

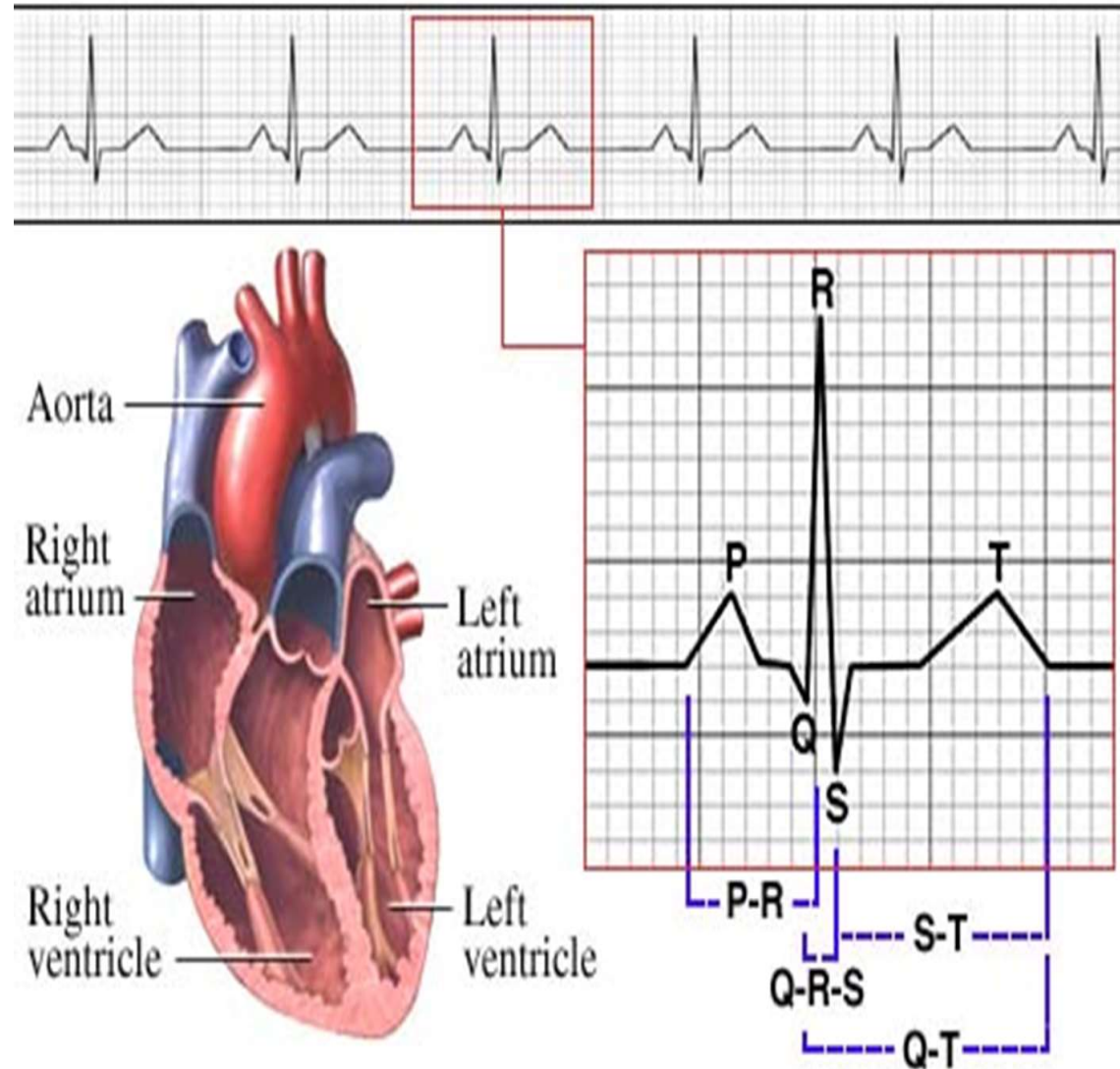
IN THE NAME OF GOD

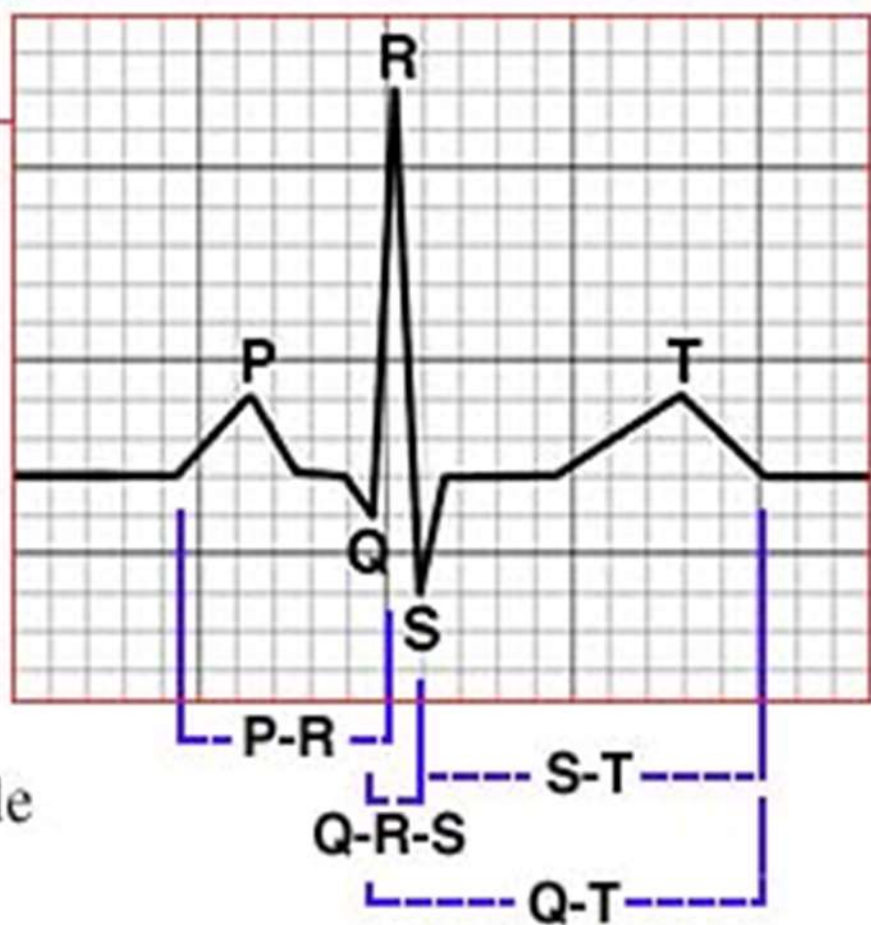
