

EKG TEST AND ANSWERS

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QUESTION 1

Sinus bradycardia is defined as

- a. Sinus rhythm with a heart rate less than 60
- b. Heart rate less than 48
- c. Sinus rhythm and heart rate less than 48
- d. Normal sinus rhythm with a heart rate less than 60 and no obvious p waves.

QUESTION 1

- ▣ a
- ▣ Heart rate of 60 and below is bradycardia
- ▣ d is an oxymoron. Normal sinus rhythm.....and no p waves.
- ▣ Has to have p wave to be a normal sinus rhythm

QUESTION 2

Which of the following best define atrial fibrillation

- a. Regular rhythm with no obvious p waves
- b. Irregular rhythm with retrograde p waves
- c. **Irregularly irregular rhythm with no obvious p waves**
- d. P waves and QRS complexes are regular but the qt interval is irregular

QUESTION 2

- ▣ C.
- ▣ No p waves are seen in atrial fibrillation
- ▣ It is by definition irregularly irregular.

QUESTION 3

Premature ventricular contraction is

- a. Caused by an impulse from the av node
- b. **Is an escape beat from the ventricle and is accompanied by a compensatory pause.**
- c. Is a catalyst for ventricular tachycardia
- d. Is treated with viagra

QUESTION 3

- ▣ B.
- ▣ PVC's are VENTRICULAR escape beats
- ▣ D treats a different impulse.

QUESTION 4

Atrial flutter

- a. Should always be considered when the heart rate is 150
- b. Has p waves that oftentimes look like “saw tooth”
- c. May have p waves hidden the t wave
- d. Is a precursor the atrial fibrillation
- e. **All of the above**

QUESTION 4

- ▣ ALL ANSWERS ARE CORRECT

QUESTION 5

The sinoatrial node

Circle all correct

- a. Is an escape node for cardiac stand still
- b. **Arises in the atria and results in contraction of the atrium**
- c. Causes an svt when activated
- d. **Is the p wave on the ekg**

QUESTION 5

- ▣ B and d. Normal beats begin at the sinoatrial node.

QUESTION 6

The u wave on the ekg

- a. Looks like a large “u” on the ekg
- b. Is associated with uremic syndrome
- c. Is associated with hypoglycemia
- d. **Is associated with hypokalemia**
- e. Is associated with hyperkalemia

QUESTION 6

- ▣ D.
- ▣ Is associated with some metabolic abnormalities and digoxin toxicity
- ▣ Hyperkalemia is associated with peaked t waves

QUESTION 7

J point elevation

- a. Helps determine if there is st elevation
- b. Is measured from the end of the of the qrs complex and going over one small box.
- c. Upward slope of more than one box at the j point may indicate an acute myocardial infarction
- d. Downward sloping is seen in repolarization
- e. **All of the above.**

QUESTION 7

- ▣ E.
- ▣ J point is the critical point for determining st elevation and an acute mi.

QUESTION 8

Torsades de pointe

- a. Is an atrial arrhythmia.
- b. Is seen exclusively with hypothermia
- c. **Is a ventricular tachycardia which flips on its own axis resulting in a twisting pattern**
- d. Responds to adenosine

QUESTION 8

- ▣ C.
- ▣ Torsades is a ventricular tachycardia that twists.
- ▣ It responds to magnesium.....but I wouldn't hold back on the amiodarone.

QUESTION 9

3rd degree block

- a. Can occur in inferior and anterioseptal myocardial infarctions.
- b. Is best treated with atropine and never needs to be paced
- c. Is a complete dissociation between the atria and ventricle
- d. Is caused by a blockage at the sinoatrial node.

QUESTION 9

- ▣ A and c.
- ▣ Atropine can be used and patients may need to be paced.
- ▣ The damage is at the atrioventricular (AV) node and not the sinoatrial (SA) node.

QUESTION 10

Supraventricular tachycardia

- a. Has a ventricular heart rate greater than 180
- b. Originates in the ventricle
- c. Is always a narrow complex
- d. Is never associated with a reentrant pathway

QUESTION 10

- ▣ A
- ▣ It arises above the ventricle, hence SUPRAventricular
- ▣ It can be a wide complex and is caused by reentrant pathways.

QUESTION 11

An inferior myocardial infarction has a blockage

- a. At the right coronary artery 90% of the time.
- b. At the circumflex artery 90% of the time.
- c. At the circumflex artery 10% of the time.
- d. At the right coronary artery 10% of the time.

QUESTION 11

- ▣ A and c

QUESTION 12

Second and third degree blocks result from

- a. Varing degree of blockage at the at the sinoatrial node.
- b. **Varing degree of blockage at the atrioventricular node.**
- c. Overmedication of beta adrenergic drugs
- d. **Overmedication of beta blockers**

QUESTION 12

- ▣ B and d
- ▣ The blockage is at the atrioventricular node.
- ▣ It may be partial and progressive as seen in 2nd degree blocks
- ▣ It is a complete blockage in 3rd degree blocks.
- ▣ Certain medications such as beta blockers can cause a temporary blockage.

QUESTION 13

On the right sided ekg, an acute infarct is noted if

- a. V2 is elevated
- b. V3 is elevated
- c. **V4 is elevated**
- d. V5 is elevated
- e. All of the above

QUESTION 13

- ▣ V4 is the lead that will have elevation if there is right sided involvement.
- ▣ This should always be checked for with acute inferior wall mi's.

QUESTION 14

Inferior myocardial infarctions show

- a. Elevation in leads I, II and III
- b. Elevation in leads V1, V2 and V3
- c. **Elevation in II, III and aVF**
- d. Elevation in I, II, and aVL

QUESTION 14

▣ C

QUESTION 15

Inferior myocardial infarctions

- a. Are never associated with hypotension
- b. May be associated with a 3rd degree av block
- c. Are associated with st depression in II, III and aVF
- d. May have right ventricular extention.

QUESTION 15

- ▣ B, c and d
- ▣ All mi's can be associated with hypotension.
- ▣ St depression can reflect subendocardial ischemia and cause an mi. It is not a STEMI, and would not go to the cath lab.
- ▣ Inferior mi's also may have right ventricular extension which may be causing the hypotension

QUESTION 16

Anterior myocardial infarctions

- a. Are associated with the Left anterior descending artery
- b. Have elevation in V2,V3, V4
- c. May have right ventricle extension
- d. Can extend to the lateral wall

QUESTION 16

- ▣ A, b and d
- ▣ V1 is septal
- ▣ Right ventricular involvement is associated with inferior wall mi's

QUESTION 17

Septal myocardial infarctions

- a. Involve V1 and V2
- b. Most often extend to the anterior wall
- c. Can result in 3rd degree block which is permanent
- d. Can result in 3rd degree block which is temporary.

QUESTION 17

- ▣ A, b and c
- ▣ 3rd degree block in septal mi's indicate direct and permanent damage to the atrioventricular node.
- ▣ 3rd degree block with inferior mi's is caused by swelling around the atrioventricular node. When the swelling resolves the block resolves.

