

Emergency and Critical Care

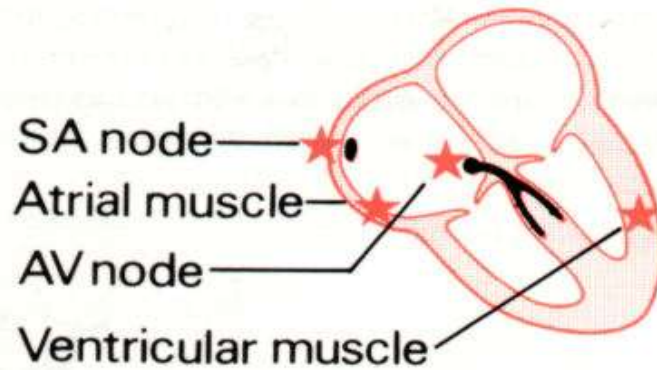


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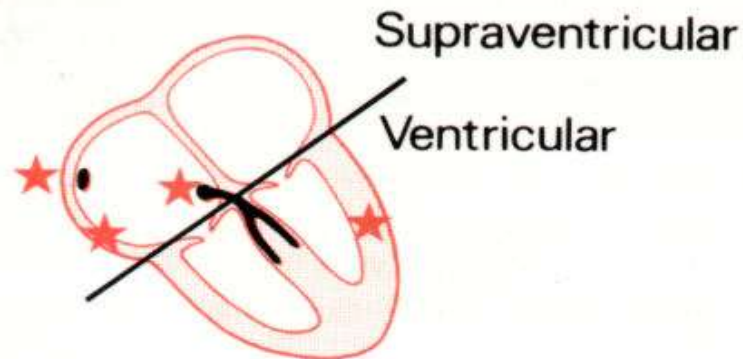
Basic ECG Interpretation
Christine L. Sommers

- Answer the following questions:
 - What is a P wave?
 - What is a QRS complex?
 - What is a QT interval?
 - What information does the T wave give us?
 - How is atrial fibrillation different from ventricular fibrillation?
 - How is sinus tachycardia different from ventricular tachycardia
 - What information does a 12 lead ECG give us?
- Using information from
 - Rhythm packet document
 - This Basic ECG Interpretation PowerPoint

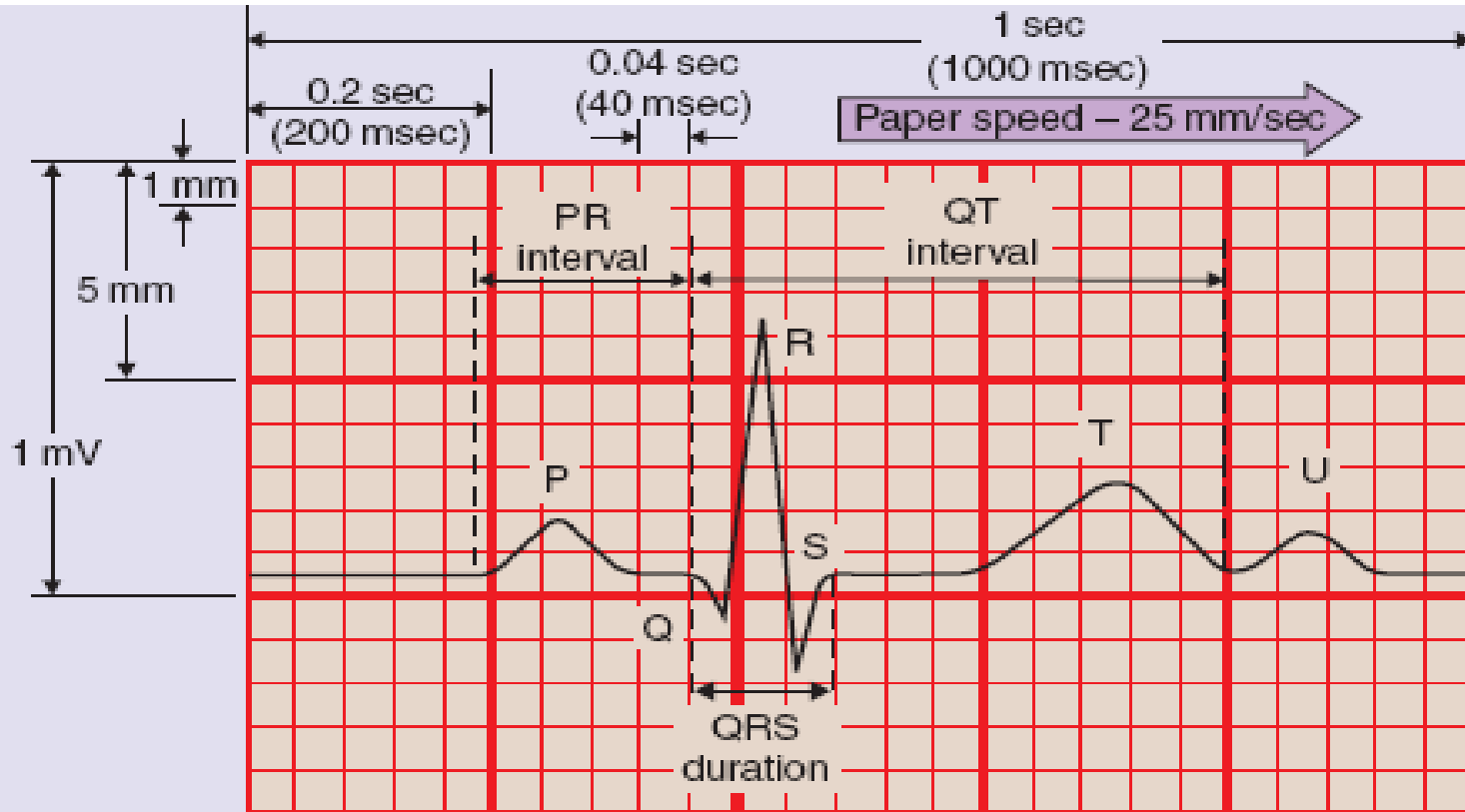
ECG Interpretation



Sinus rhythm, atrial rhythms, and junctional rhythms together constitute the 'supraventricular' rhythms.



Components of ECG



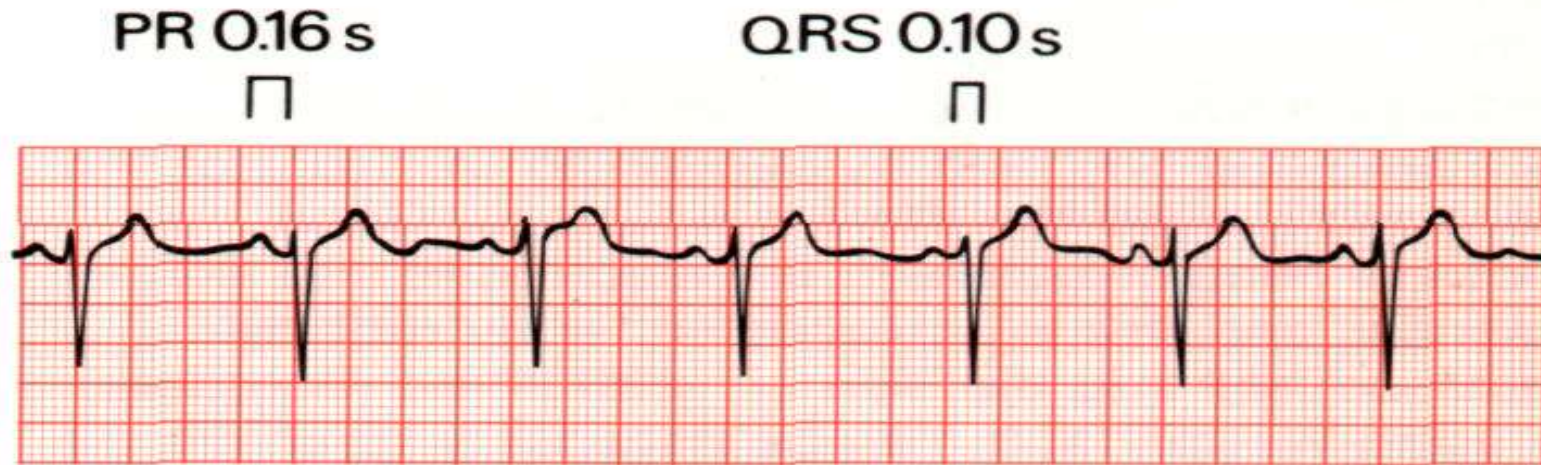
Vertical axis	1 small square = 1 mm (0.1 mV)
	1 large square = 5 mm (0.5 mV)
	2 large squares = 1 mV

Horizontal axis	1 small square = 0.04 sec (40 msec)
	1 large square = 0.2 sec (200 msec)
	5 large squares = 1 sec (1000 msec)

Figure 4.2

Components of the electrocardiogram. Copyright © 2000, General Electric.

