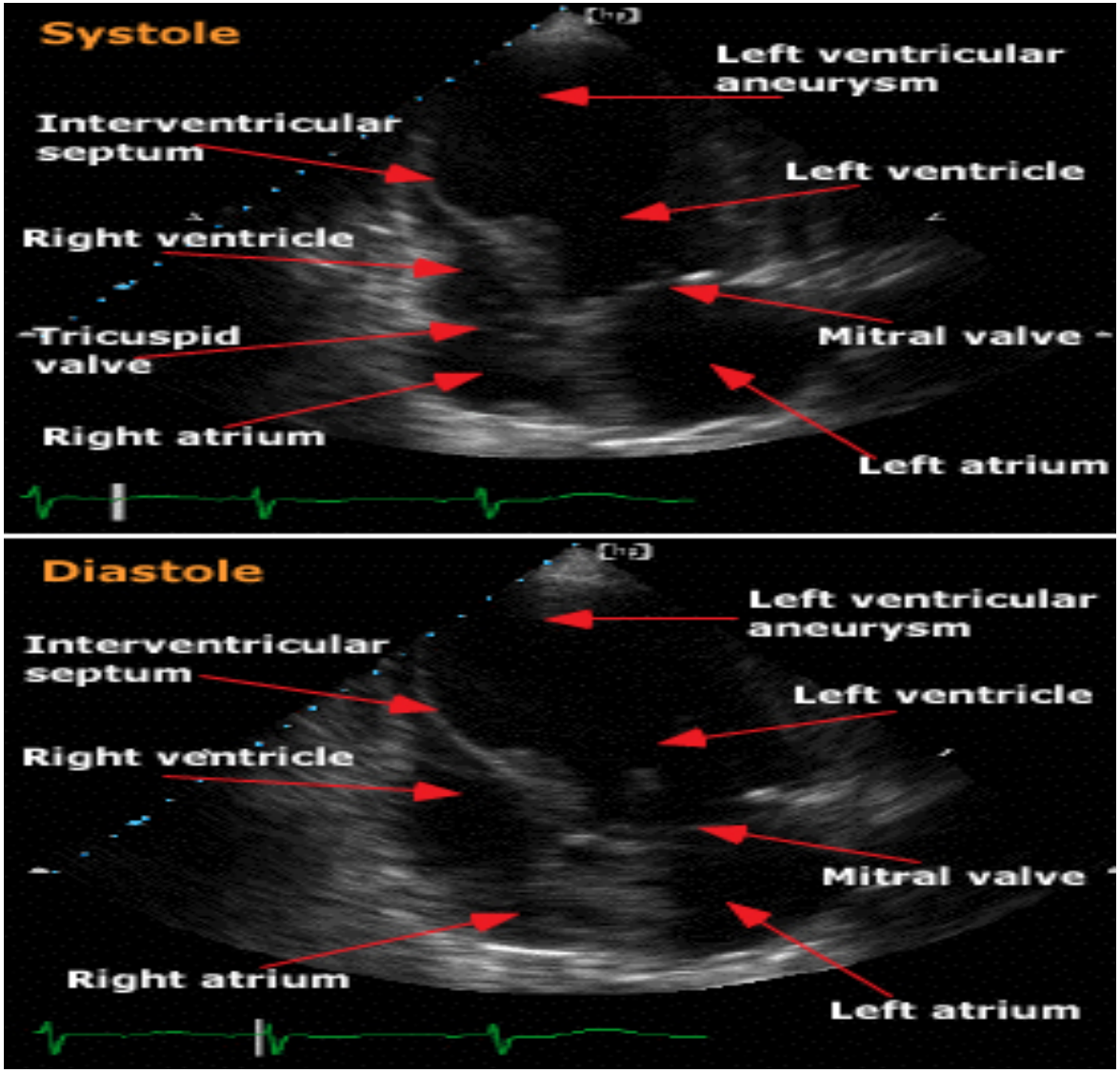
HINT !

What do u expect to see in the ECG ???

ECG (same as previous)