QUESTION 18

Lateral myocardial infarctions

- a. Involve the lateral wall of the heart
- b. Are noted in V4, V5, V6, I, aVL
- c. Are associated with the circumflex artery
- d. Involve only I and aVL

QUESTION 18

▣ A, b and c

QUESTION 19

Inferior lateral myocardial infarctions

- a. Indicate that the inferior wall is supplied by the circumflex artery
- b. Indicate that the lateral wall is supplied by the right coronary artery
- c. Indicate that there are two obstructed arteries; RCA and circumflex
- d. Indicate that the patient has a clot in the left anterior descending artery

QUESTION 19

- ▣ A
- ▣ The inferior wall is supplied by the RCA 90% of the time and the circumflex 10% of the time. The lateral wall is supplied by the circumflex. Therefore involvement of both would mean the circumflex is the blood supply for both the inferior and lateral wall.

QUESTION 20

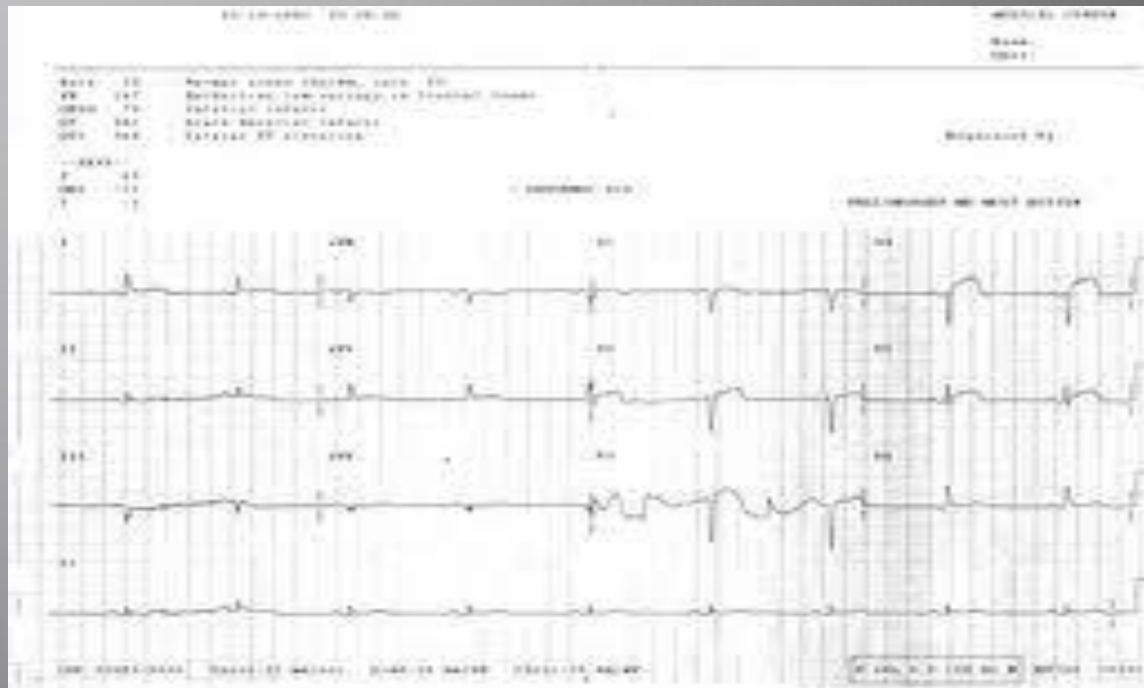
Posterior myocardial infarctions

- a. Cannot be diagnosed with standard ekg placement
- b. Are mirror opposite images of an anterior myocardial infarction
- c. Can be viewed by flipping the ekg upside down and viewing from the back side.
- d. Don't occur

QUESTION 20

- ▣ B and c.
- ▣ Posterior mi's are diagnosed on regular ekgs but are mirror opposites of the anterior.
- ▣ They are associated with r waves and st depression. When the paper is flipped and reversed, it appears as q waves and st elevation.

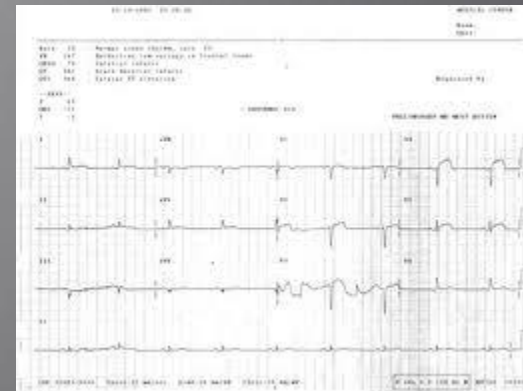
EKG-1



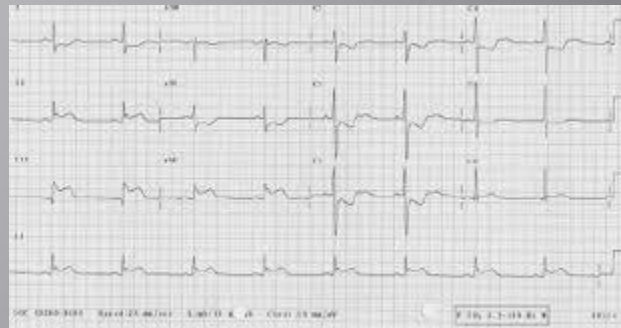
- ▣ STEMI?
- ▣ INTERPRETATION: ANTERIOR

Ekg-1

- ▣ Stemi
- ▣ Anterior st elevation leads V2-V5



EKG-2



- ▣ STEMI?
- ▣ INTERPRETATION: IMI

EKG-2

- ▣ STemi
- ▣ Inferior ST elevation.
- ▣ Anterior changes could be reciprocal but posterior involvement is a consideration
- ▣ Always check right sided leads when possible in inferior MI's