Components of ECG



The duration of the QRS complex shows how long excitation takes to spread through the ventricles. The QRS duration is normally 0.12 s (three small squares)

12 lead

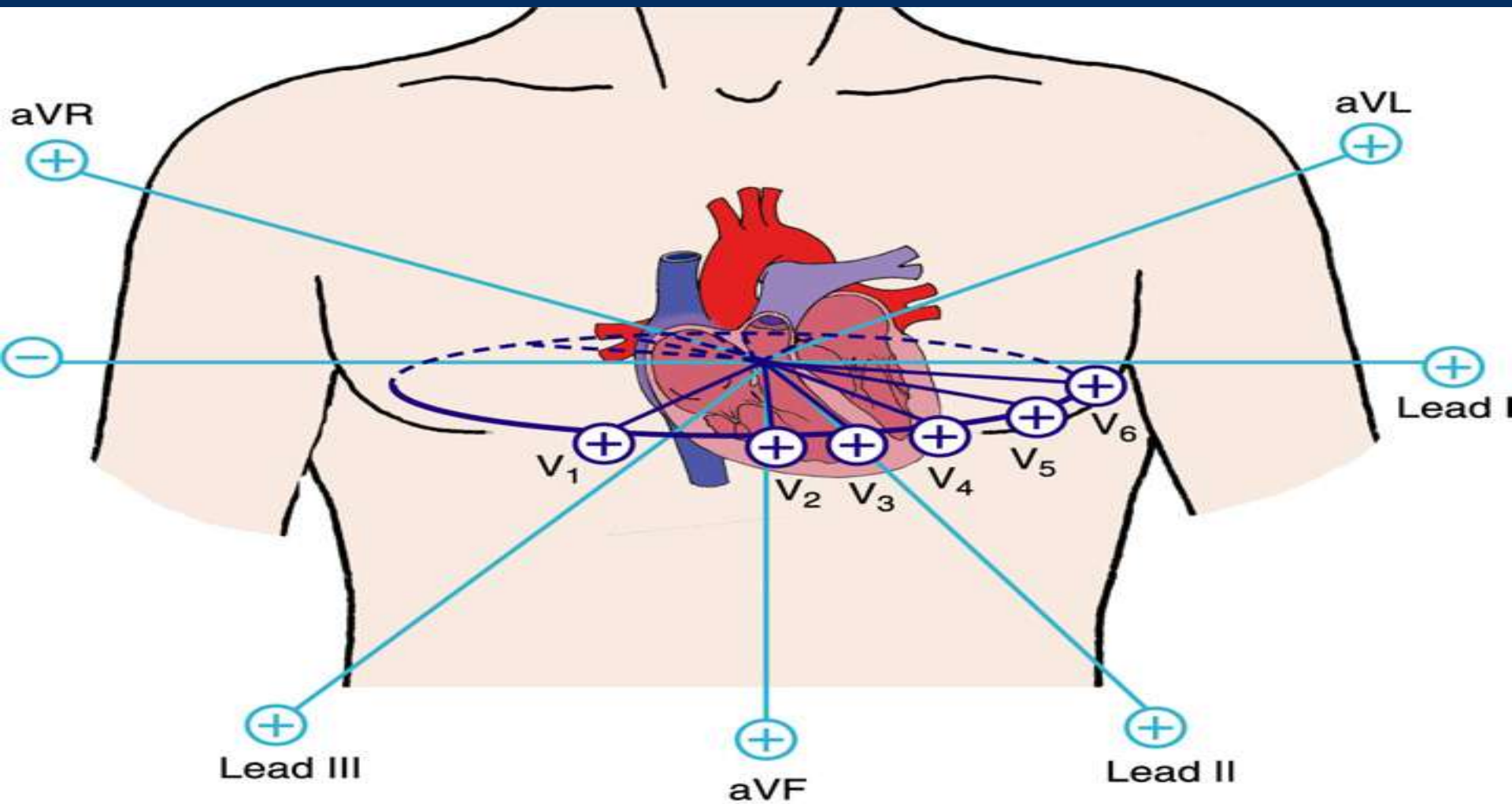
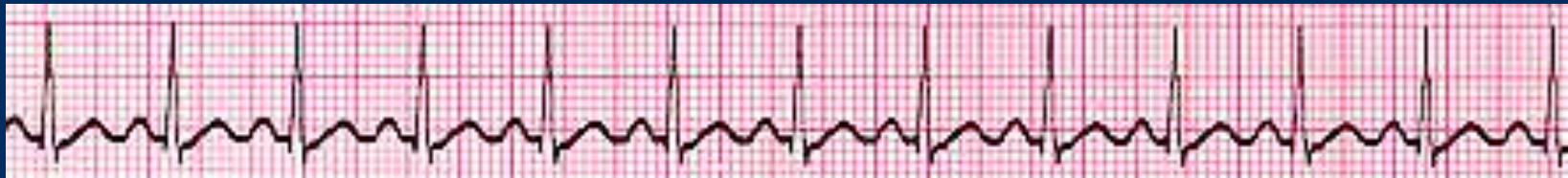
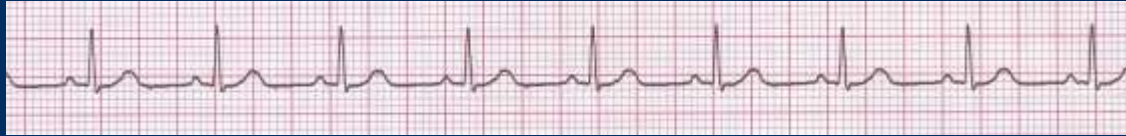


Figure 17-42 Electrocardiographic views of the heart.

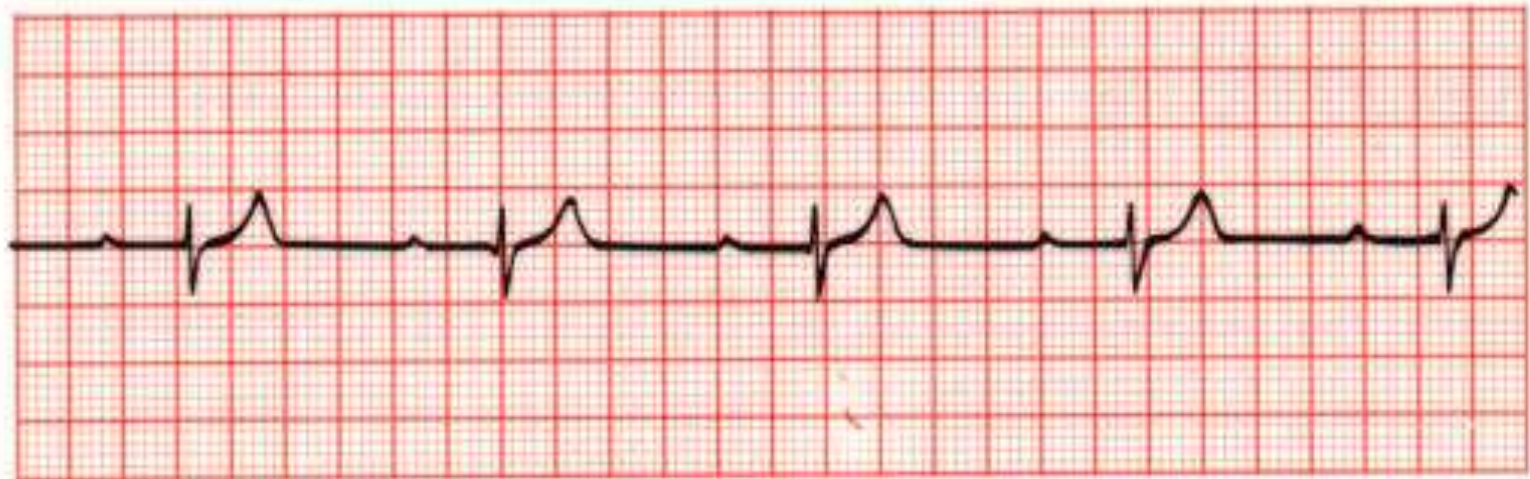
1. Rate
2. Rhythm
3. P waves
4. PR interval
5. QRS complex
6. QRS complex V1
7. ST segments
8. T wave
9. QTc

Sinus Rhythms



FIRST DEGREE BLOCK

PR 0.36 s



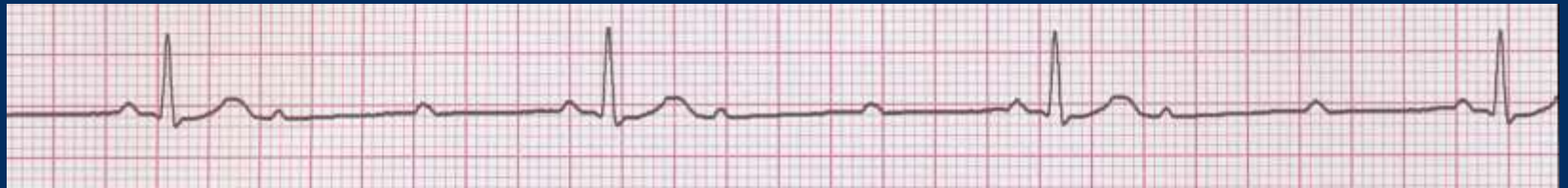
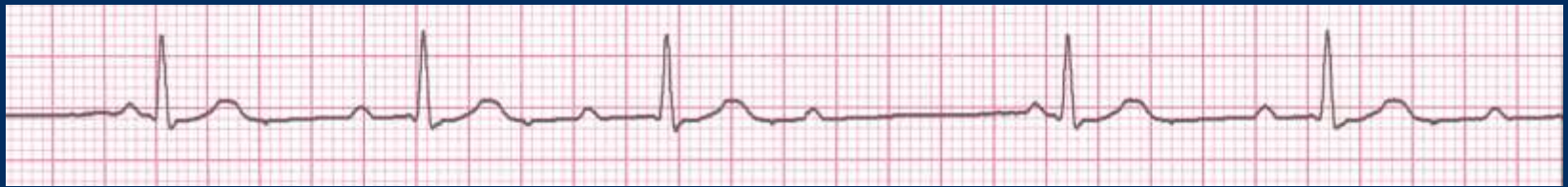
Note: One P wave per QRS complex.
PR interval 0.36s.