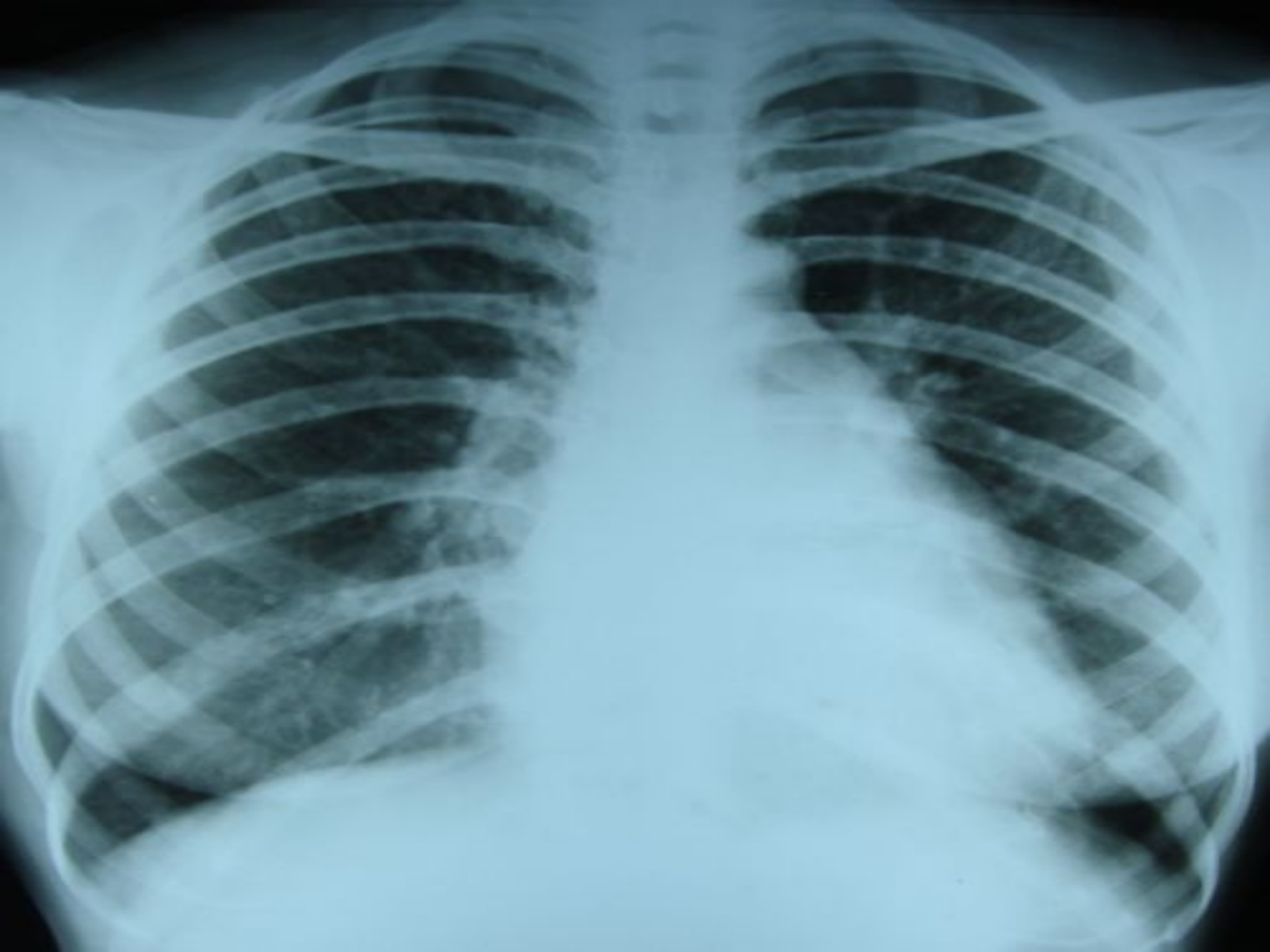
Echocardiography

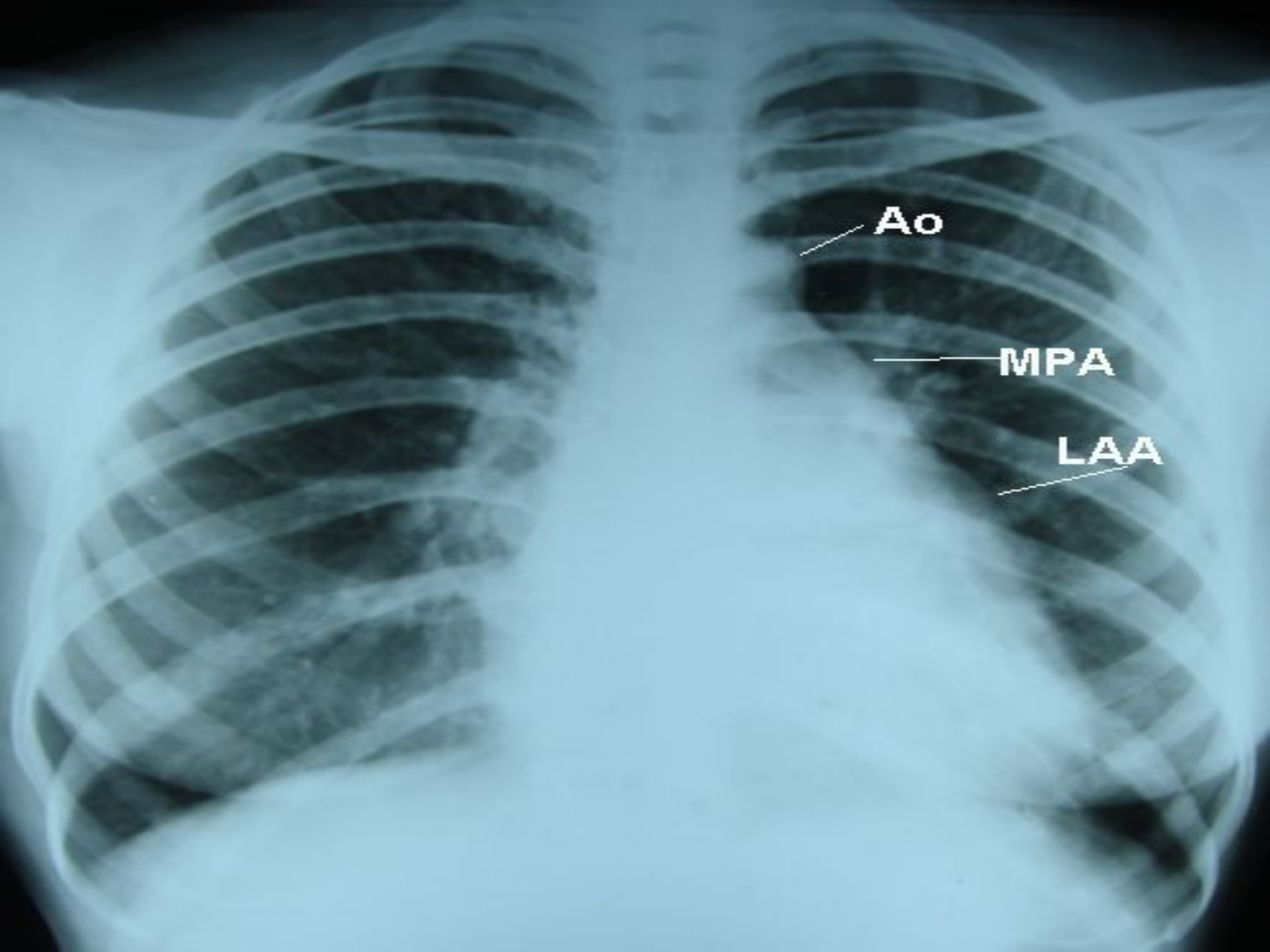


What was missing in his discharge meds??