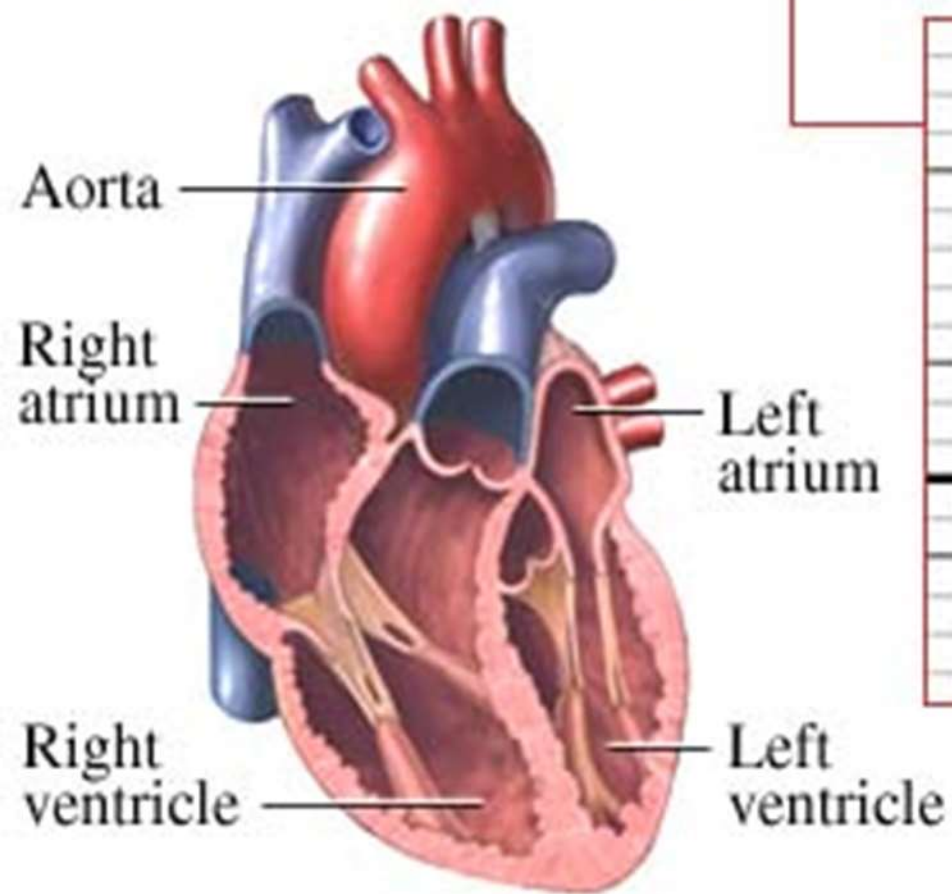
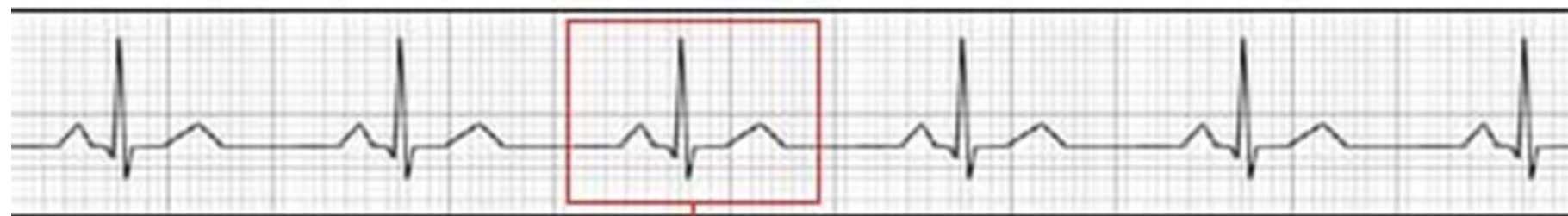
# Rapid reading of ECG in emergency