SECOND DEGREE BLOCK

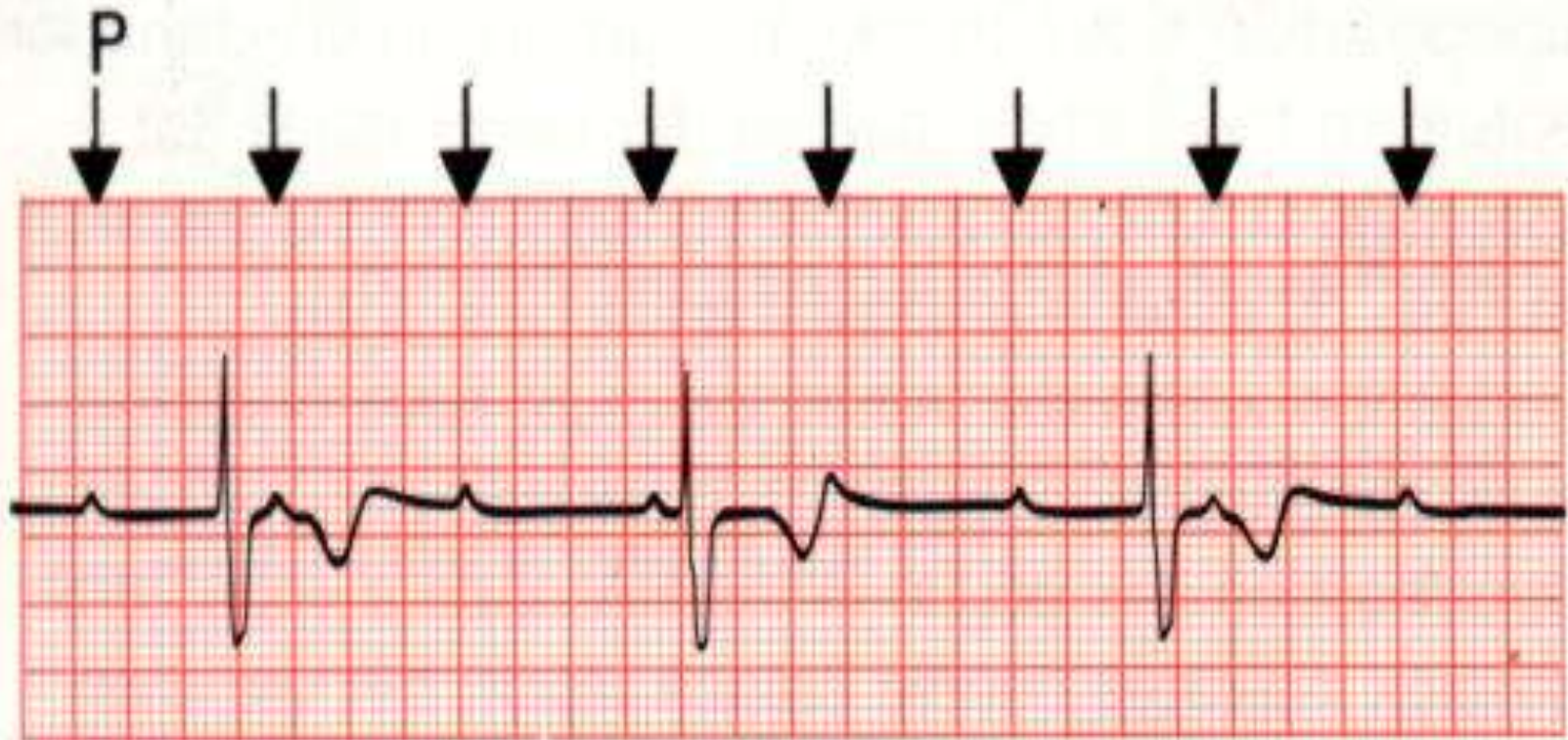


(Wenckebach type)

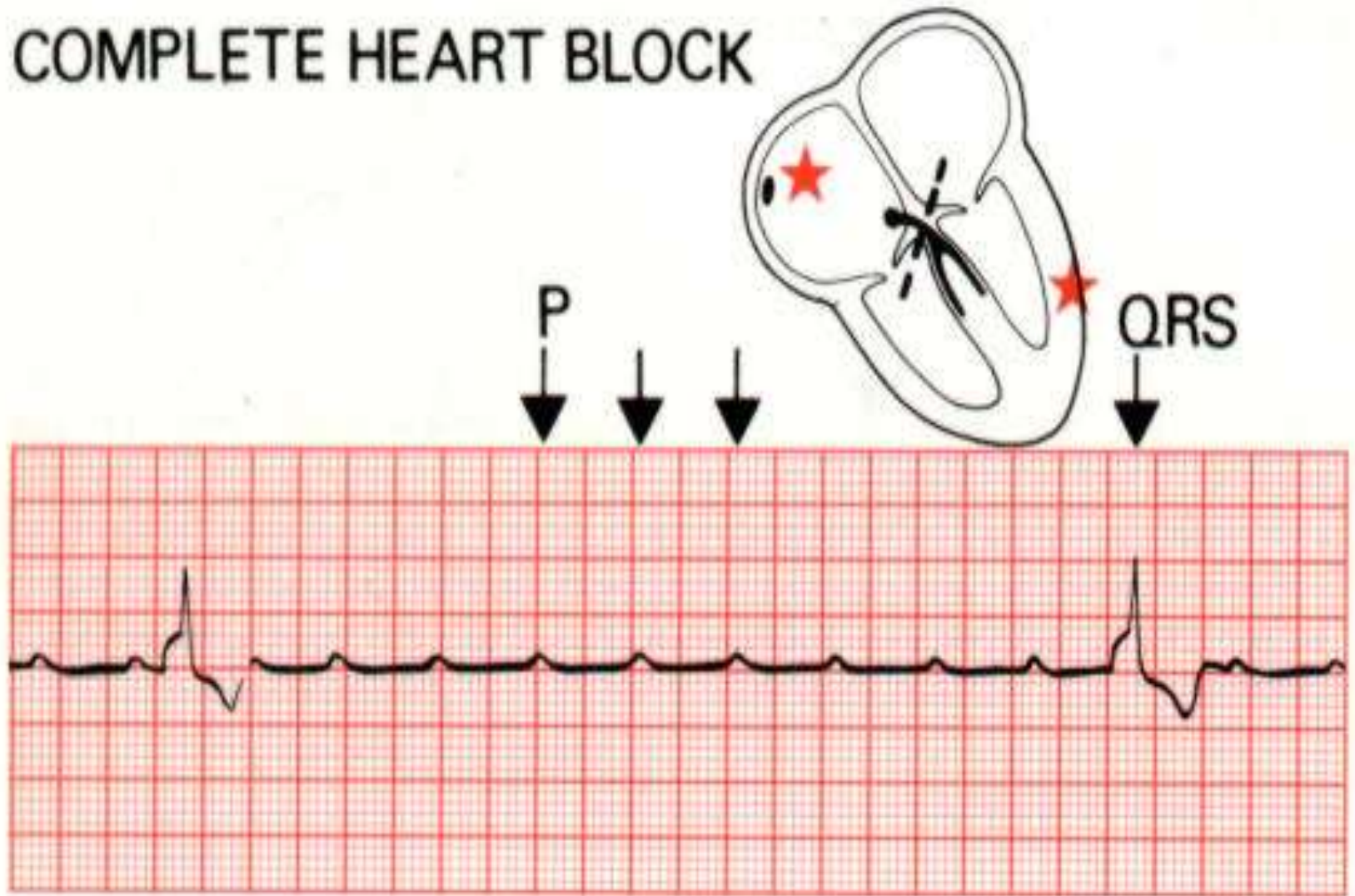
Second Degree Block



THIRD DEGREE (COMPLETE) BLOCK

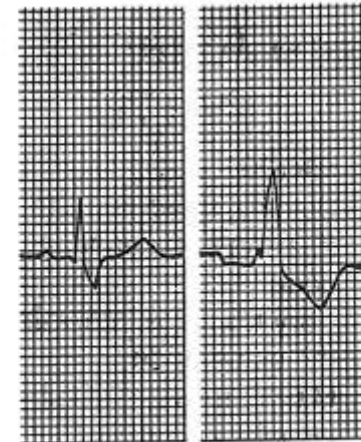


COMPLETE HEART BLOCK



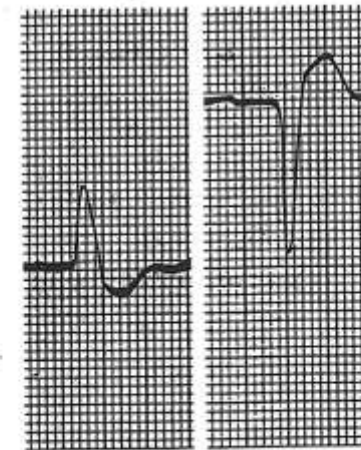
Bundle Branch Block

- Right:
 - V_1 : rS·R'
 - V_6 : qRS
- Left:
 - V_1 : rS or QS
 - V_6 , AVL, I: slurred--notched·R· wave



Lead I

Lead I



Lead V_1

RBBB

Lead V_1

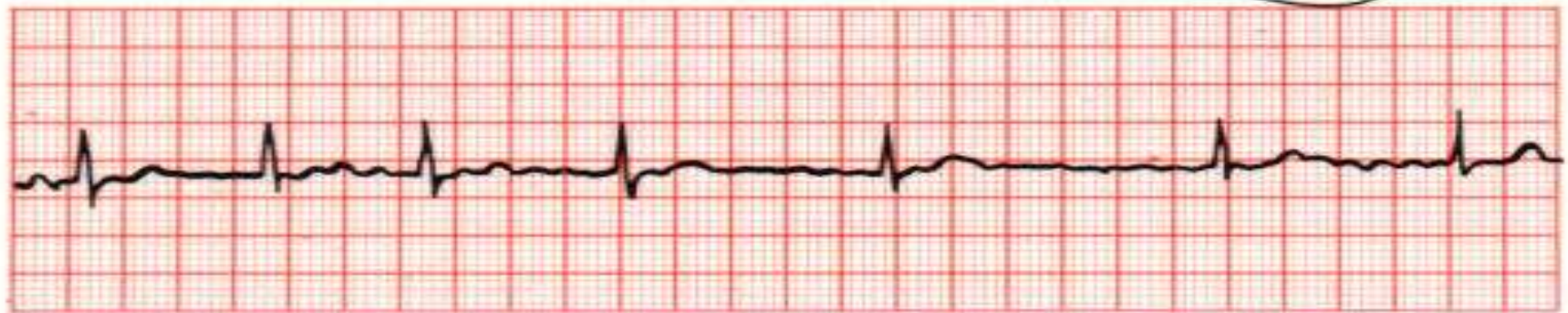
LBBB

FIGURE 8-34
Bundle branch block.