Case 6

- 25 y/o female not known to have any medical illness presented c/o :
  - ✓Progressive SOB
  - ✓Recurrent palpitations




Ao
MPA
LAA

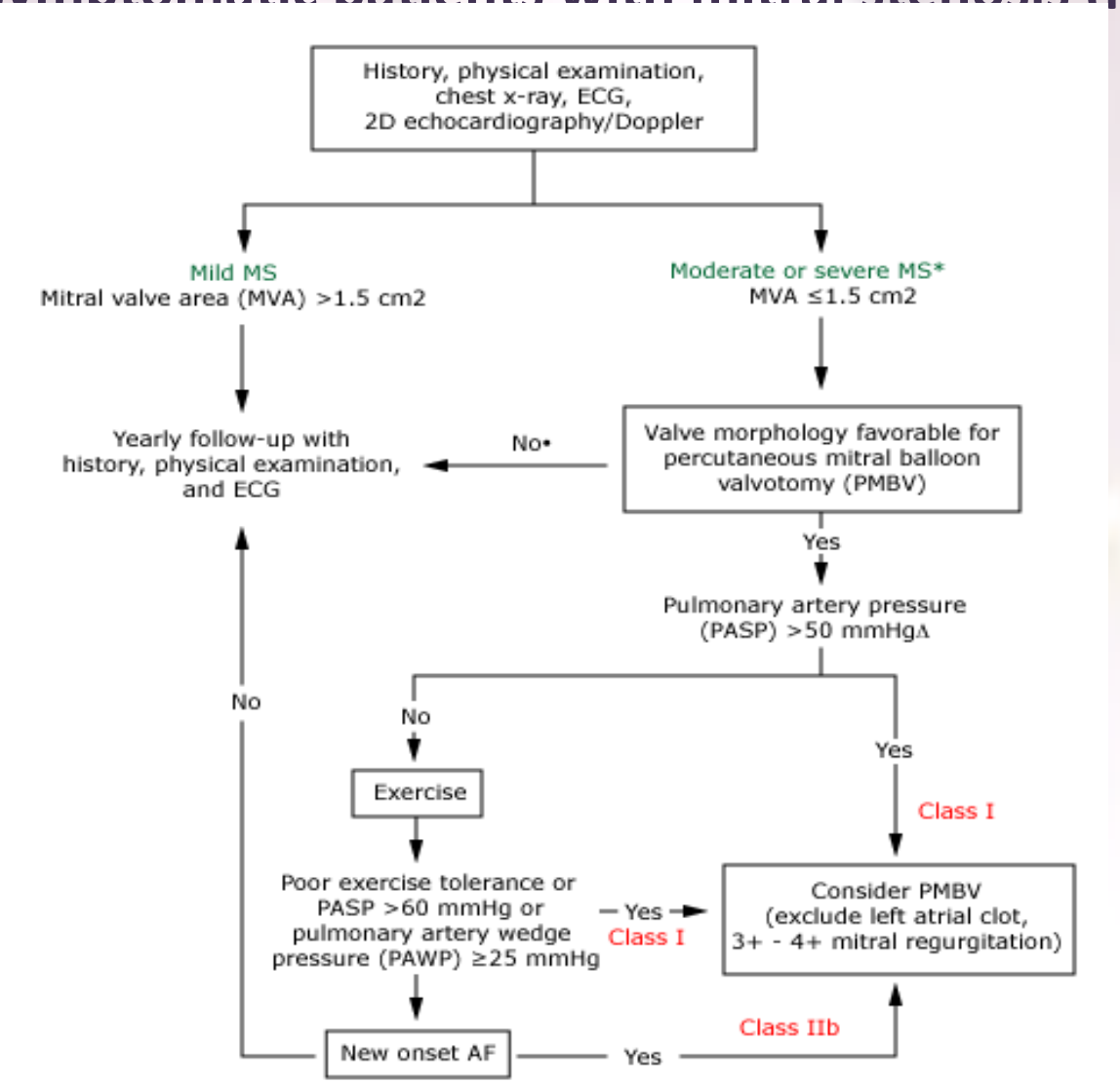
Most likely DX??

Mitral stenosis

- Treatment is usually supportive.
- **<u>primary indications for intervention are:</u>**
  - ✓*moderate to severe MS*
  - ✓*The presence of symptoms*

•The main indication for intervention in ***asymptomatic*** pts was moderate to severe MS & PHTN (PASP >50 mmHg at rest or >60 mmHg with exercise)

ACC/AHA guideline summary: Management strategy for asymptomatic patients with mitral stenosis (MS)



- **2006 ACC/AHA guidelines generally recommended that PMBV is preferred to surgery if :**
  - ✓ Valve morphology is favorable
    - ➢ The degree of leaflet rigidity
    - ➢ The severity of leaflet thickening
    - ➢ The amount of leaflet calcification
    - ➢ The extent of subvalvular thickening and calcification MR.
  - ✓ NO left atrial thrombus.
  - ✓ No moderate to severe (3+ to 4+)

ECGs

Case 7

- 70 y/o female k/c of DM, HTN &COPD presented with acute exacerbation , found to be tachycardiac with irregular pulse .
- Her ECG showed:

DDX of irregular irregular rhythm ?

AF

Atrial flutter

CHB

MAT

- **<u>The DX of MAT requires the following ECG criteria :</u>**

  ✓Discrete P waves with at least 3 different morphologies (including the normal sinus P wave).