**DR ROUZBAHANI MD**  
**interventional cardiologist**

# Narrative Interpretation:

- Rhythm
- Rate
- Axis
- Intervals
- Abnormalities





# **EKG Tracing .....**

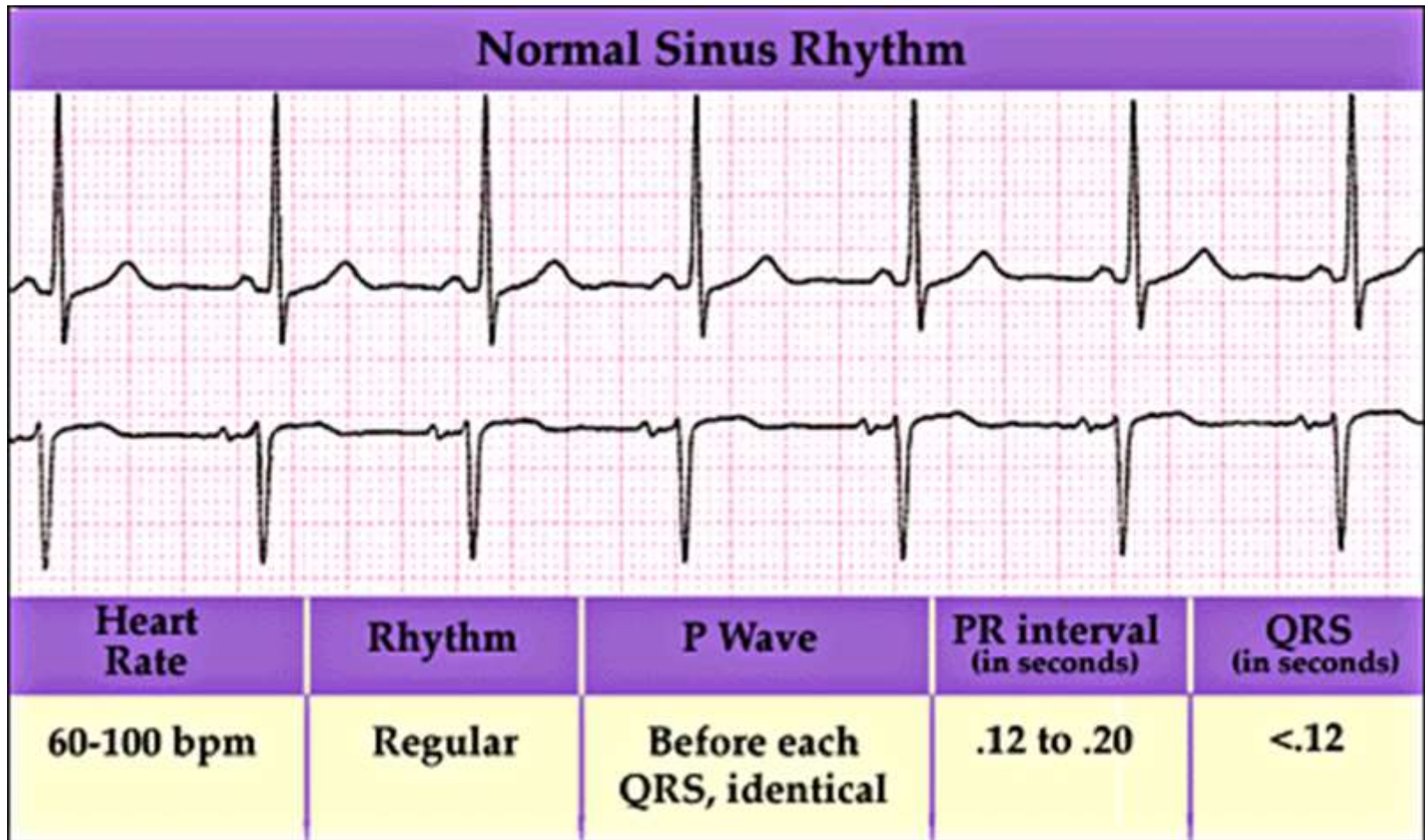
- **Grid Paper**
- **Each small box = 0.04 seconds**
- **Each large box = 0.20 seconds (5 small boxes across)**
- **One second is 5 large boxes**
- **Three seconds is 15 large boxes**
- **Six seconds is 30 large boxes**
- **Each minute has 300 large boxes**

# Reading a Rhythm Strip

## What Do I Look For?

- **Regularity - What is the R – R Interval?**
- **Rate - Is the rate normal (60-100), slow, or fast?**
- **\*\*\*Six-second strip method - (30 big boxes) & multiply times ten**
- **P Wave – Is there a P wave before every QRS? Is it upright?**
- **QRS Complex – Is there a normal QRS complex following each P wave? Wide or normal?**
- **T wave – How does your T wave look? Upright?**
- **Measure your intervals – PR Interval, QRS, QT**