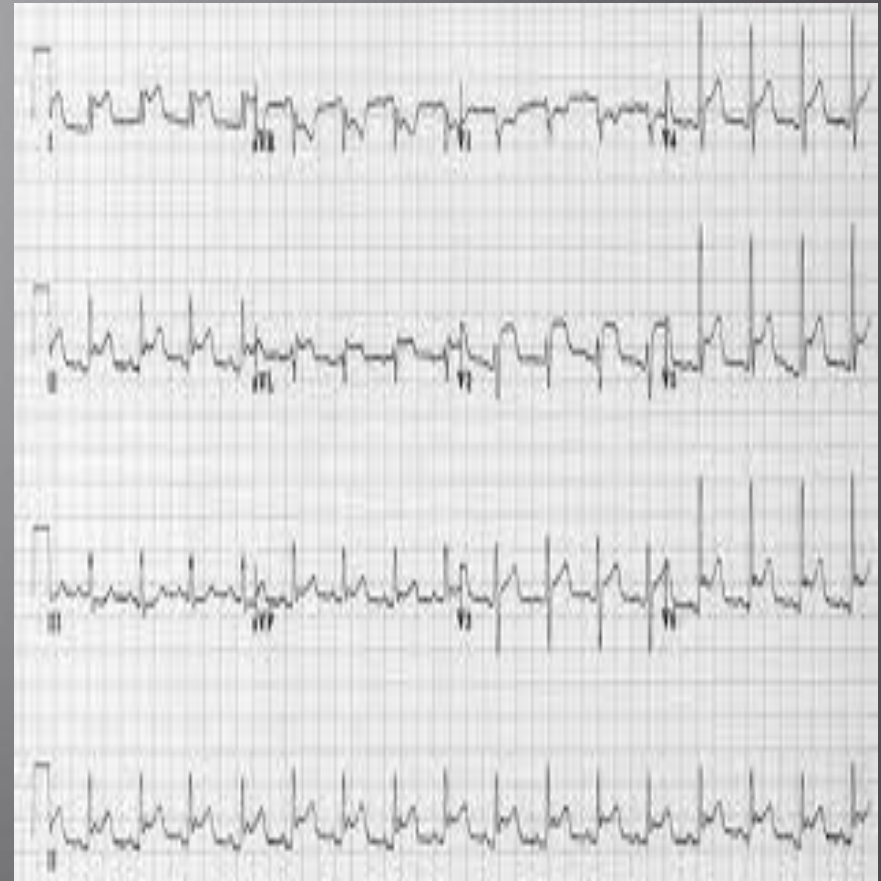
EKG-3



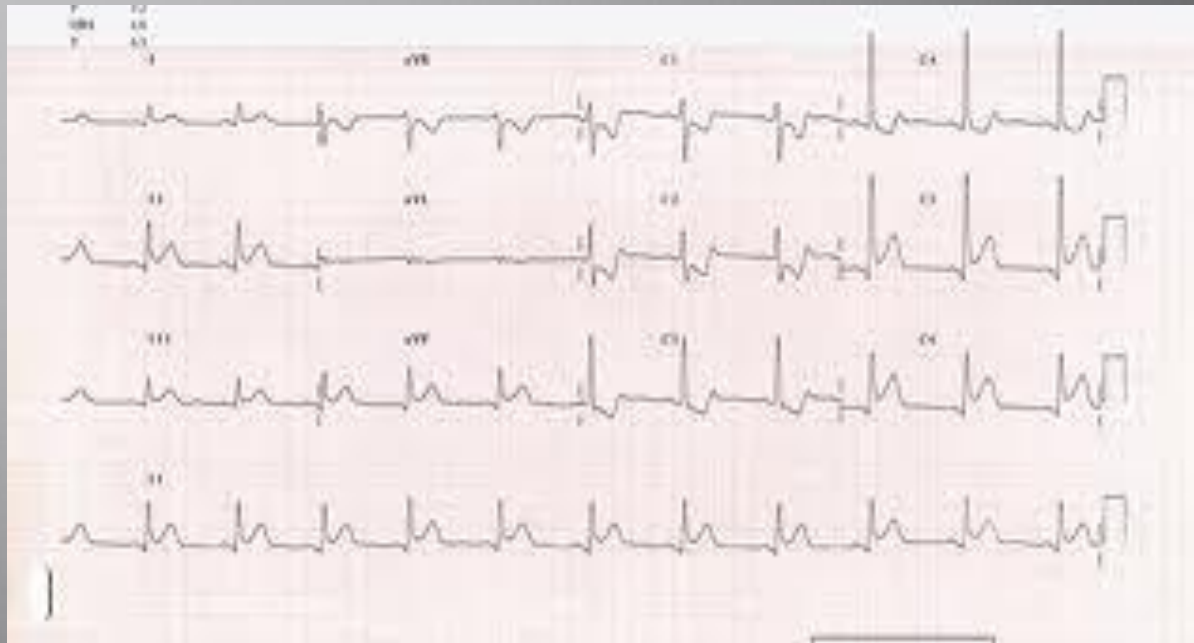
- ▣ STEMI?
- ▣ INTERPRETATION: PERICARDITIS

EKG-3

- ▣ Pericarditis
- ▣ Characterized by diffuse st wave changes
- ▣ Virtually all the leads have st elevation.
- ▣ Note the pr interval depression; the down sloping of the pr interval