  ✓ P wave morphology is generally best seen in leads II, III and V1.

  ✓An atrial rate of >100 bpm (classic definition) .

  ✓The P-P intervals, the P-R duration, and the R-R intervals vary.

Causes

- **Pulmonary disease:** COPD *(most common)* ,can also occur with pneumonia & PE.
- **Cardiac disease**
- **Metabolic :** (Hypokalemia, Hypomagnesemia)
- **Drugs :** (isoproterenol, aminophylline & theophylline)
- **CRF**
- **Sepsis**
- **after recent surgery**
- **mitral valve prolapse**

Treatment

- The use of antiarrhythmic drugs in the Rx of MAT is generally disappointing.
- Evidence of benefit with verapamil & BB.

Case 8

- 55 y/o male , heavy smoker & k/c of HTN on HCZ & amlor , presented for a routine check up & his ECG showed:


I
aVR
V1
V4
II
aVL
V2
V6
III
aVF
V3
V5
II

Voltage criteria of LVH

- **The Sokolow-Lyon index:**
  - ✓S in V1 + R in V5 or V6 (whichever is larger) ≥ 35 mm
  - ✓R in aVL ≥ 11 mm
- **The Cornell criteria for LVH are:**
  - ✓S in V_3 + R in aVL > 28 mm (men)
  - ✓S in V_3 + R in aVL > 20 mm (women)

- **Other voltage-based criteria for LVH include:**
  - ✓Lead I: R wave > 14 mm
  - ✓Lead aVR: S wave > 15 mm
  - ✓Lead aVL: R wave > 12 mm
  - ✓Lead aVF: R wave > 21 mm
  - ✓Lead V_5: R wave > 26 mm
  - ✓Lead V_6: R wave > 20 mm

Non-voltage criteria

- LAD
- LV "strain"
- LA enlargement: ↑ duration of P w (≥120 ms) in the limb leads &/or biphasic P w with a prominent (-) component (≥40 ms in duration &/ or ≥1 mV in depth) in V1.
- QRS duration ≥0.09 sec
- Delayed intersicoid deflection in V_5 or V_6 (>0.05 sec)

Case 9

- 60 y/o male k/c of IHD , presented to the ER with hx of chest pain for 1 hour associated with sweating .
- ECG showed :


EMEDU
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

Sgarbossa criteria

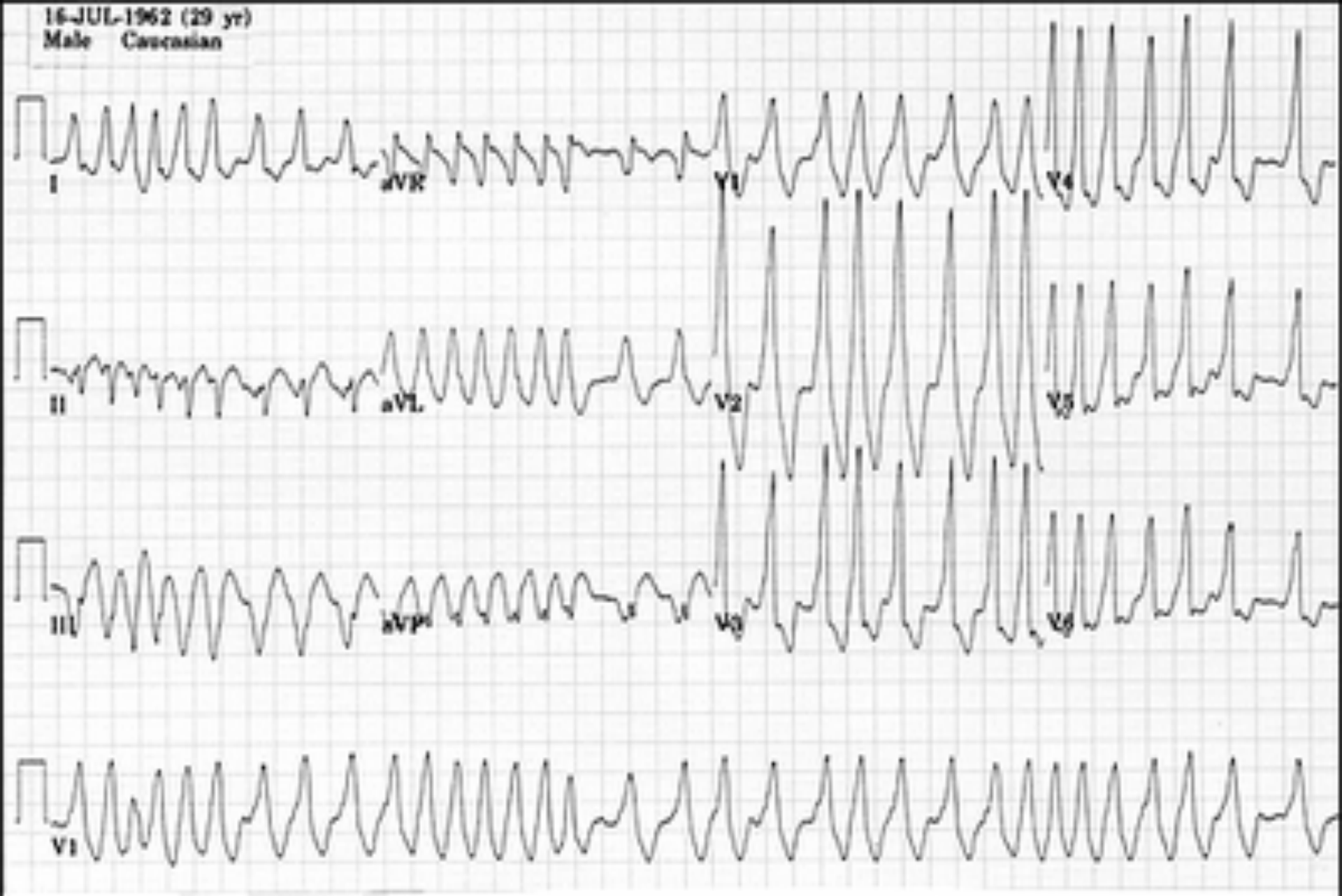
- **A minimal score of 3 is required for a specificity of 90 % :**
  - ✓ST segment elevation of 1 mm or > that is (concordant) with QRS in any lead **(score 5).**
  - ✓ST segment depression of 1 mm or > in any lead from V1 - V3 **(score 3)** .
  - ✓ST segment elevation of 5 mm or > that is discordant with the QRS (ie, associated with a QS or rS complex) **(score 2).**