# “Practice Strip”





# **What is Normal?**

## **“Normal” Sinus Rhythm**

**The electrical impulse originates in the SA Node**

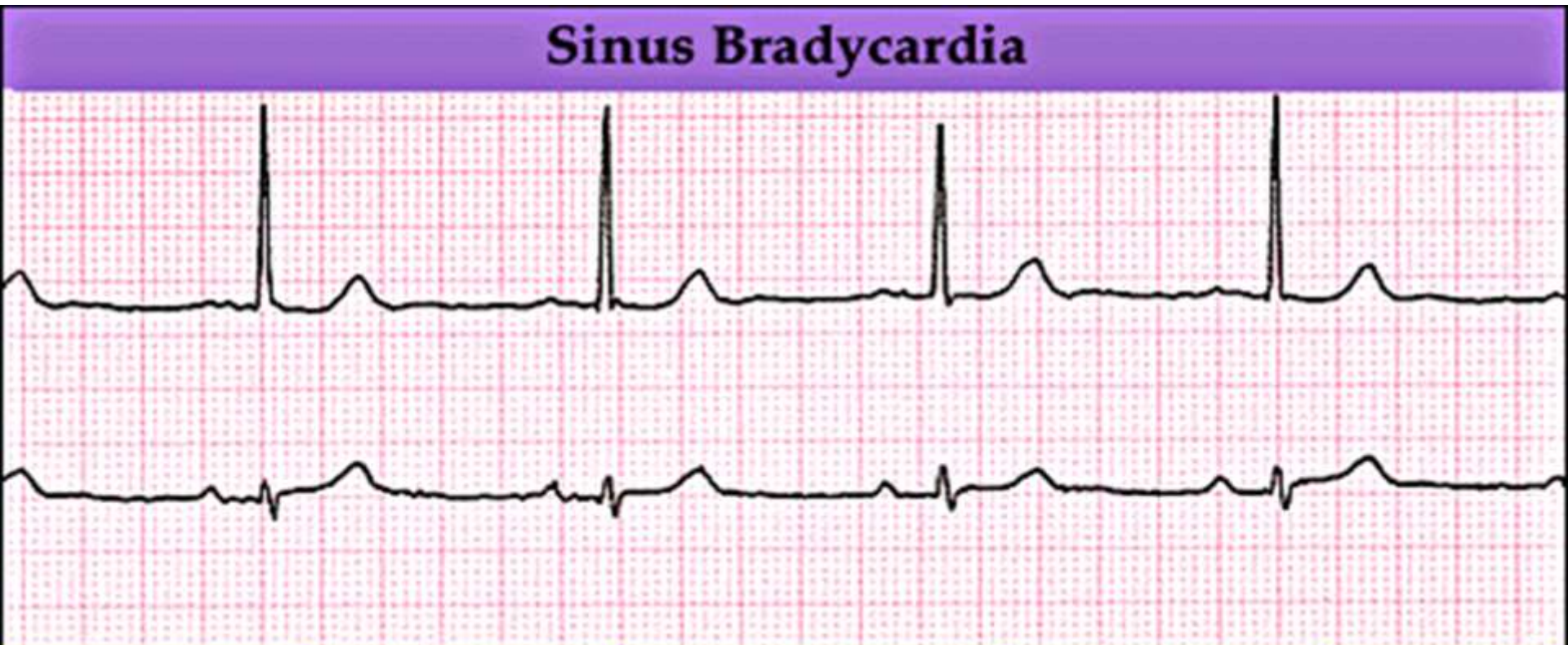
- **Rhythm ► Regular (R to R Interval)**
- **Rate ► Regular (60 – 100 beats/minute)**
- **P wave ► before every QRS complex**
- **QRS complex ► narrow, not wide (0.04-0.10sec)**



# EMERGENCY

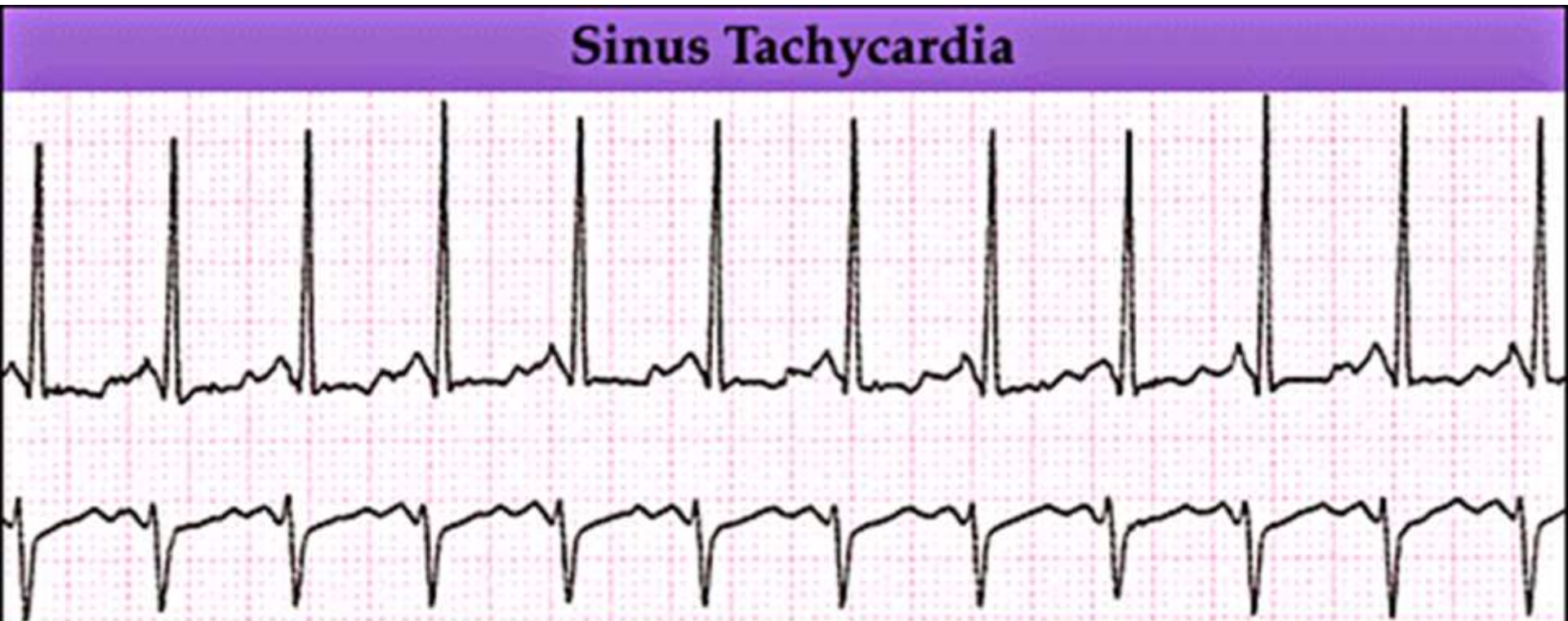
- **INFARCTION**
- **ISCHEMIA**
- **BLOCKS**
- **ARYTHMIA**