ATRIAL FLUTTER (4:1)



ATRIAL FIBRILLATION

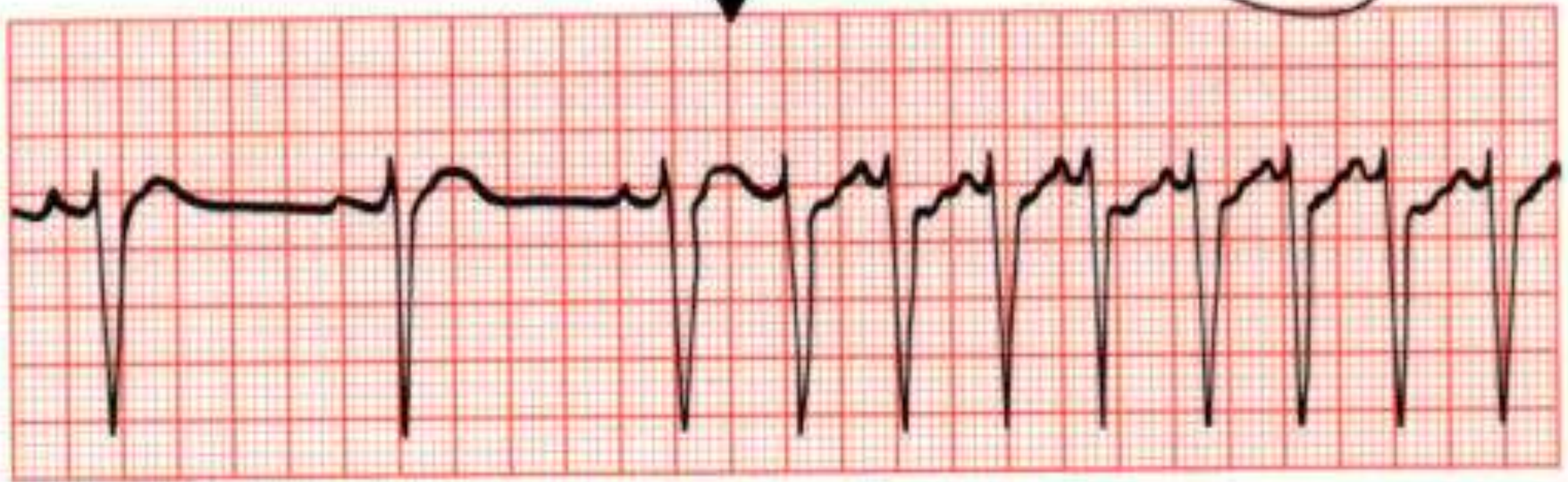


Lead II

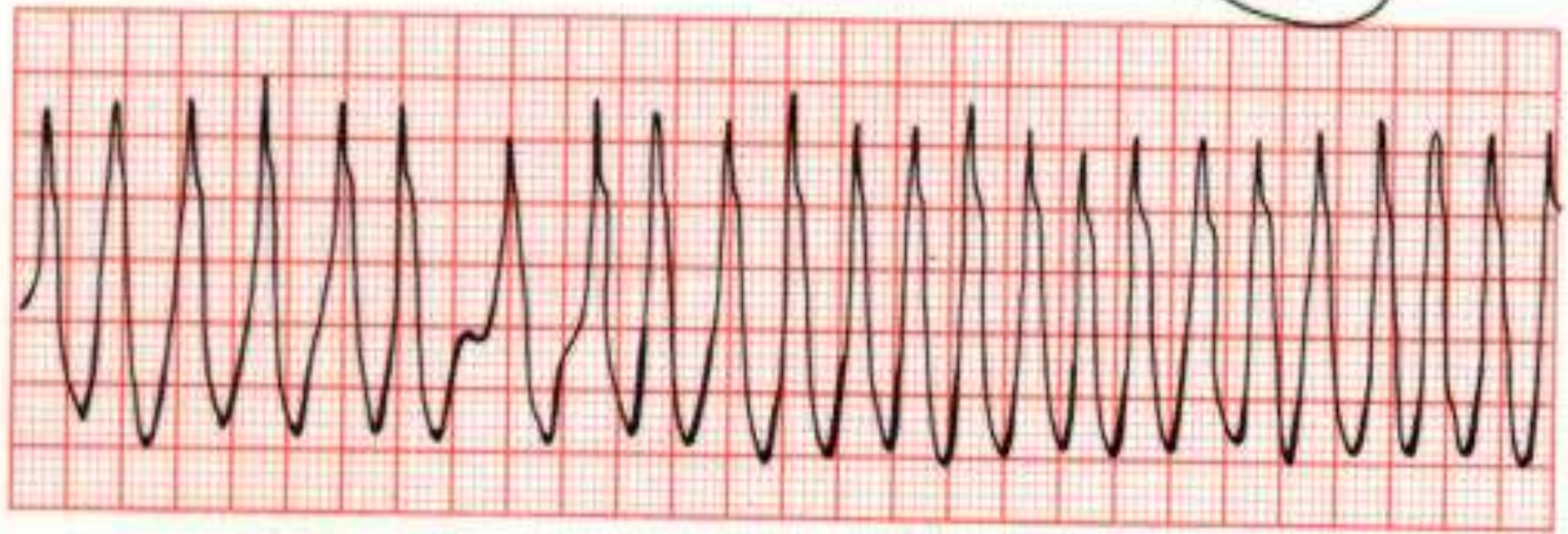


Lead V₁

ATRIAL TACHYCARDIA



VENTRICULAR TACHYCARDIA



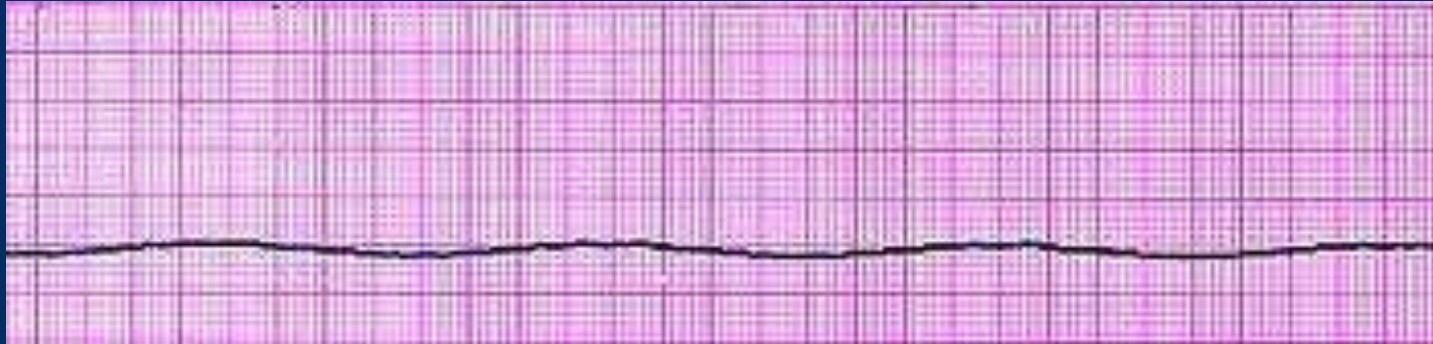
Torsades des Pointes



VENTRICULAR FIBRILLATION



Asystole



- What is it?
- How is it treated?

12 Lead ECG

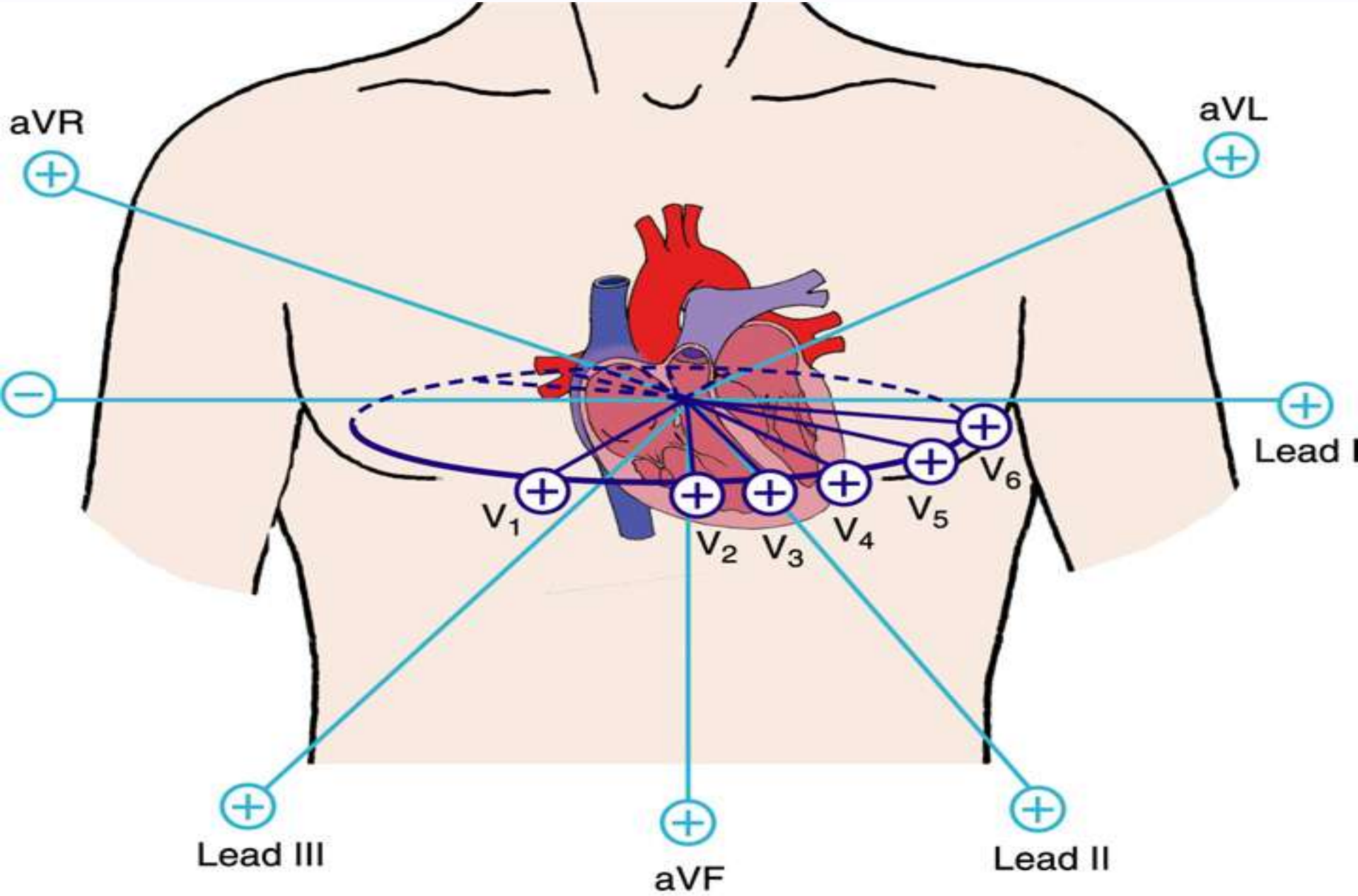
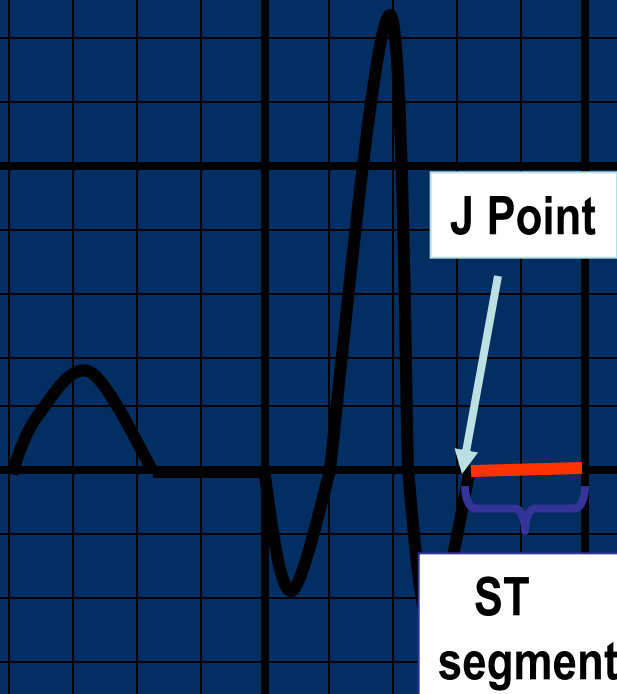


Figure 17-42 Electrocardiographic views of the heart.