Causes of LAD

- LVH
- LAFB
- IMI
- ASD primum

Case 10

- While you were on call in the CCU, one of your patients cardiac monitors shows the following rhythm :



What is your next step in managing this pt if he is HD stable ??

Brugada criteria of VT

- Lack of an RS complex in the precordial leads
- Whether the intersecoide interval in any precordial lead (the beginning of the R to the deepest part of S) when an RS complex is present is > 100 ms .
- AV dissociation .
- V1 and V6 fulfilled classic criteria of VT.

Morphology criteria

RBBB- like QRS:

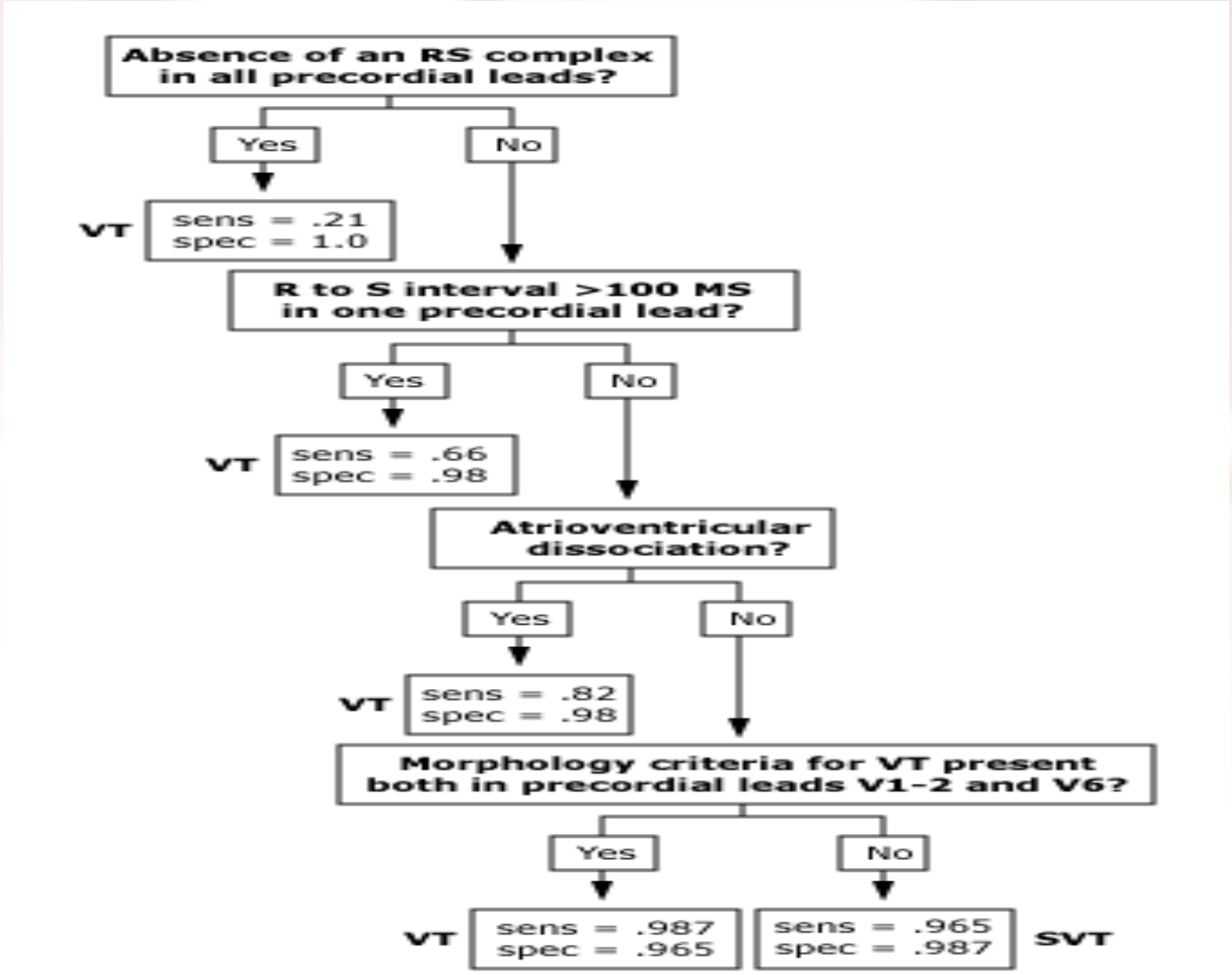
- **Lead V1**
  - ✓Monophasic R or QR or RS favors VT
  - ✓Triphasic RSR' favors SVT
- **Lead V6**
  - ✓R to S ratio <1 (R wave smaller than S wave) favors VT
  - ✓QS or QR favors VT
  - ✓Monophasic R favors VT
  - ✓Triphasic favors SVT
  - ✓R to S ratio >1 (R wave larger than S wave)favors SVT