# Sinus Bradycardia



Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
<60 bpm	Regular	Before each QRS, identical	.12 to .20	<.12

# Sinus Tachycardia

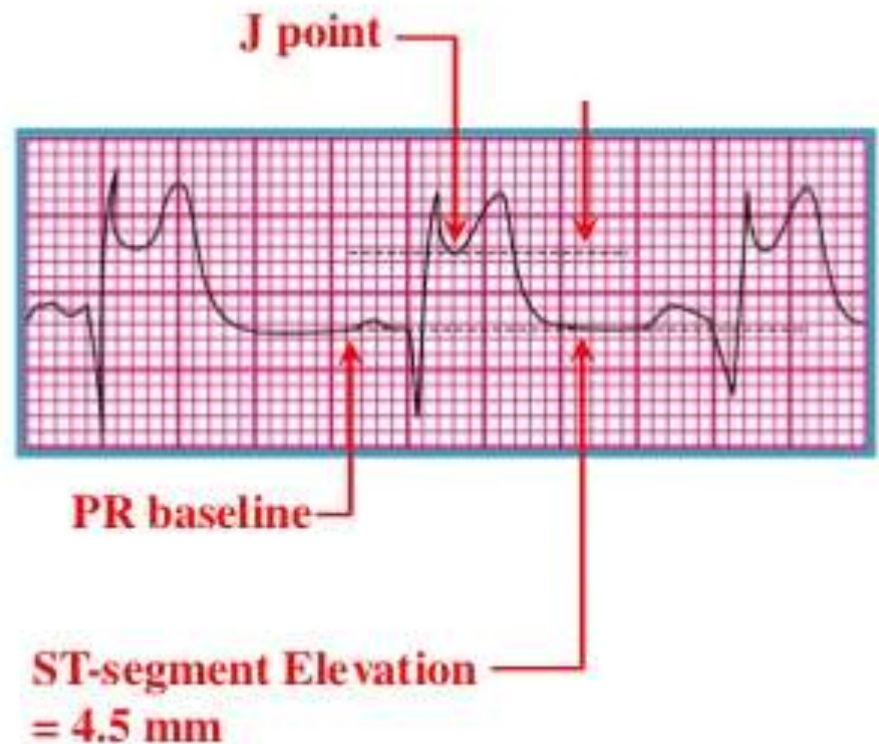


Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
> 100 bpm	Regular	Before each QRS, identical	.12 to .20	<.12