ST segment represents the end of ventricular conduction or depolarization and the beginning of ventricular recovery or repolarization. The point that marks the end of the QRS complex and the beginning of the ST segment is called the “J Point.”

A normal ST segment has these characteristics:

Location: extends from the S wave to the beginning of the T wave.

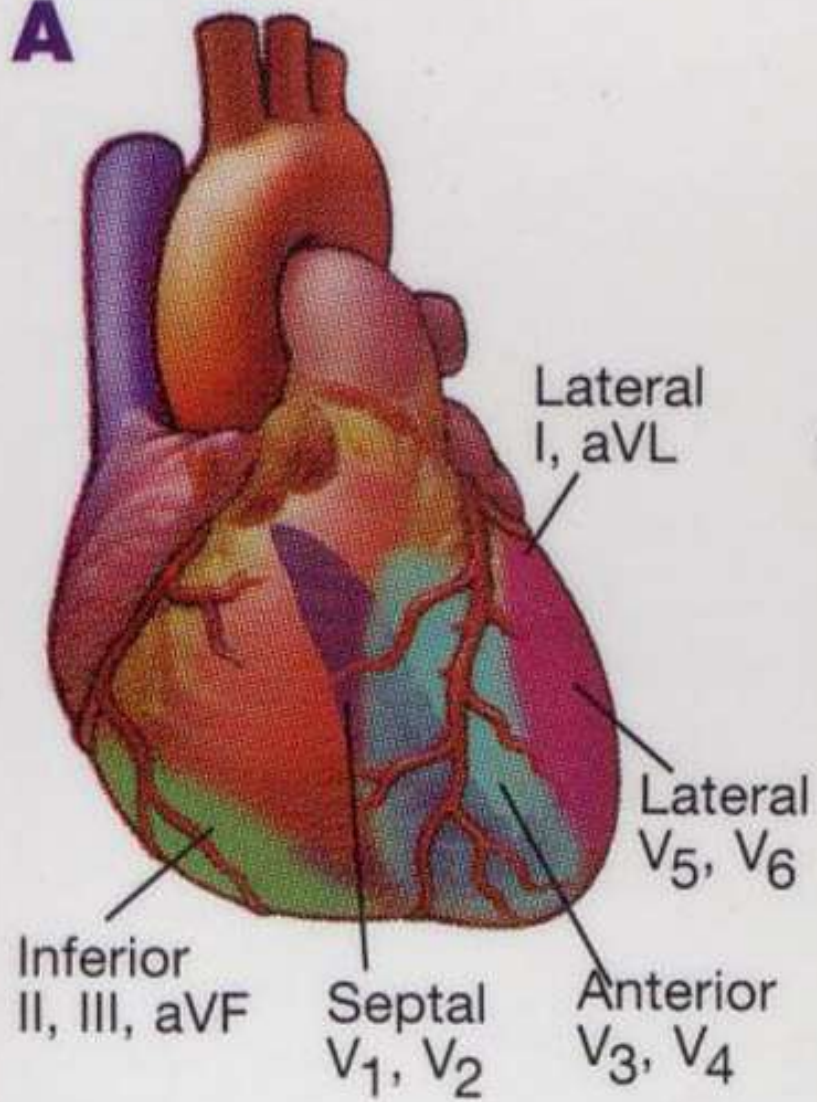
Deflection: usually isoelectric_

ST Changes in

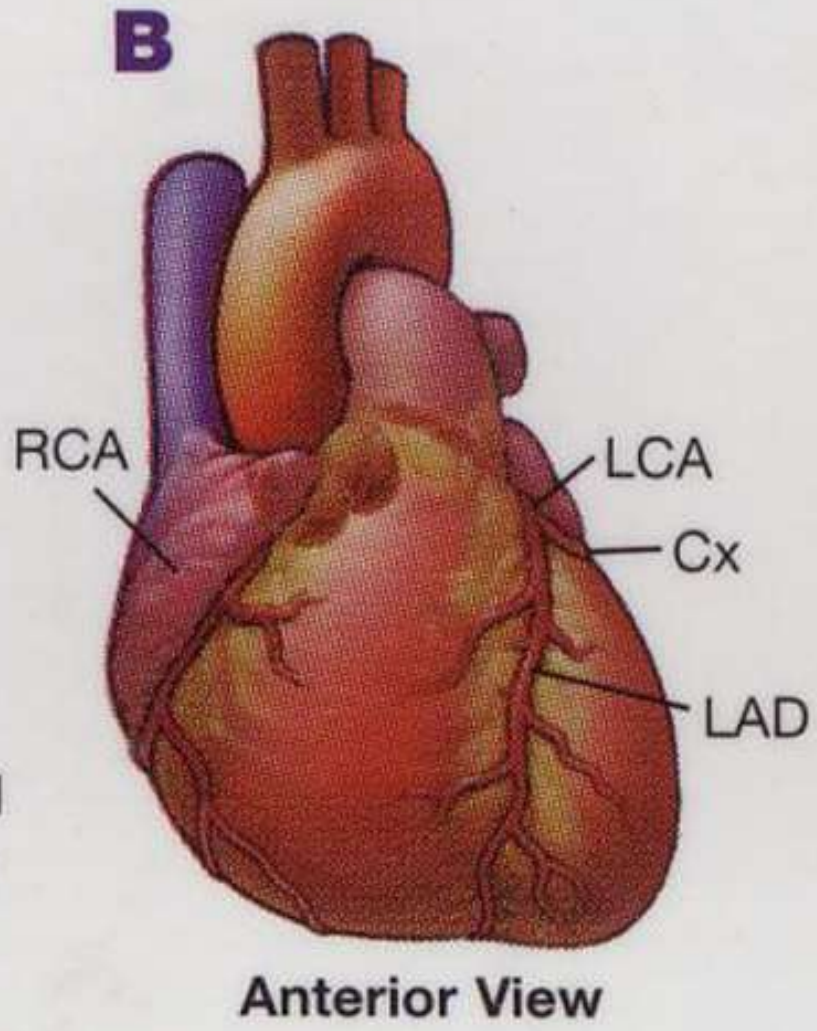
Grouped leads on a 12-Lead ECG

- ***Impaired Circulation: ischemia, injury or infarction?***
- ***Ischemia:*** ST depression and T-wave inversion
- ***Injury:*** ST elevation
- ***Infarction:*** ST elevation
- ***Q-wave:*** Indicates a previous infarction