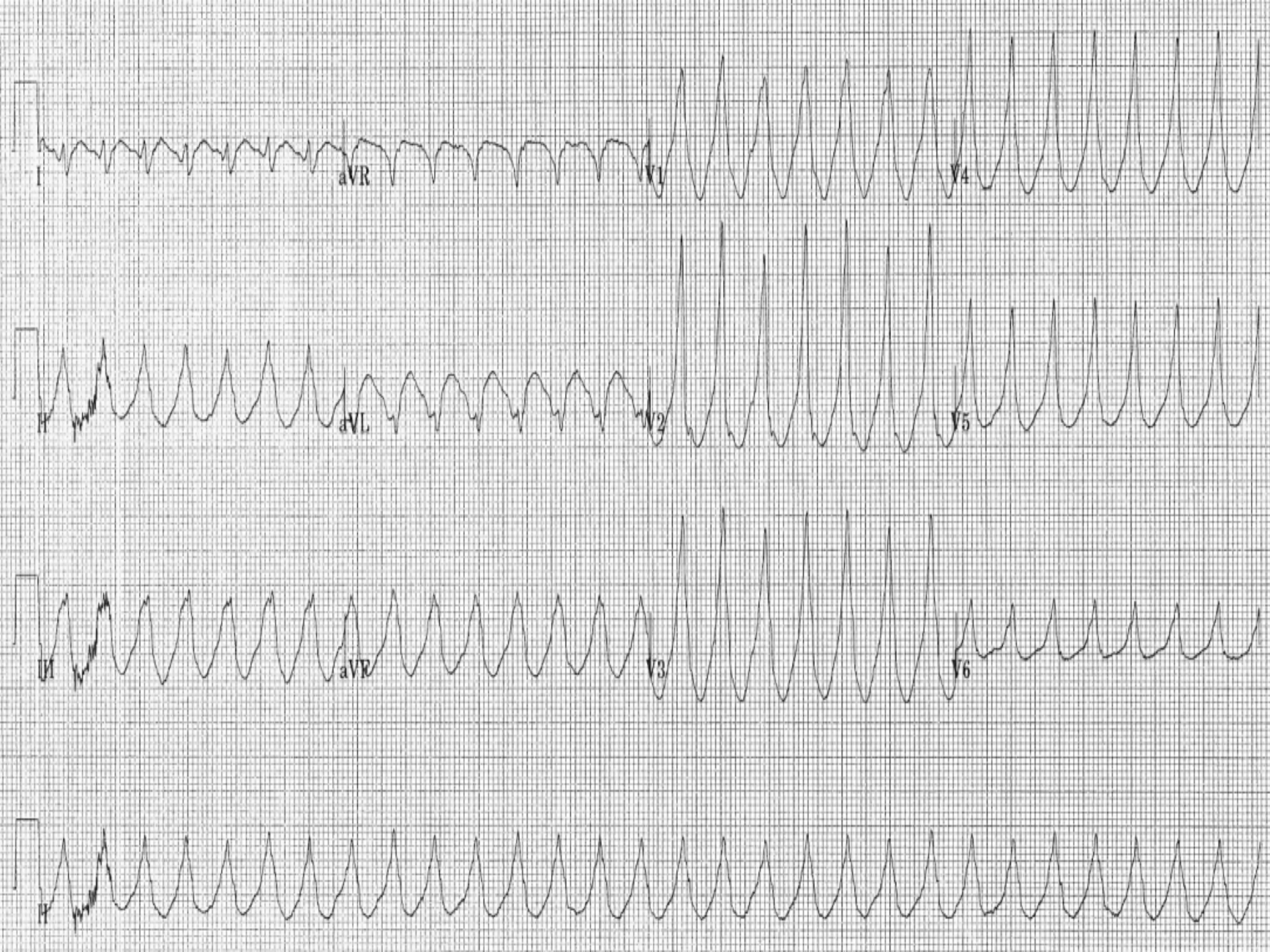
LBBB- like QRS:

- **Lead V1 or V2**
  - ✓Any of following:

  (R >30 msec, >60 msec to nadir S, notched S favors VT)
- **Lead V6**
  - ✓Presence of any Q wave, QR or QS favors VT
  - ✓The absence of a Q wave in lead V6 favors SVT