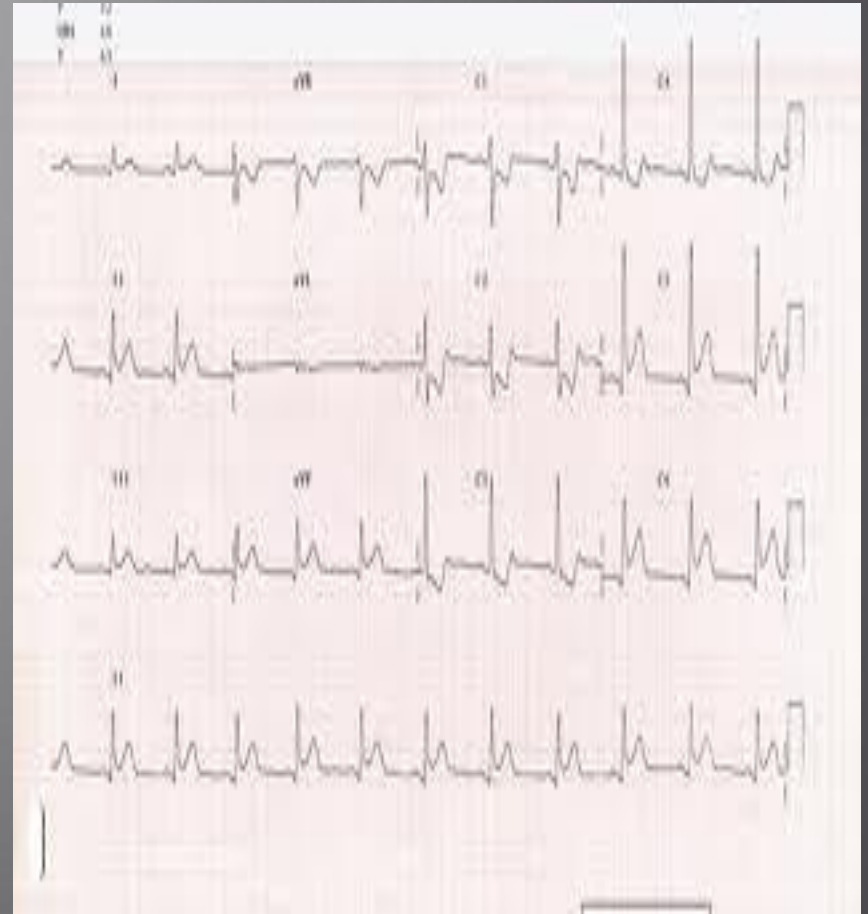
EKG-4



- ▣ STEMI?
- ▣ INTERPRETATION: INFERIOR LATERAL

EKG-4

- ▣ STemi
- ▣ ST elevation in the inferior and lateral leads.
- ▣ Reciprocal



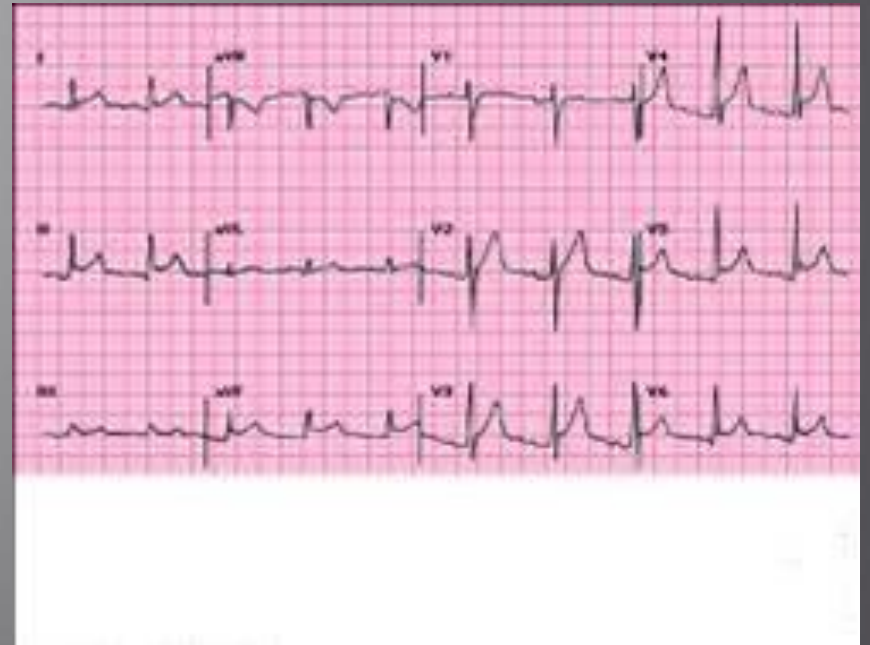
EKG-5



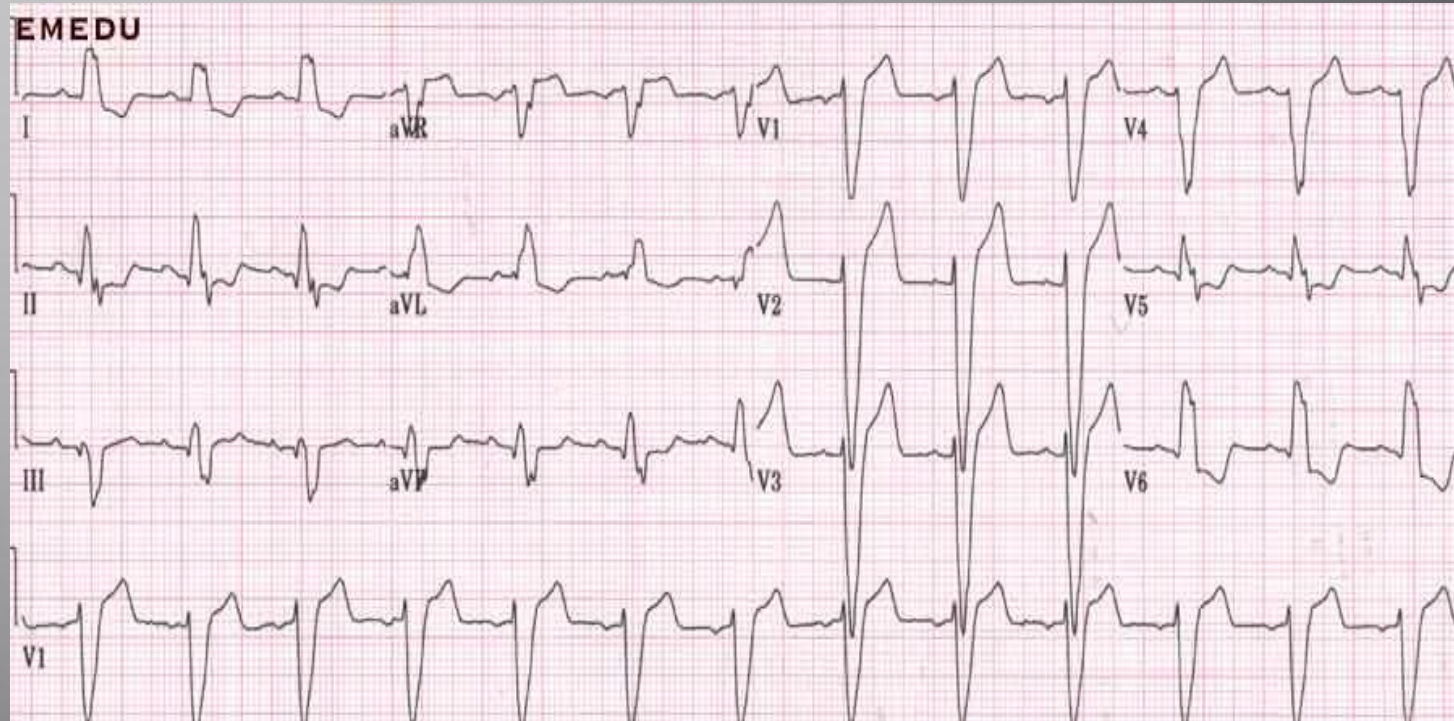
- ▣ STEMI?
- ▣ INTERPRETATION: PERICARDITIS

EKG-5

- ▣ Note the diffuse st segment elevation.
- ▣ Pr intervals are also depressed



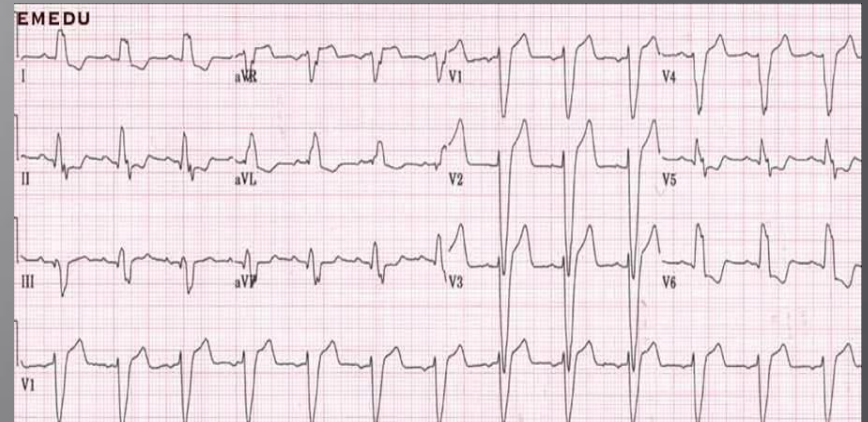
EKG-6



- ▣ STEMI?
- ▣ INTERPRETATION: LBBB

EKG-6

- ▣ Left bundle branch block can be a STEMI if it is new.
- ▣ The trick is to determine if it is new.