A



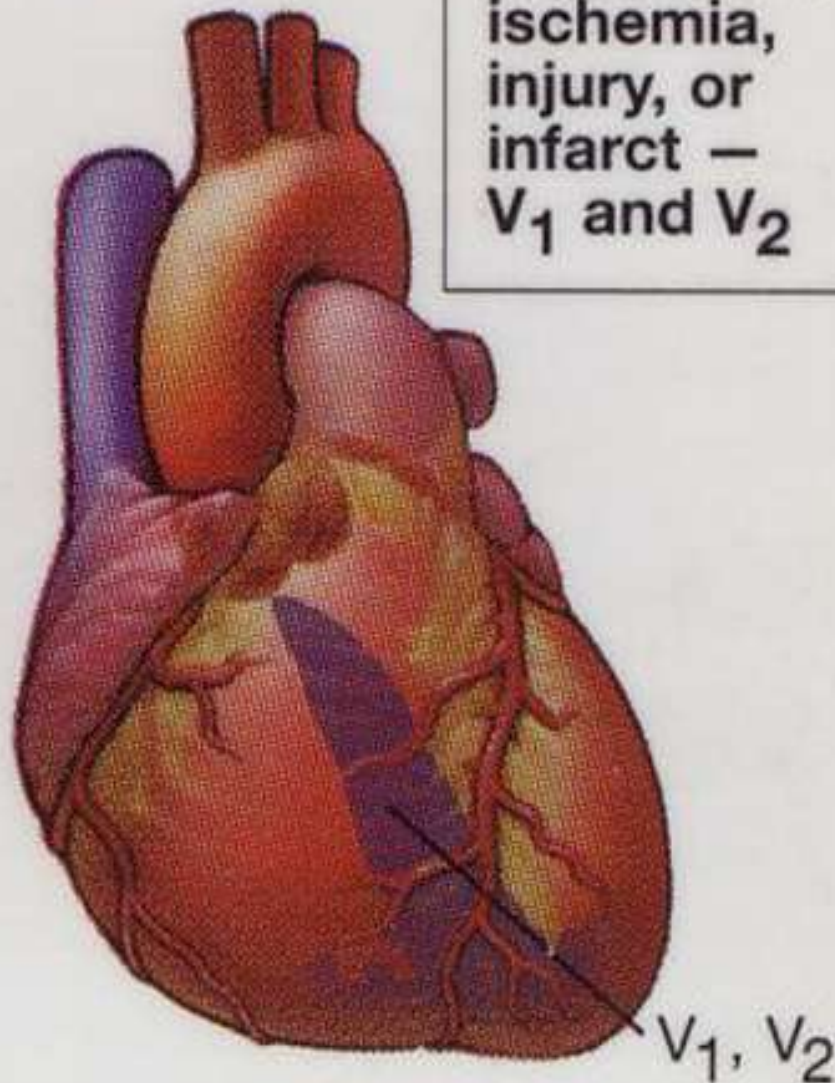
B



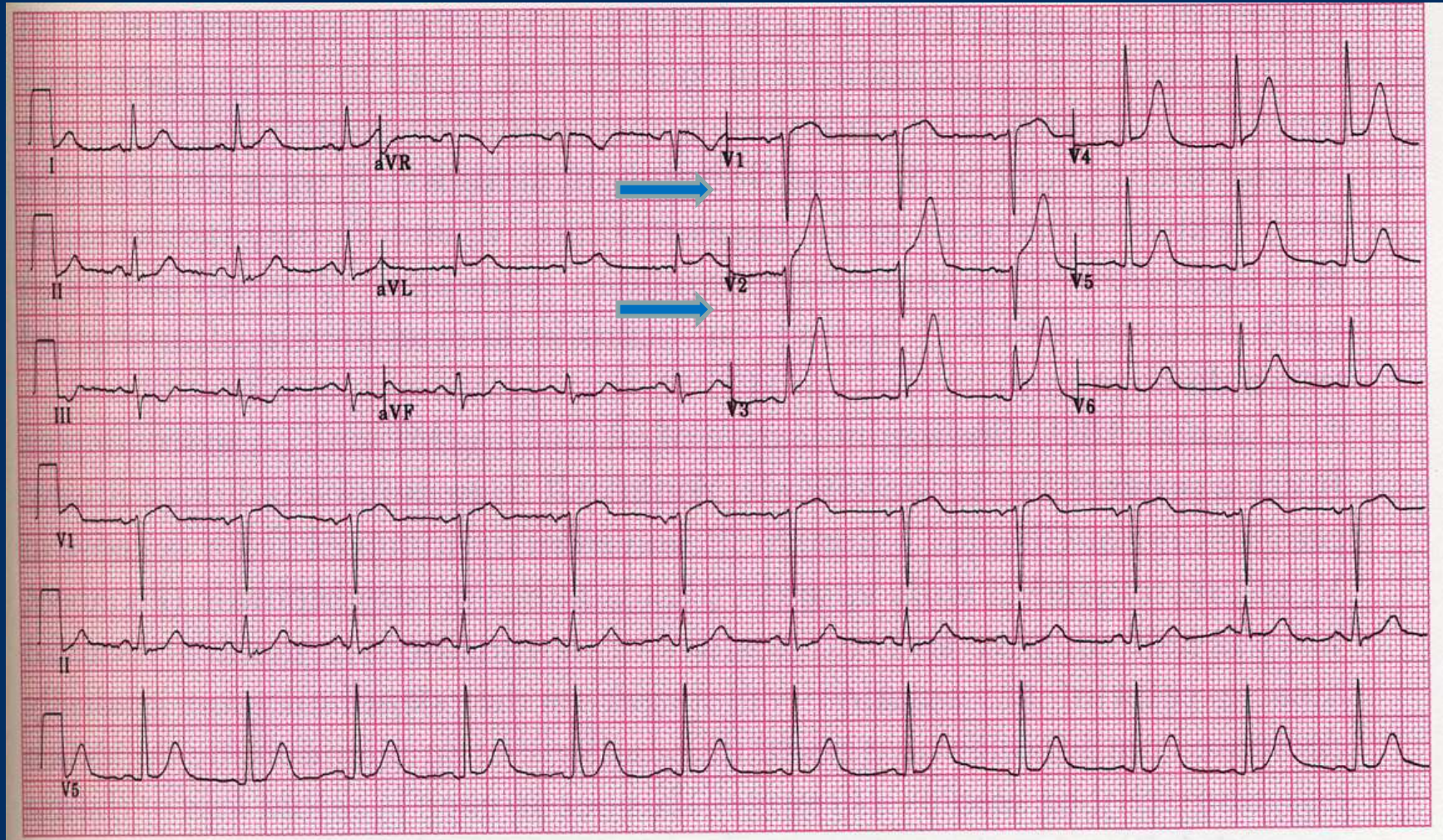


C

Septal wall
ischemia,
injury, or
infarct —
V₁ and V₂

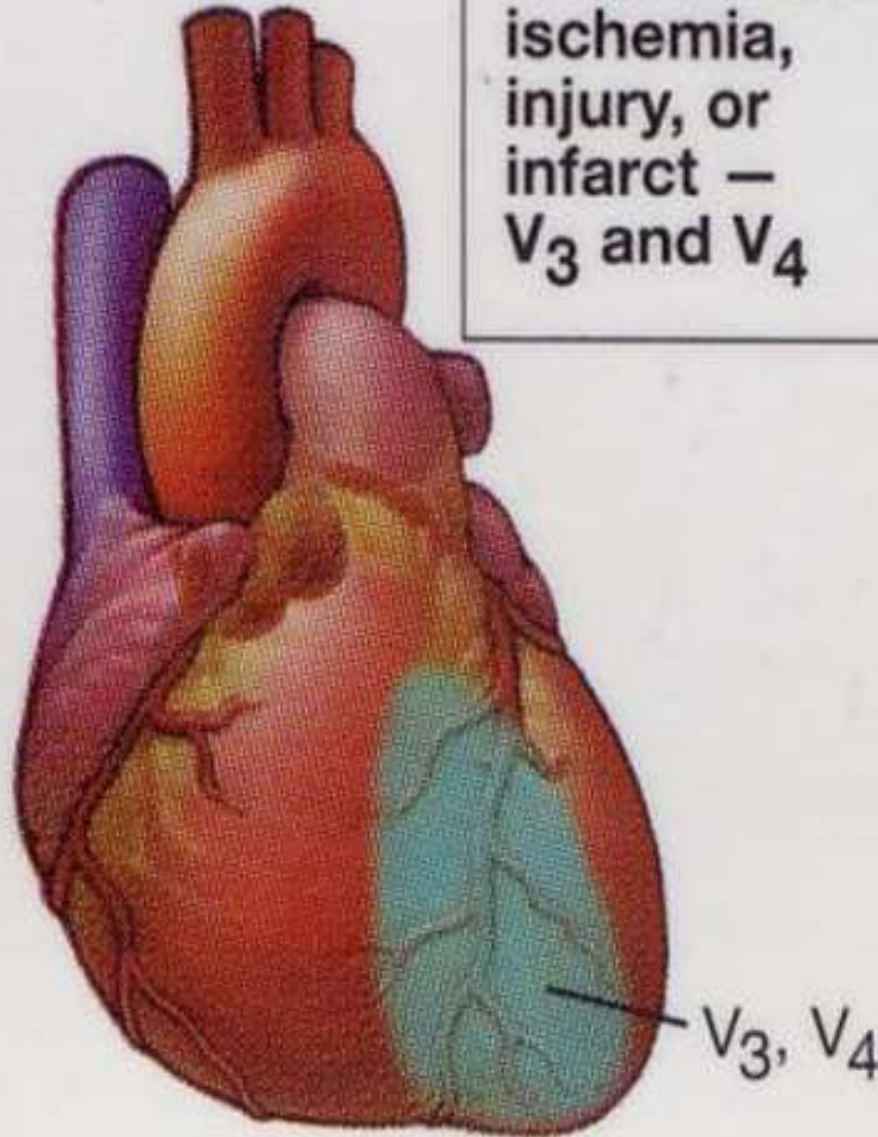


ST Elevation in Septal Leads V1 & V2

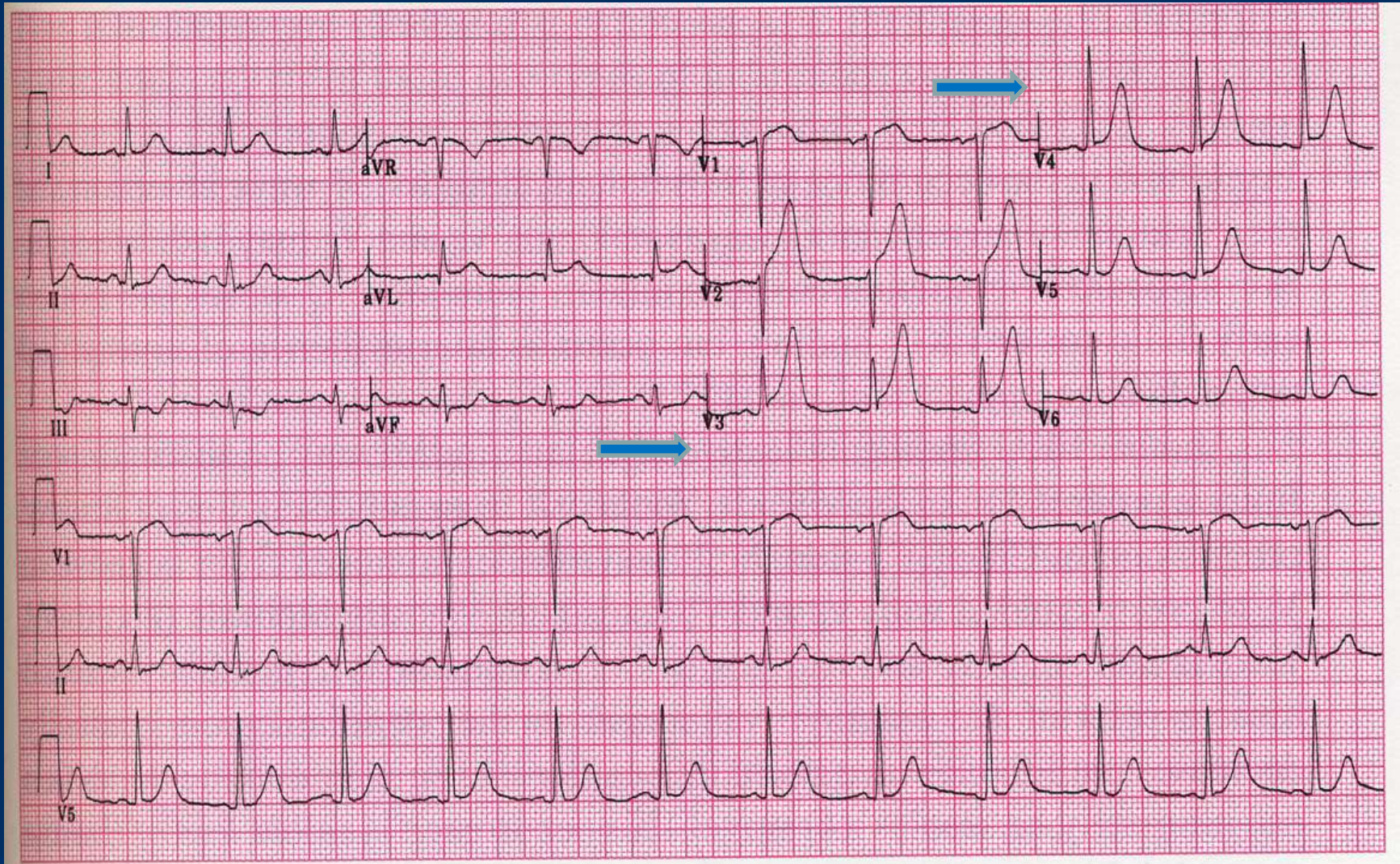


D

Anterior wall
ischemia,
injury, or
infarct –
V₃ and V₄

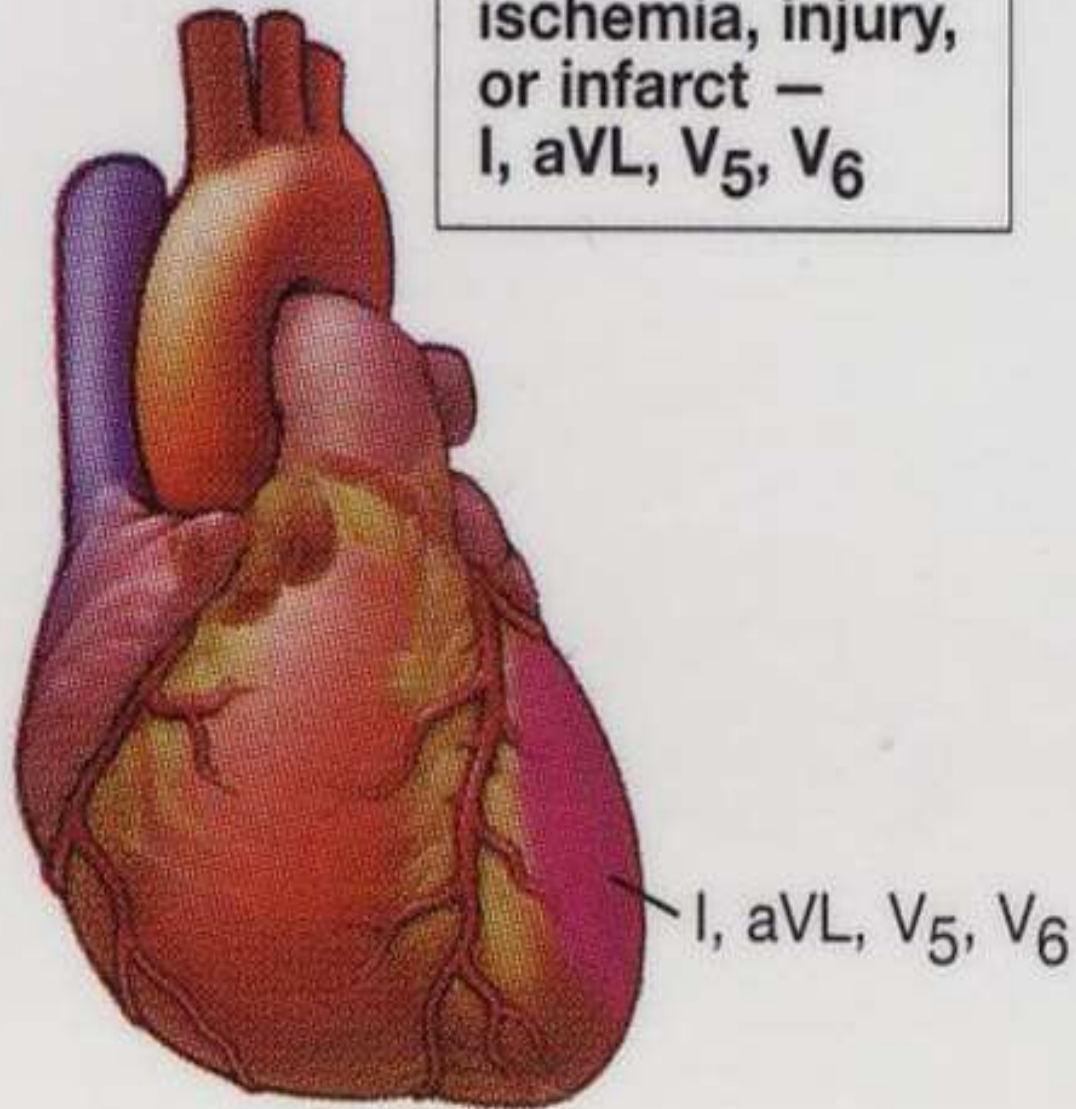


ST elevation in Anterior Leads V3 & V4



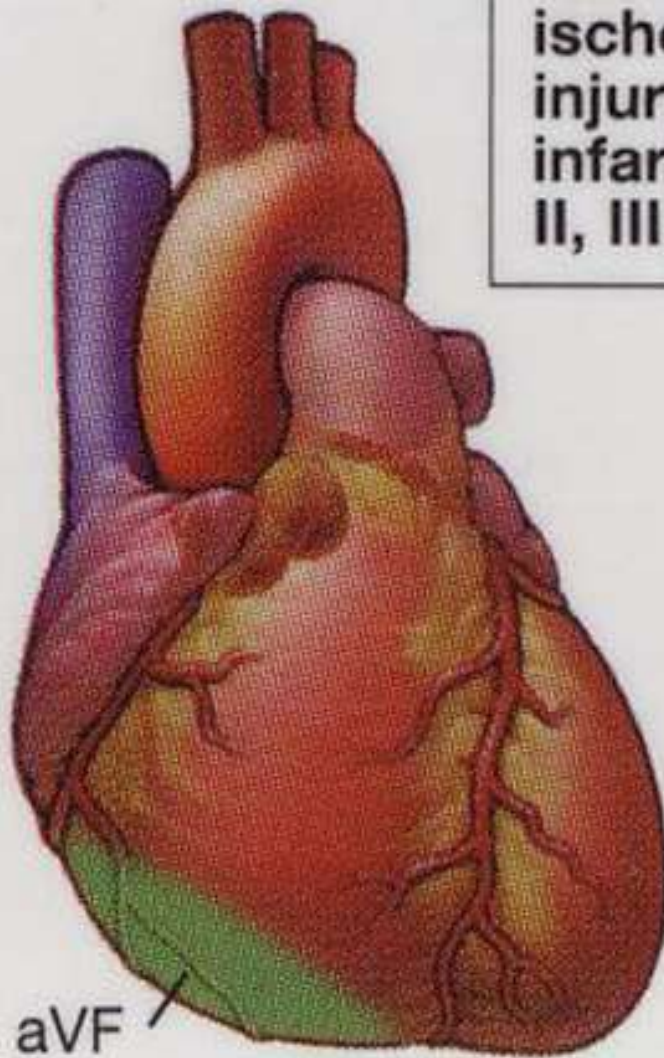
E