Stepwise algorithm




I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

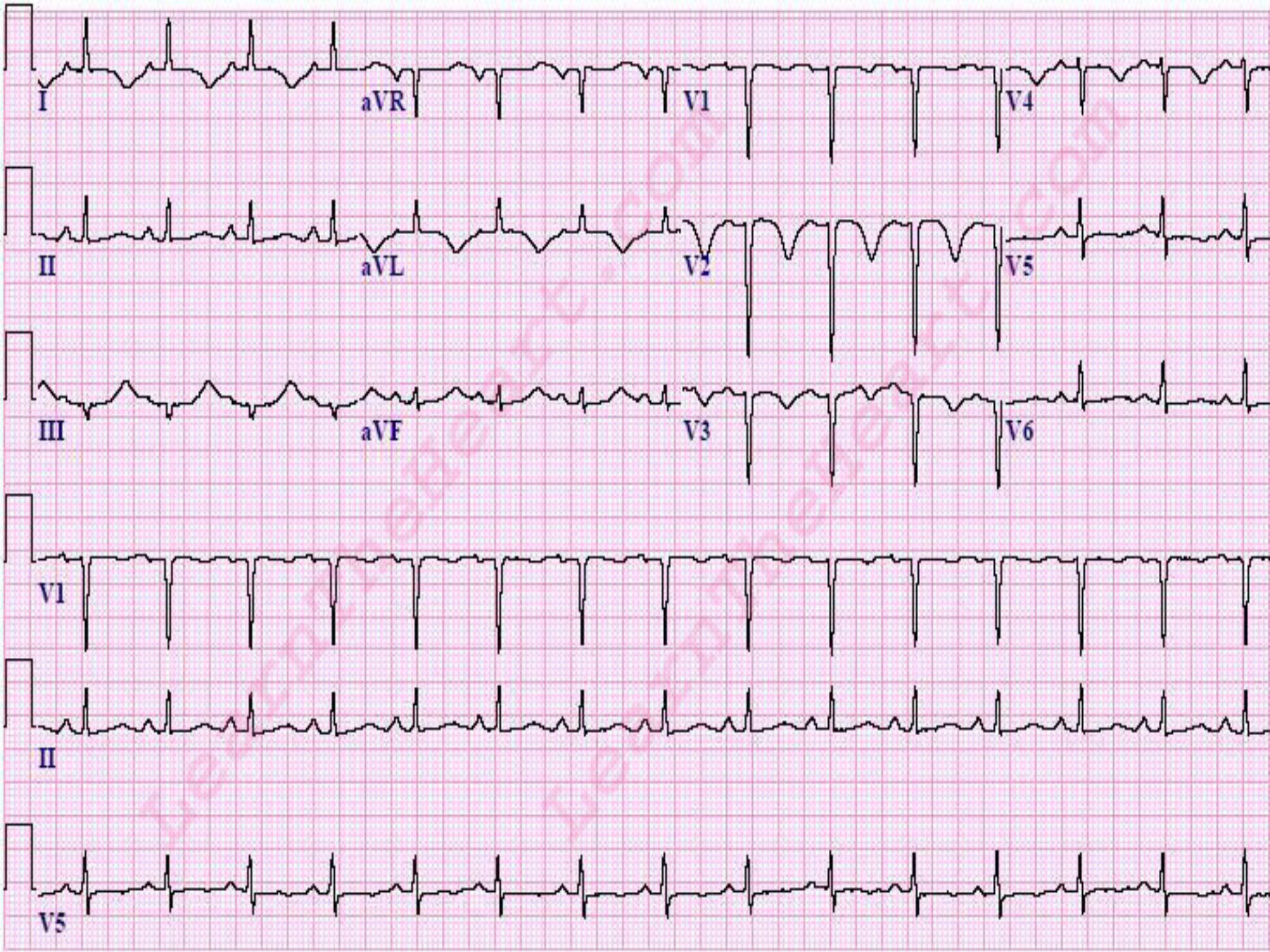
Case 11

- 60 y/o lady k/c of DM, HTN, fibromyalgia on (OHA, HCZ & amytiptaline) , admitted as case of UTI & started on ciprofloxacine , next day pt arrested & the rhythm during arrest was :


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

What is your next step ??

ECG on admission !


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5

QT interval

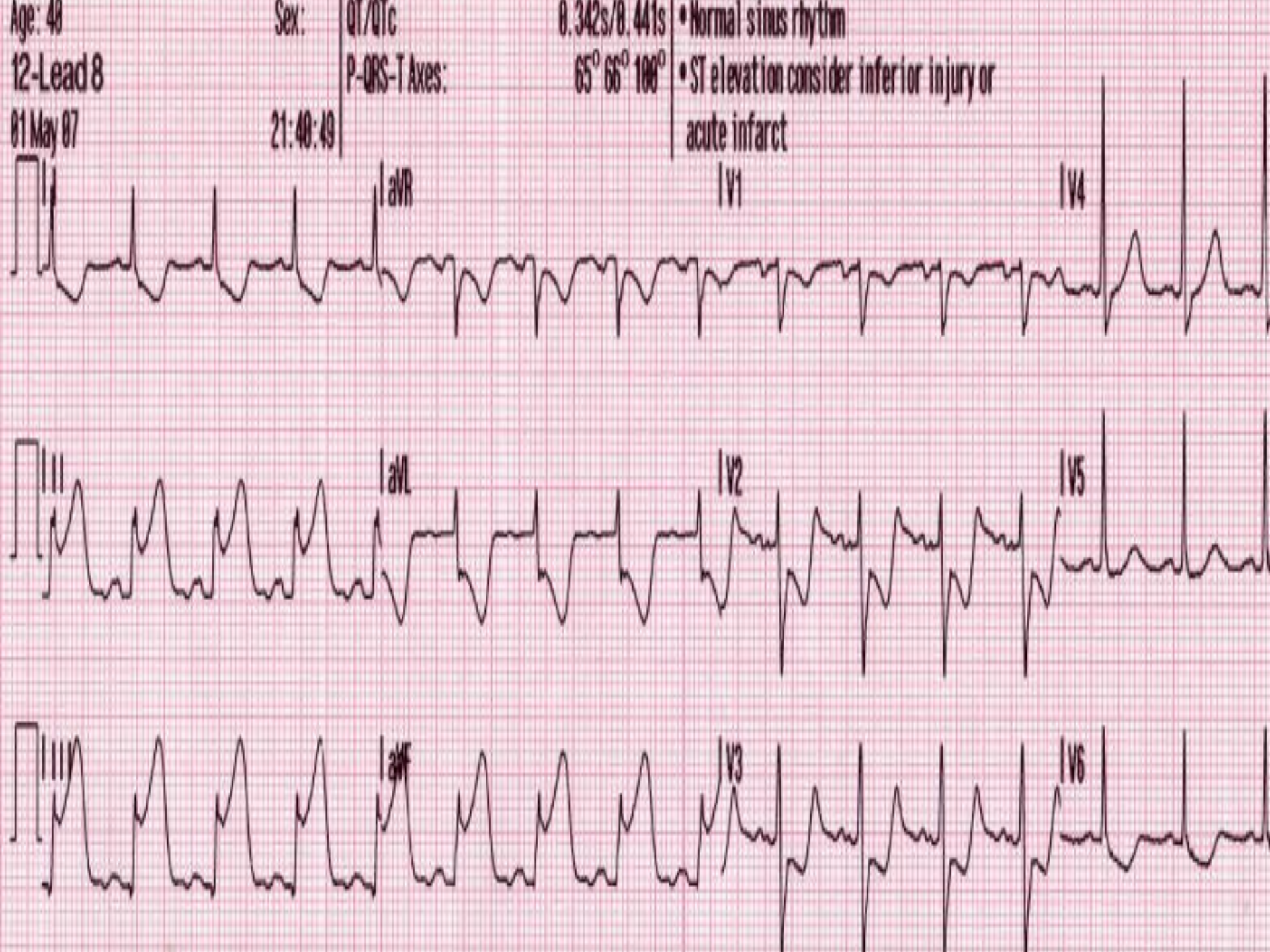
- **QTc** = QT interval ÷ square root of the RR interval (in sec)
- The normal value for the **QTc is ≤0.44 sec.**