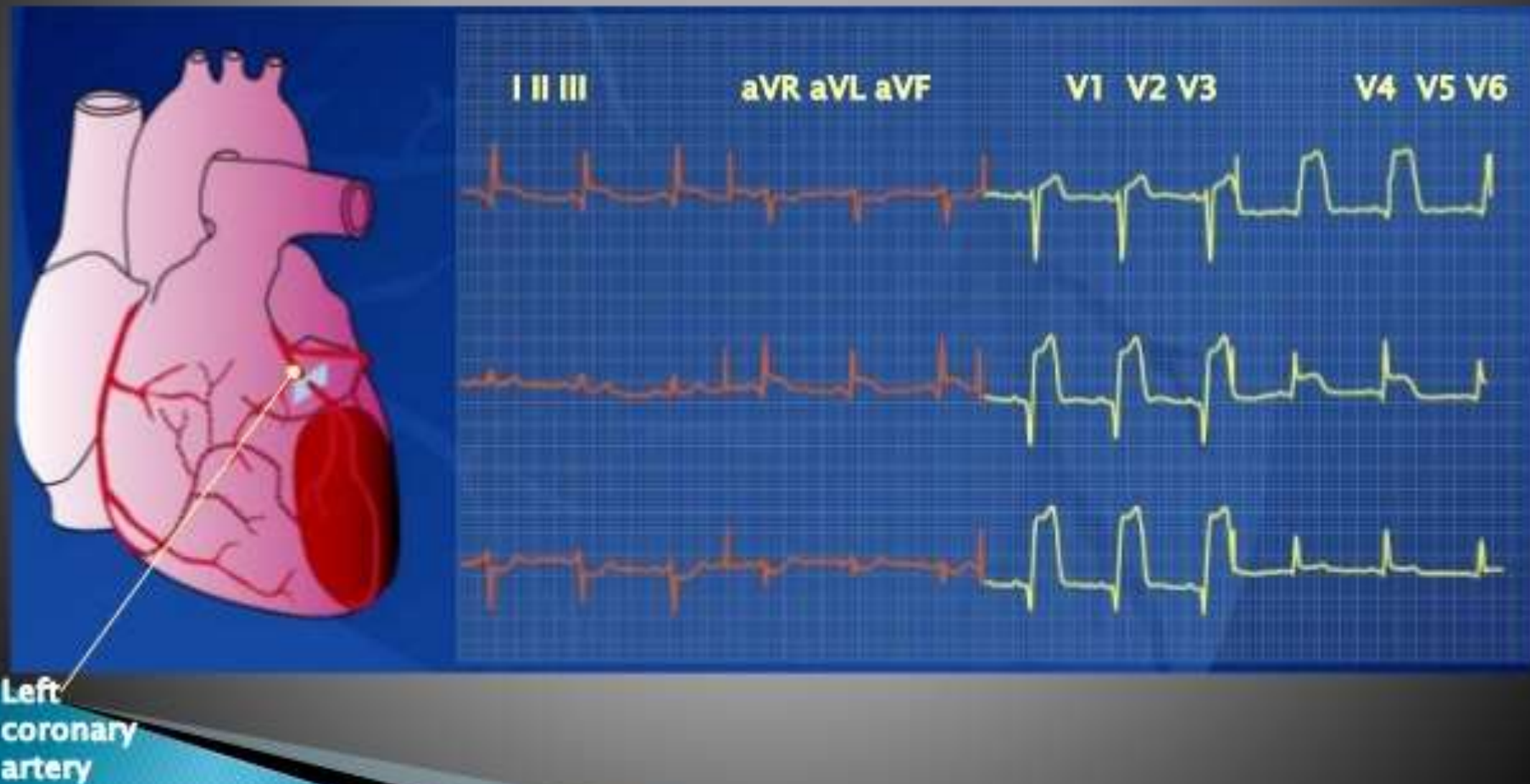
# Recognition of AMI

- Know what to look for—
  - ST elevation  $> 1$  mm
  - 2 contiguous leads
- Know where to look
  - I, AVL, V5, V6 = Lateral
  - V1 V2 V3 V4 = Anterior
  - II, III & AVF = Inferior