EKG-7



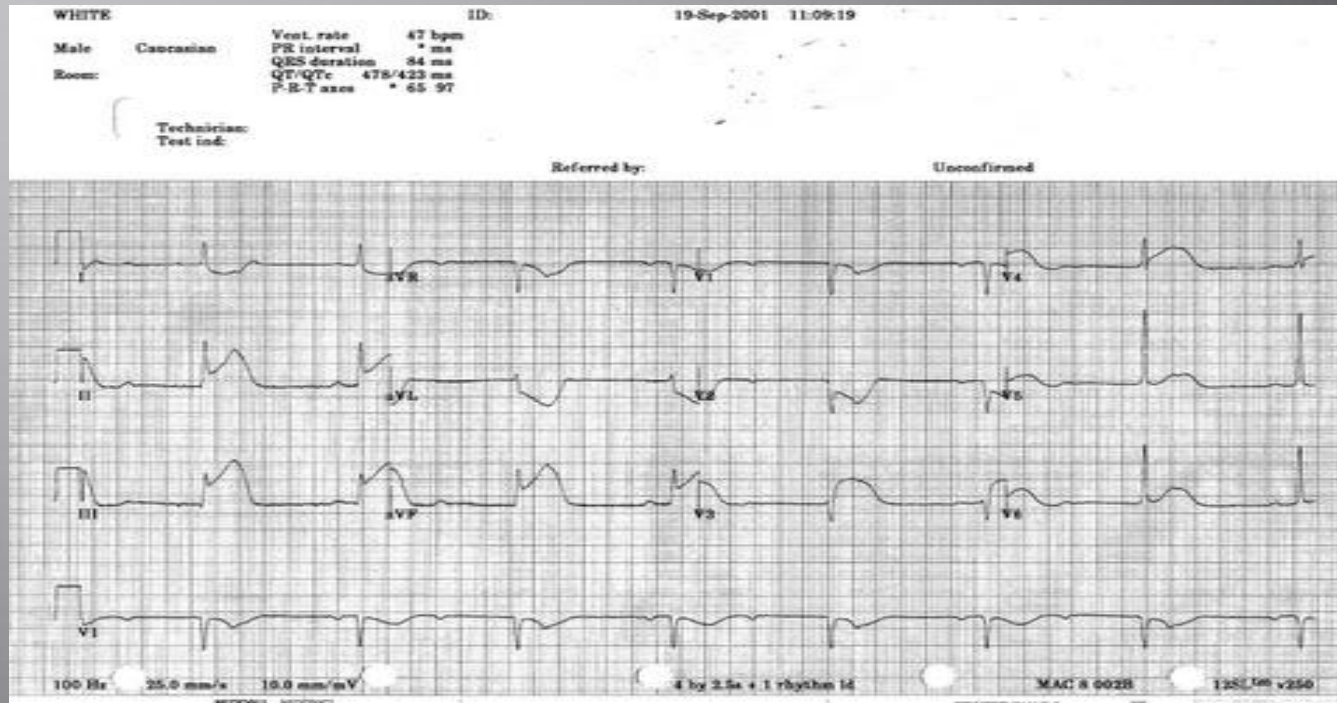
- ▣ STEMI?
- ▣ INTERPRETATION: ANTERIOR

EKG-7

- ▣ Elevation is noted in V2-5
- ▣ Q waves are present in V2-3



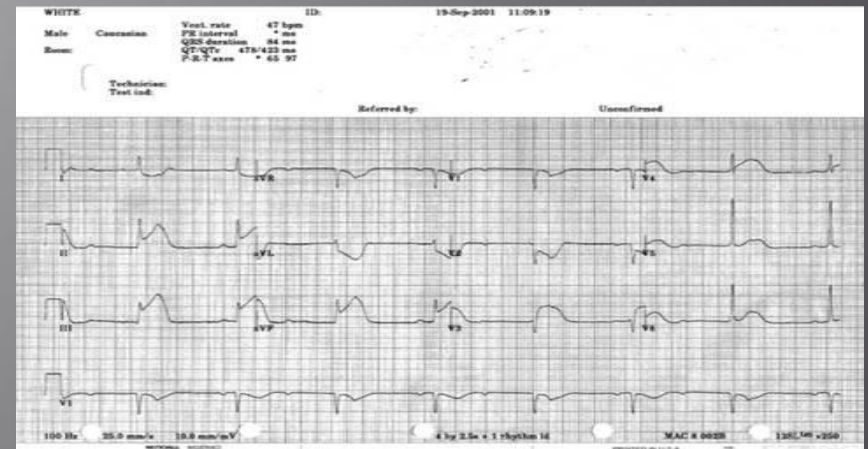
EKG-8



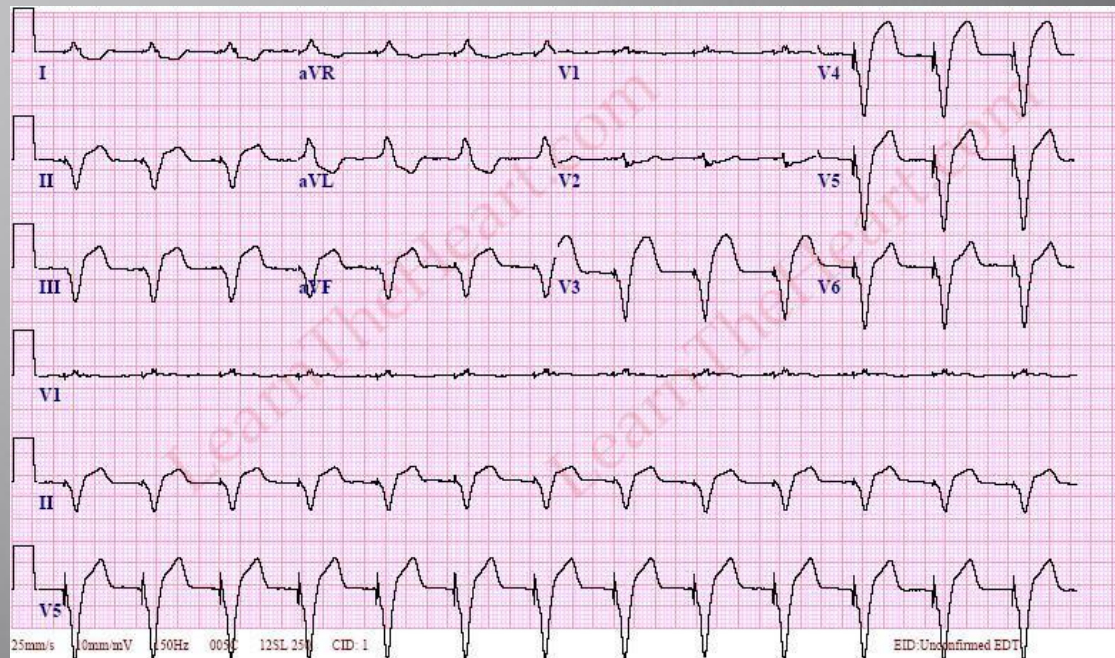
- ▣ STEMI?
- ▣ INTERPRETATION: INFERIOR

EKG-8

- Prominent elevation in II, III and aVF.