Lateral wall
ischemia, injury,
or infarct –
I, aVL, V₅, V₆



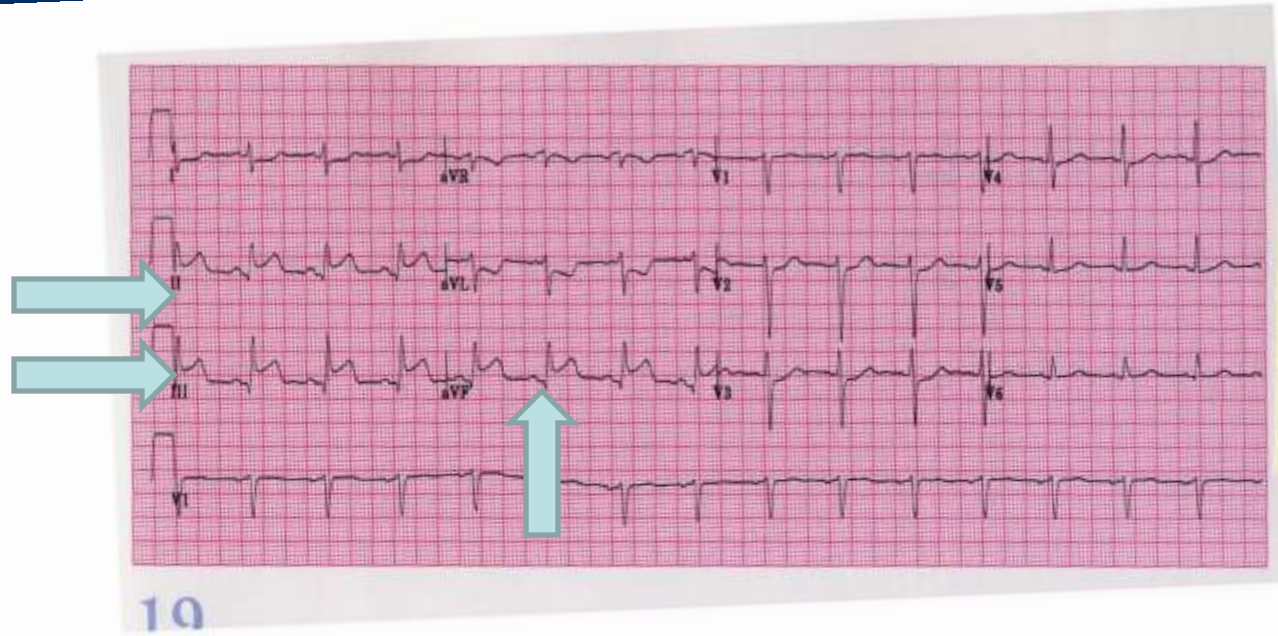
F

Inferior wall
ischemia,
injury, or
infarct —
II, III, aVF



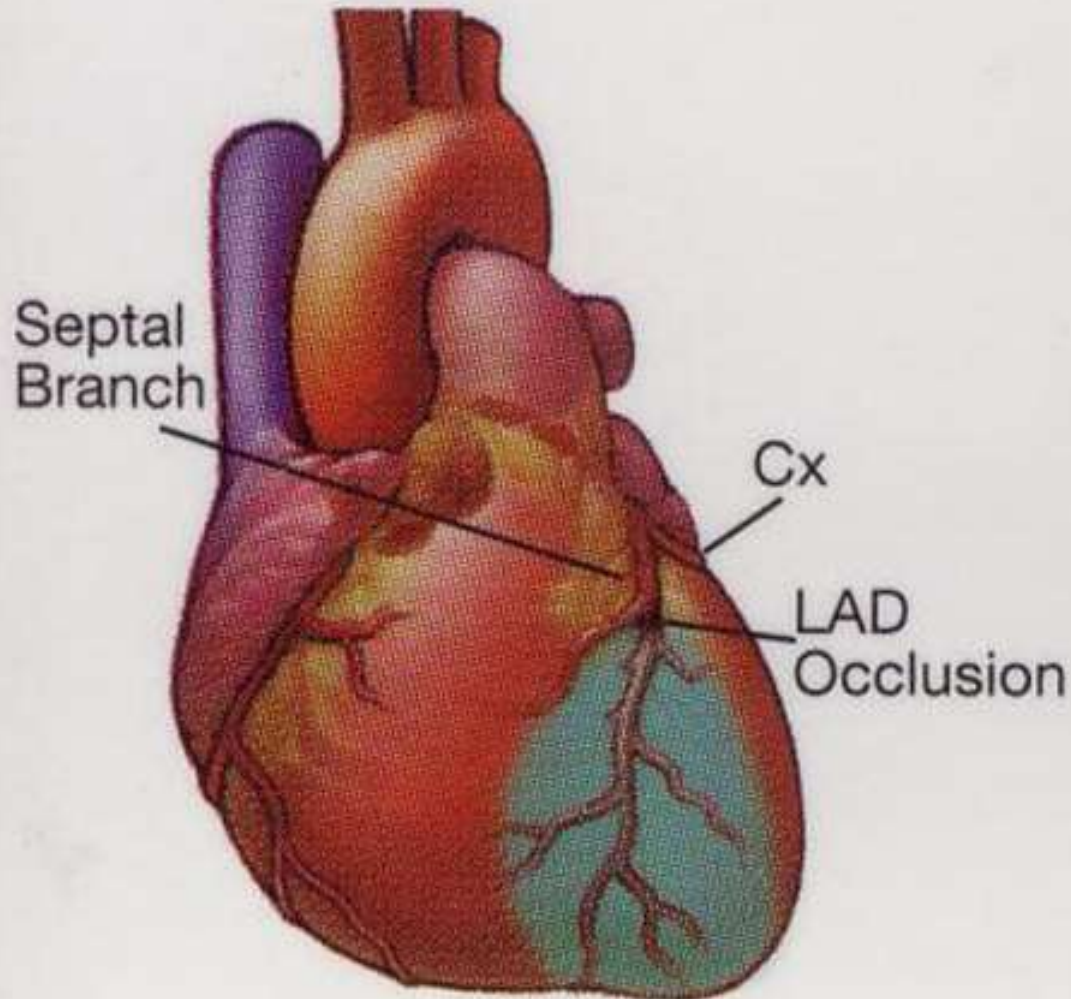
II, III, aVF

ST elevation in Inferior Leads II, III & aVF



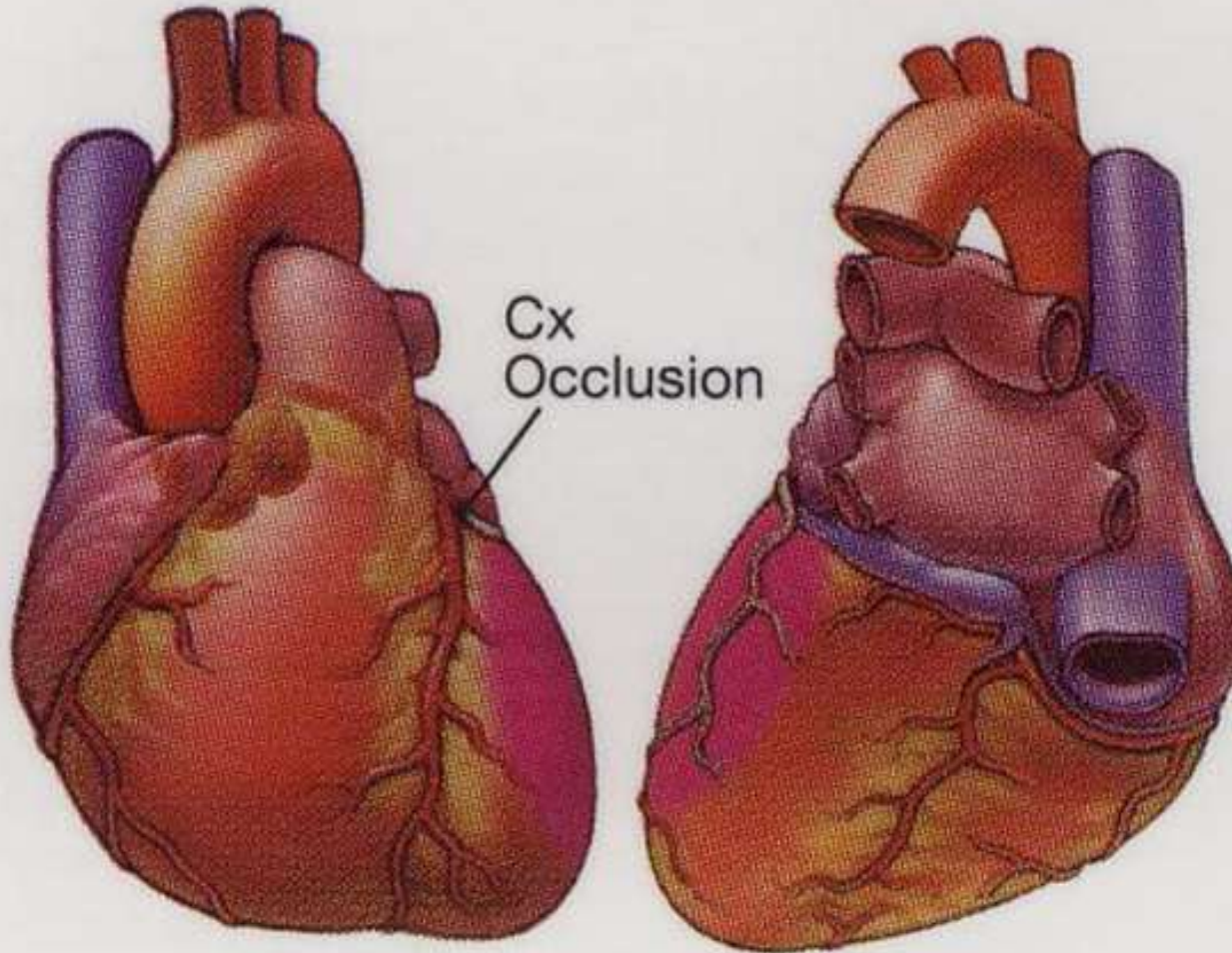
G

LAD occlusion –
V₁ through V₆



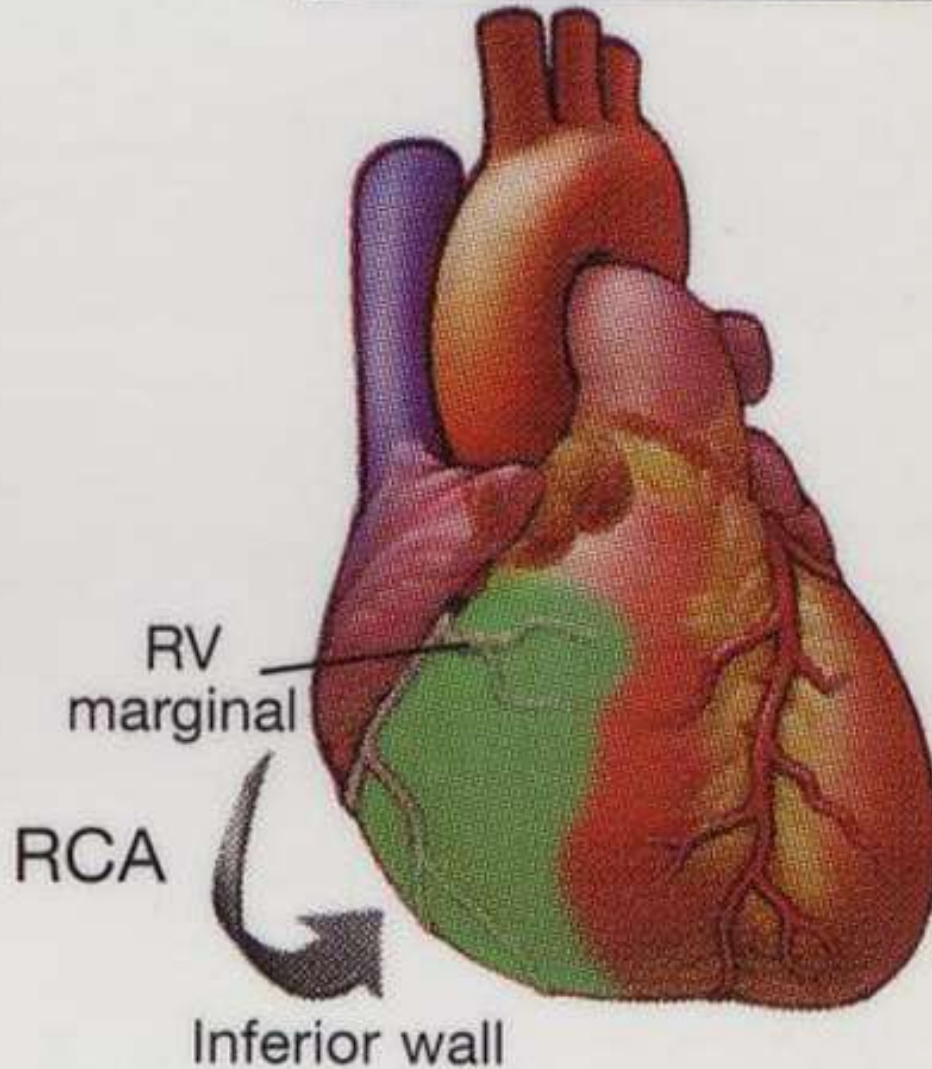
H

Cx occlusion –
I, aVL, possibly V₅, V₆



Anterior View Posterior View

**RCA occlusion —
II, III, aVF**



Lead Summary



UPH
UNIVERSITAS PELITA HARAPAN

I Lateral Circumflex Artery	aVR	V1 Septal Left Anterior Descending Artery	V4 Anterior Right Coronary Artery
II Inferior Right Coronary Artery	aVL Lateral Circumflex Artery	V2 Septal Left Anterior Descending Artery	V5 Lateral Circumflex Artery
III Inferior Right Coronary Artery	AVF Inferior Right Coronary Artery	V3 Anterior Right Coronary Artery	V6 Lateral Circumflex Artery