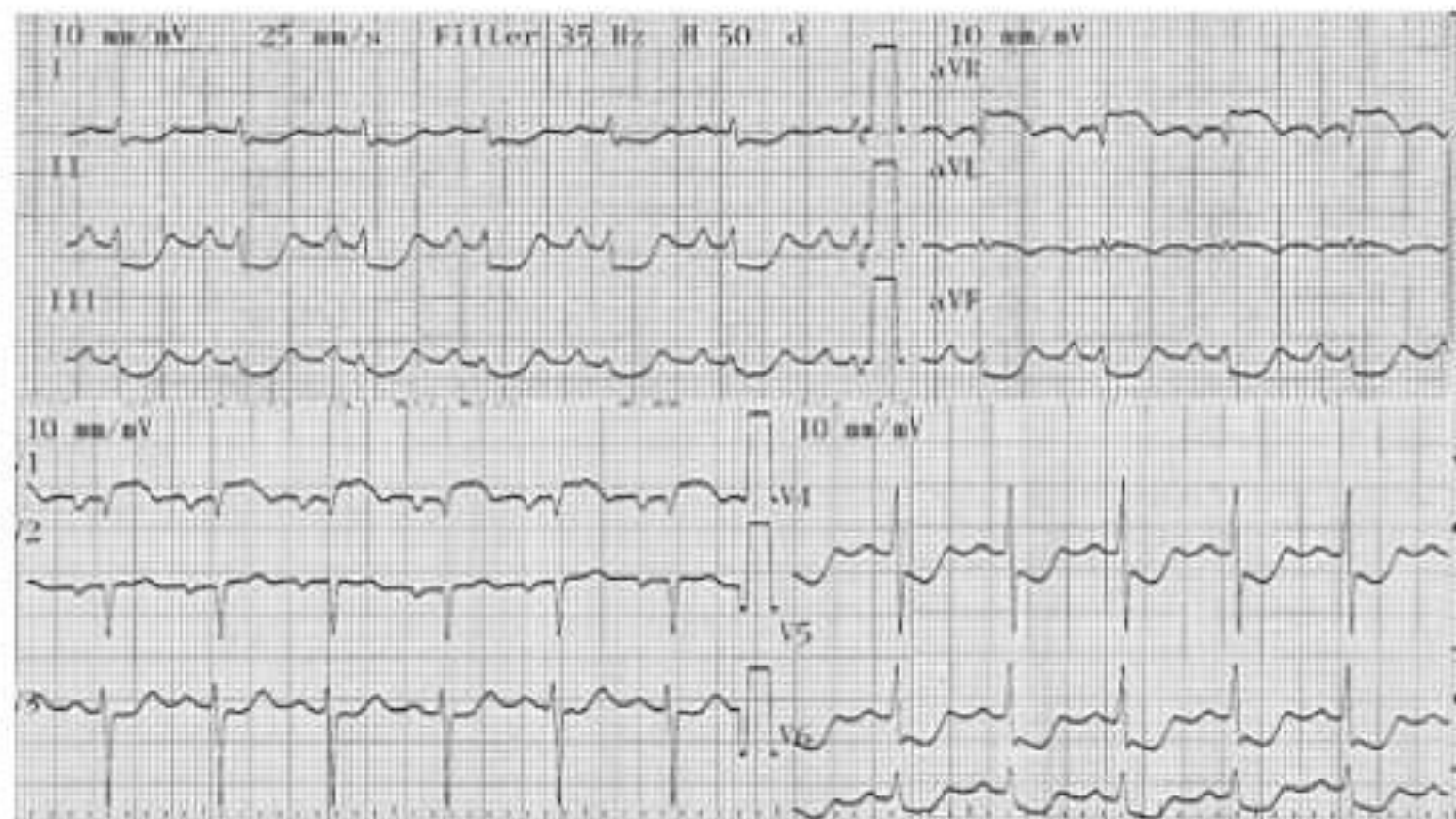


# Anterior infarction

## Anterior Infarction



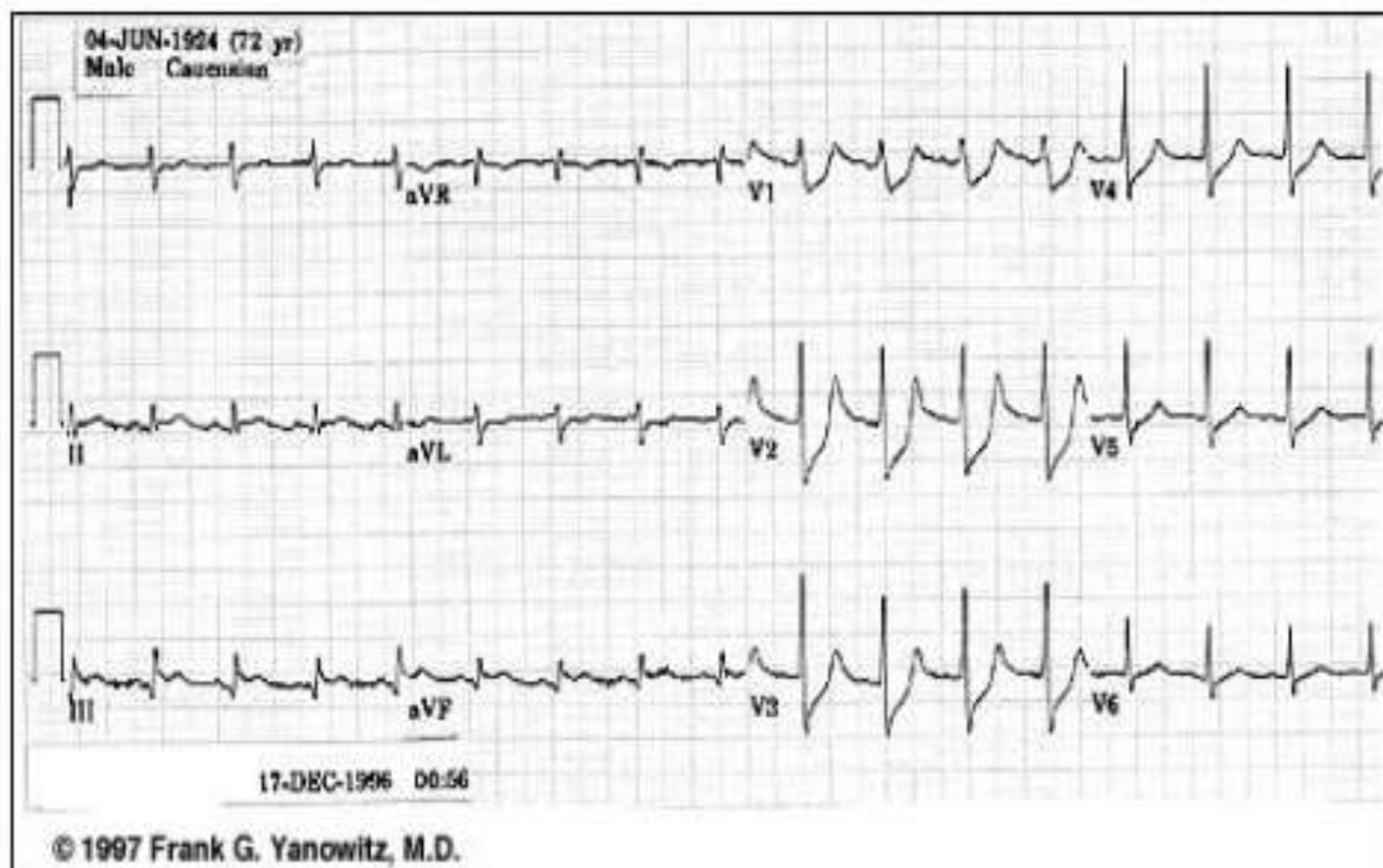