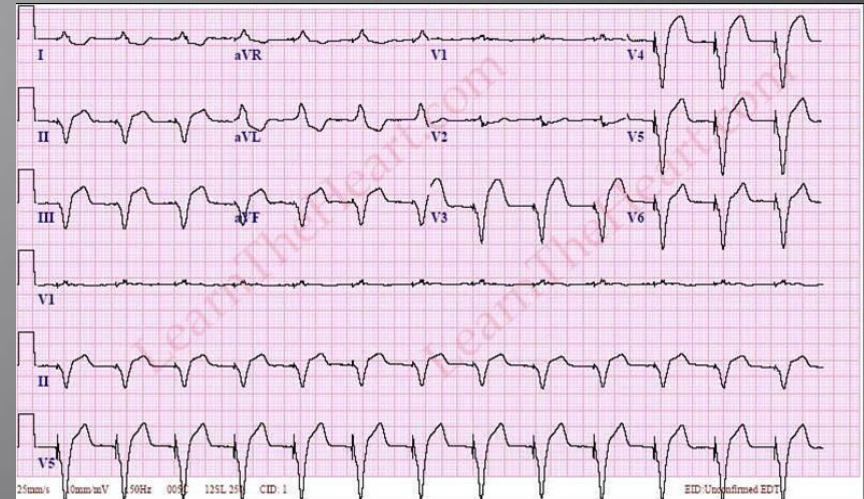
EKG-9



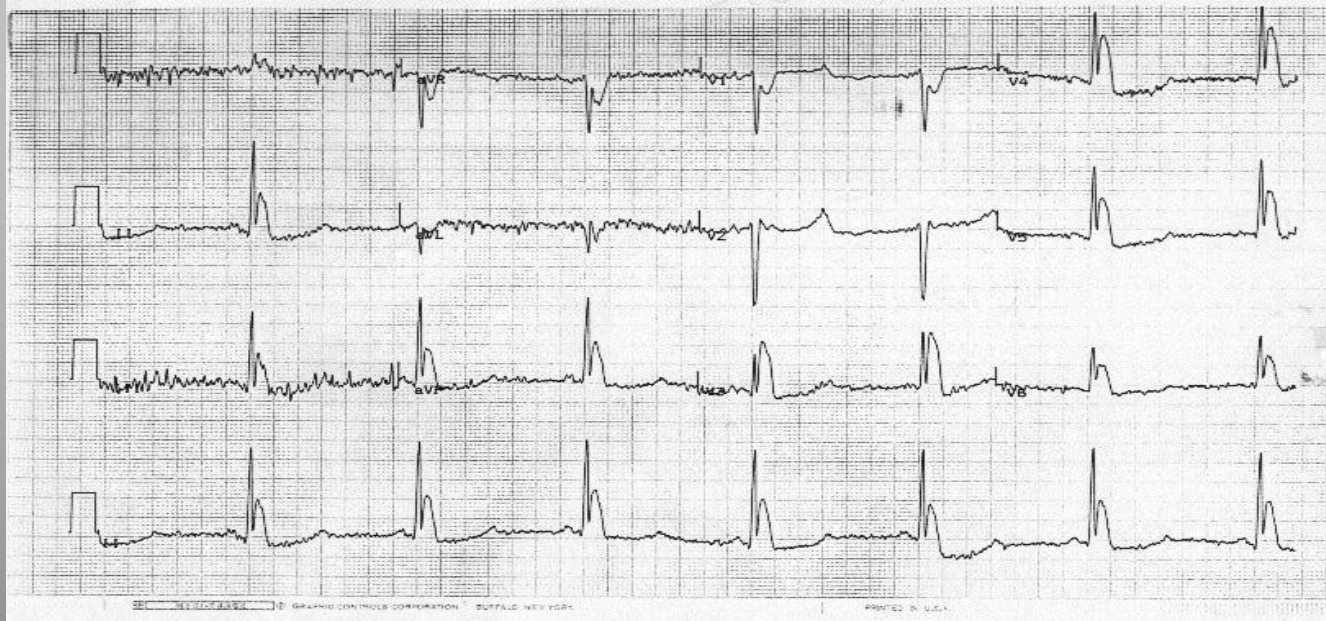
- ▣ STEMI?
- ▣ INTERPRETATION: PACED

EKG-9

- ▣ Ventricular paced.
- ▣ Complexes are paced from the ventricle and wires are placed in the lower ventricle.
- ▣ Complexes are wide because of the distance from the av node.



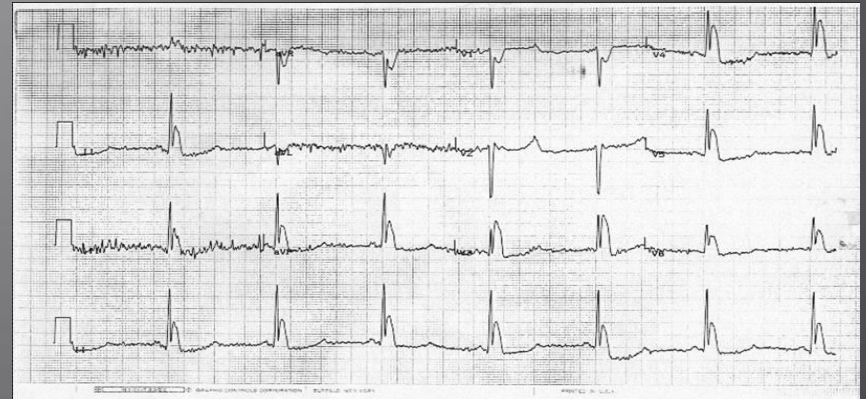
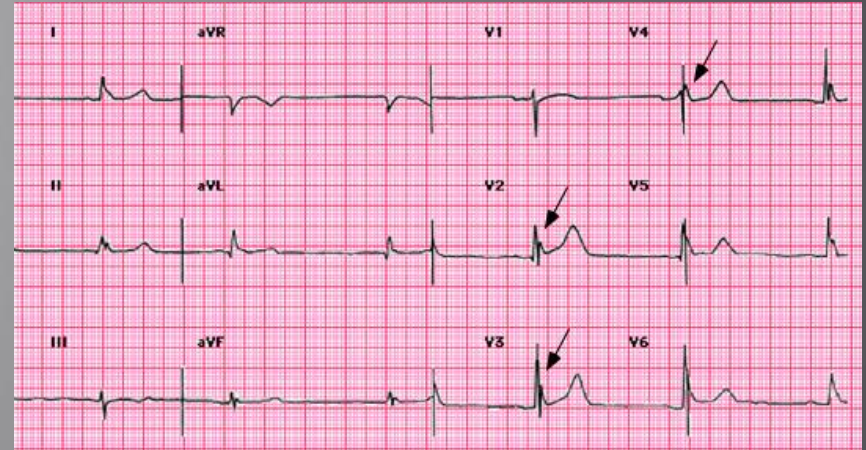
EKG-10



- ▣ STEMI?
- ▣ INTERPRETATION: OSBORNE WAVES

EKG-10

- ▣ Osborne or J waves create the appearance of ST elevation.
- ▣ They are indicative of HYPOTHERMIA.
- ▣ Move these patients with caution since they can go into V-Tach.