Cause of prolonged QT interval

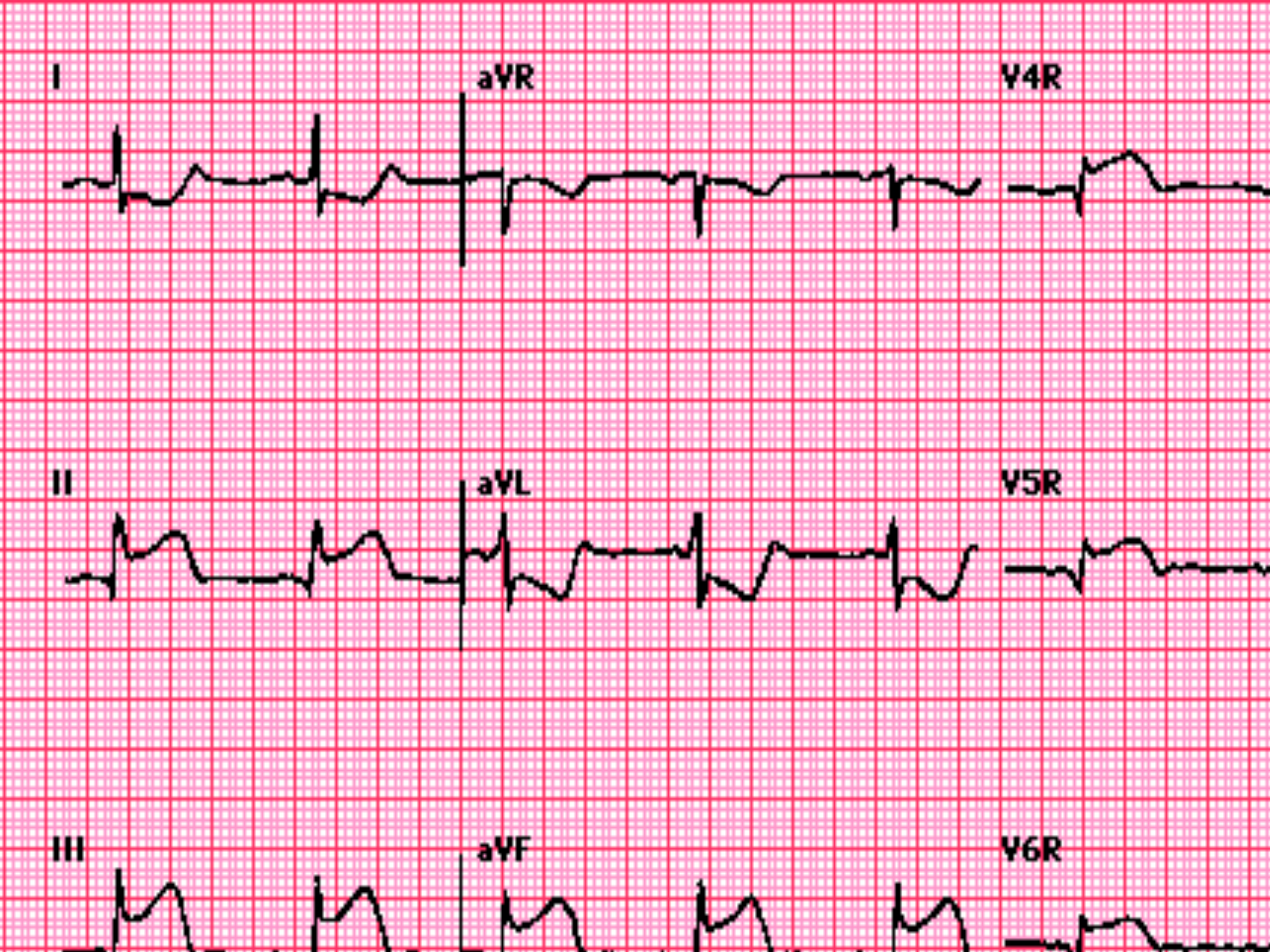
- Electrolyte dist. (hypo Mg, Ca, K)
- Drugs : antipsychotic , antiarrhythmic, macrloids , lithium.
- ICH
- Hypothermia
- Hypothyroidism
- Long QT syndrome (congenital)

Case 12

- 45 y/o male smoker & diabetic presented with chest pain, nausea & vomiting
  - ECG showed:


Age: 48
Sex:
12-Lead 8
01 May 07
21:48:49
QT/QTc
0.342s/0.441s
P-QRS-T Axes:
65° 66° 186°
• Normal sinus rhythm
• ST elevation consider inferior injury or acute infarct
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

What is your next step??


I
aVR
V4R
II
aVL
V5R
III
aVF
V6R

What is the most likely culprit ??

What is the most serious underlying cause that u should R/O ???

Mention the 3 most important clincal signs of RV MI ??

Hypotension

jugular vein distention

clear lung fields

What is the most imp. Step in Mx??

Mention the drugs that should b avoided in this situation ??

Thank you