EKG-11



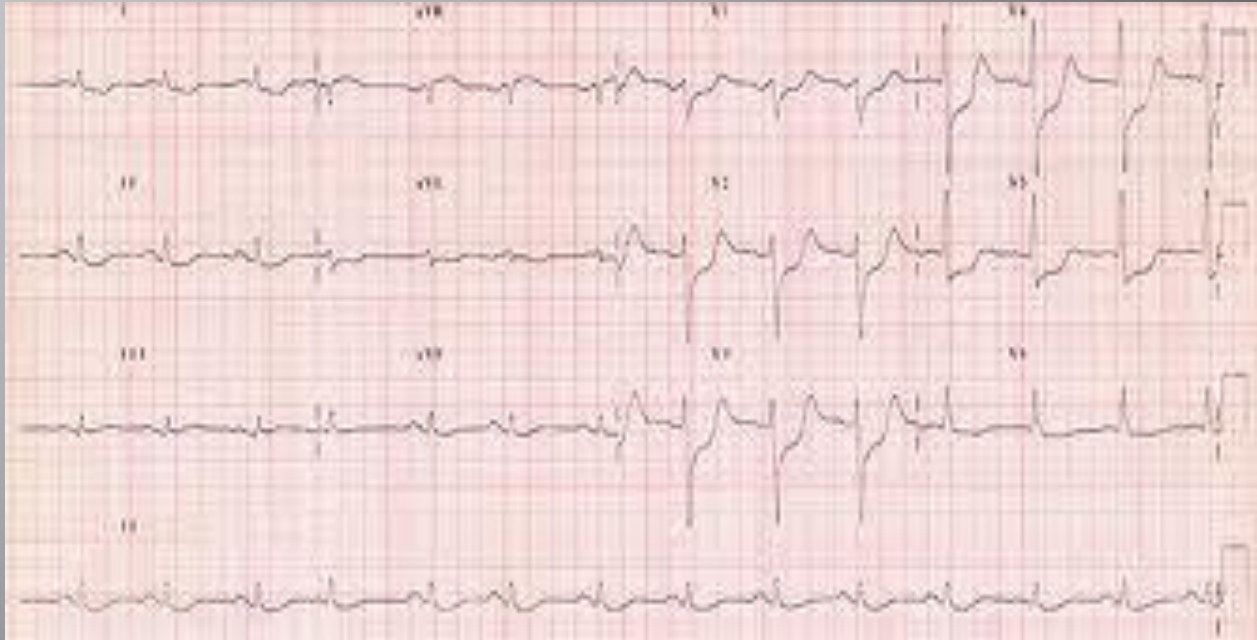
- ▣ STEMI?
- ▣ INTERPRETATION: HYPERKALEMIA

EKG-11

- ▣ Peaked t waves have a “church steeple” appearance.
- ▣ Large t waves should not be mistaken for the peaked wave.
- ▣ Always keep in mind when this could occur; renal failure, dka.



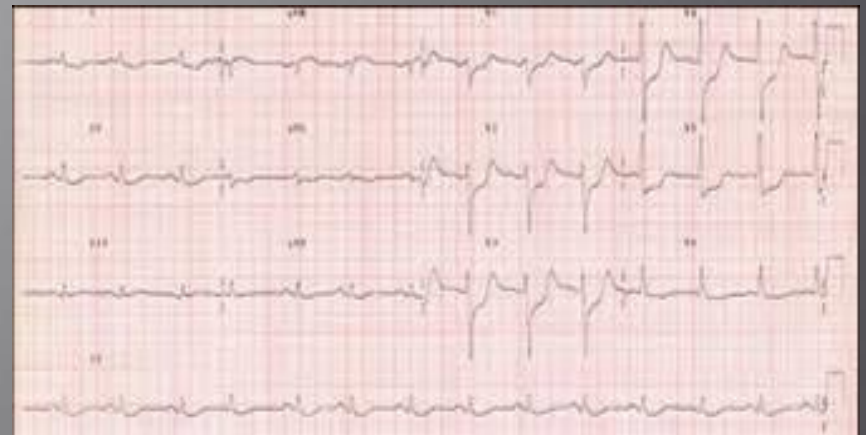
EKG-12



- ▣ STEMI?
- ▣ INTERPRETATION: POSTERIOR

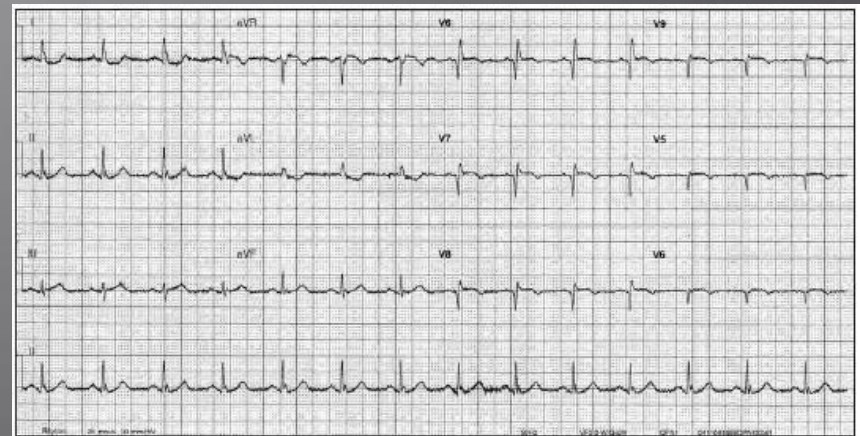
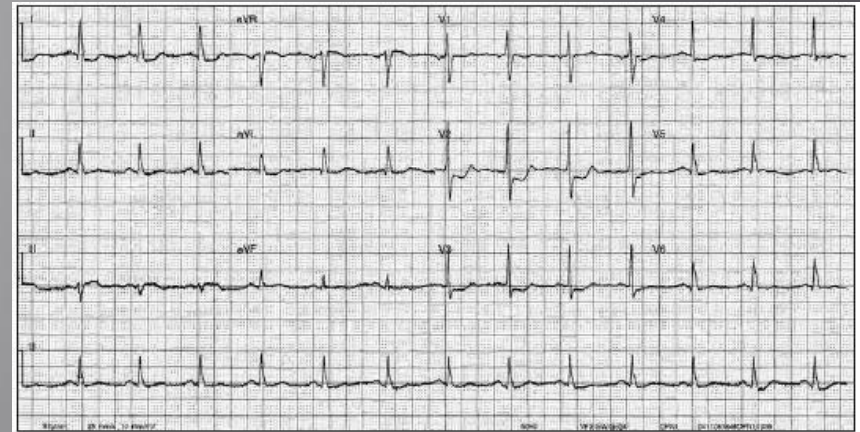
EKG-12

- Anterior leads reflect a “mirror image” mi with “r” deflection the “q” wave and the st depression actually st elevation.

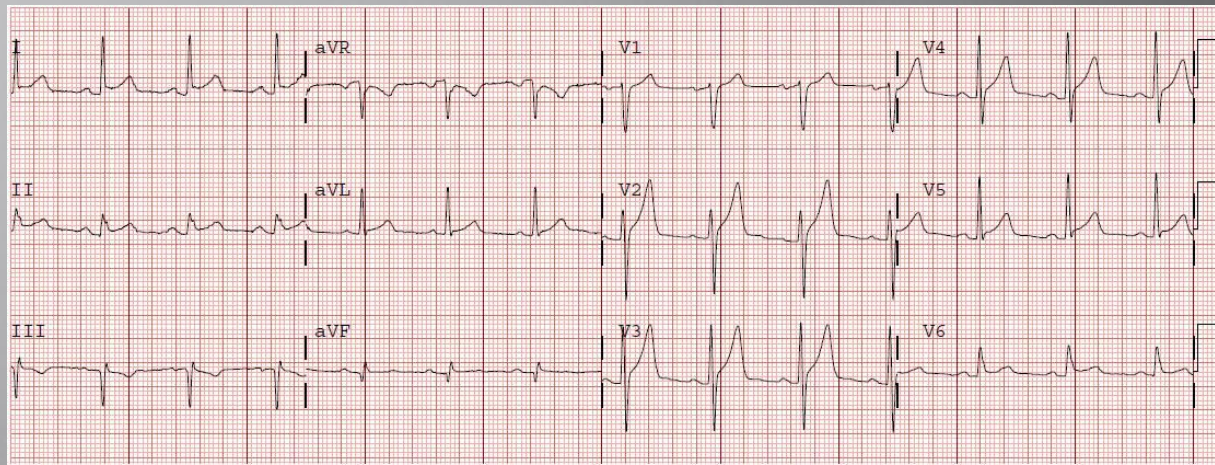


EKG-12

- In the first ekg, the anterior leads show a posterior myocardial infarction with “mirror image” changes.
- The second ekg shows the st elevation when the leads are extend around the back; V7-



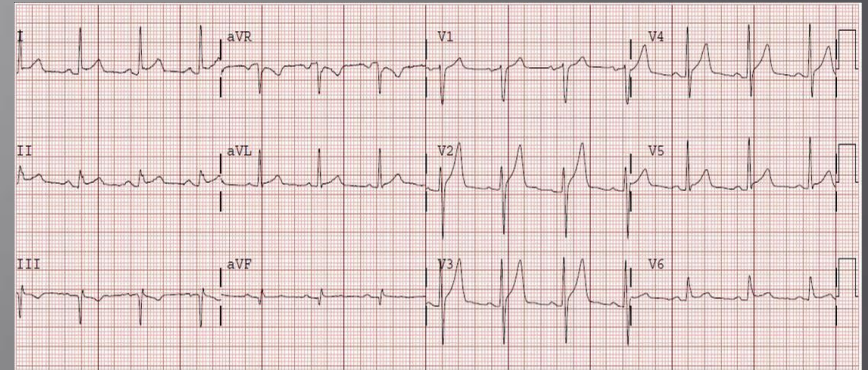
EKG-13



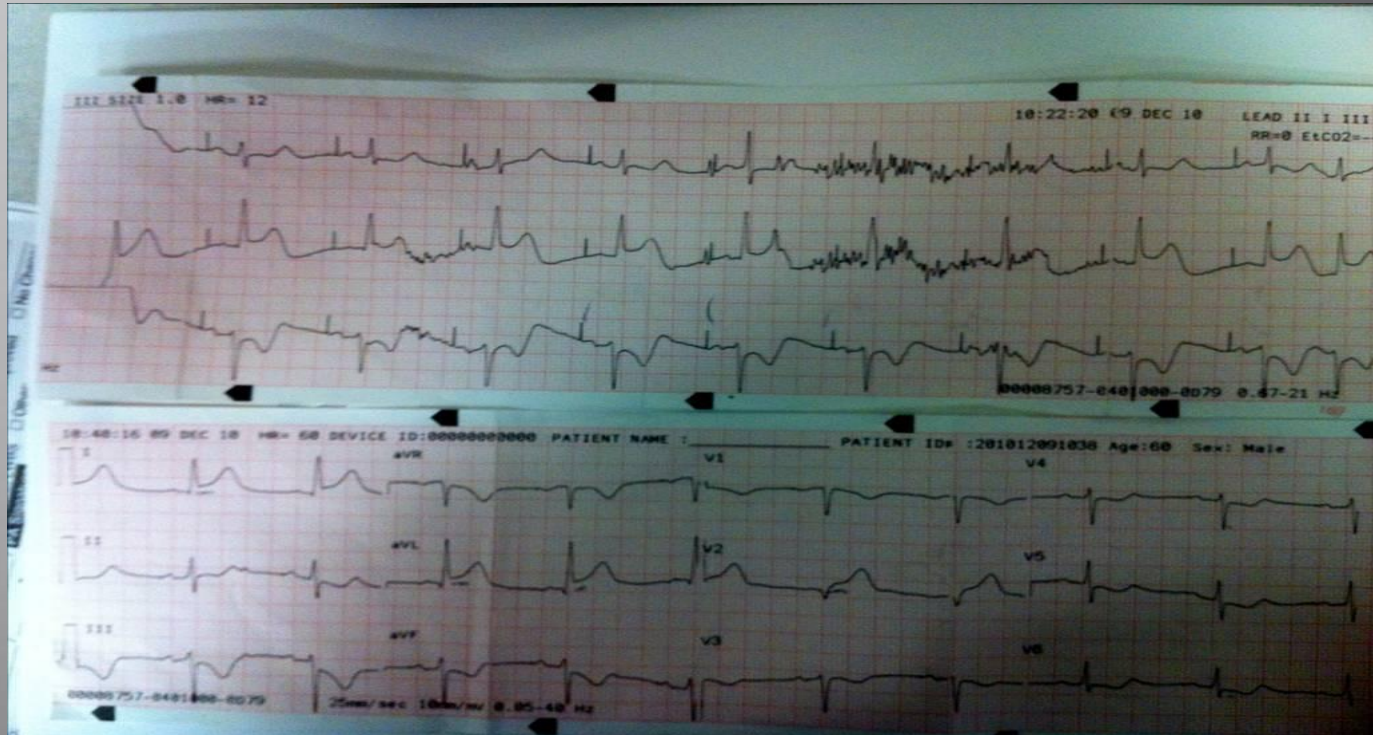
- ▣ STEMI?
- ▣ INTERPRETATION: REPOLARIZATION

EKG-13

- ▣ The J point is level or downward in repolarization.



EKG-14



- ▣ STEMI?
- ▣ INTERPRETATION:

EKG-14

- ▣ With an atrial pacemaker, the impulse is generated in the atria.
- ▣ The impulse passes through the av node and the morphology of the qrs complex is a natural complex.
- ▣ It can be interpreted for st elevation.