# Left main occlusion



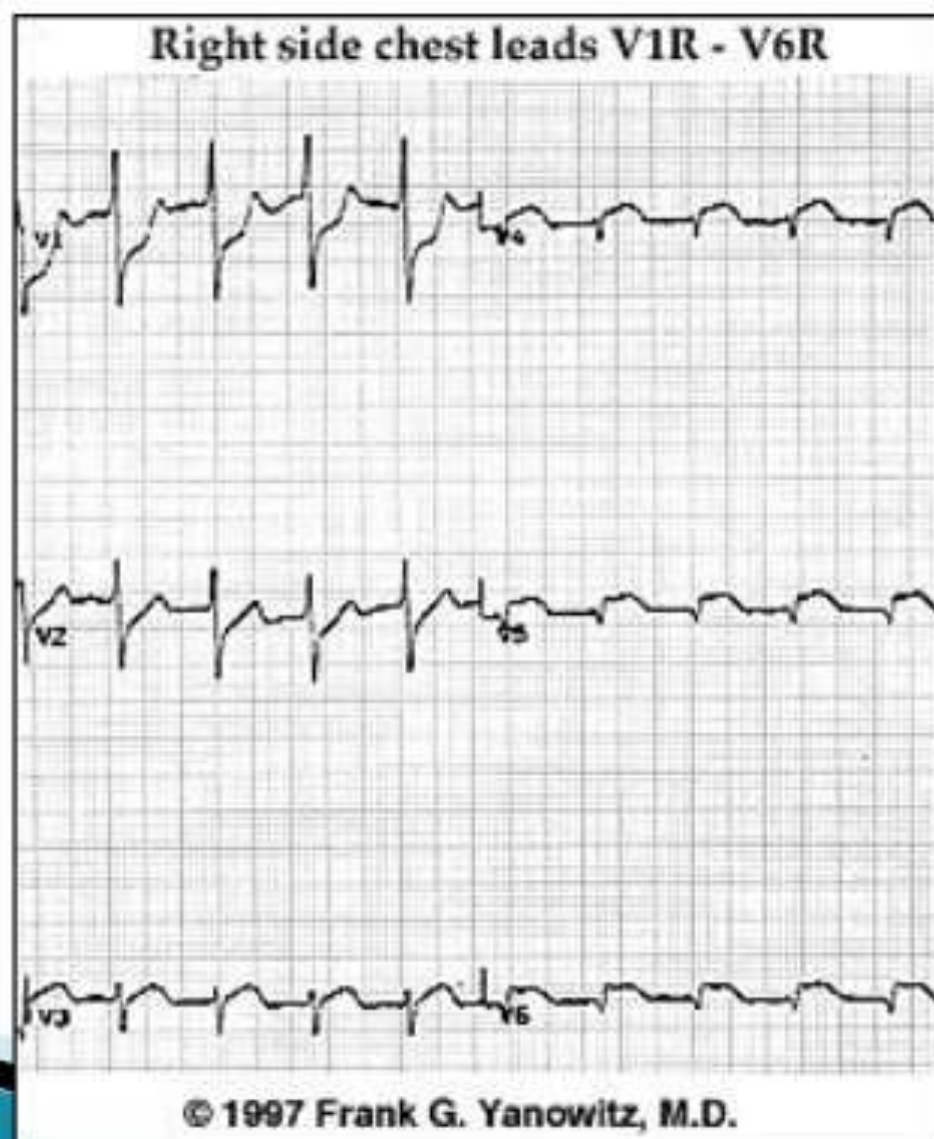


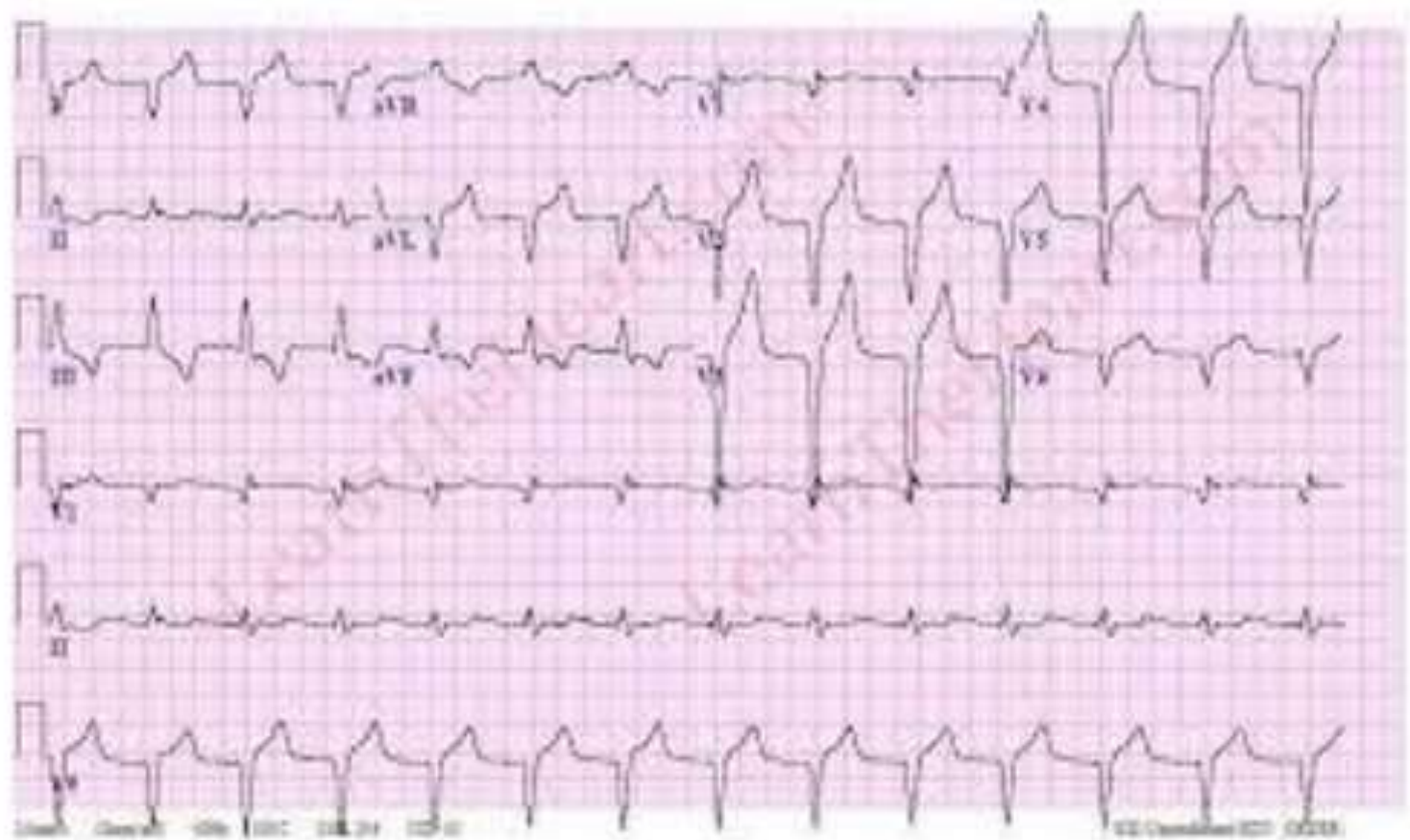


# Inferoposterior MI

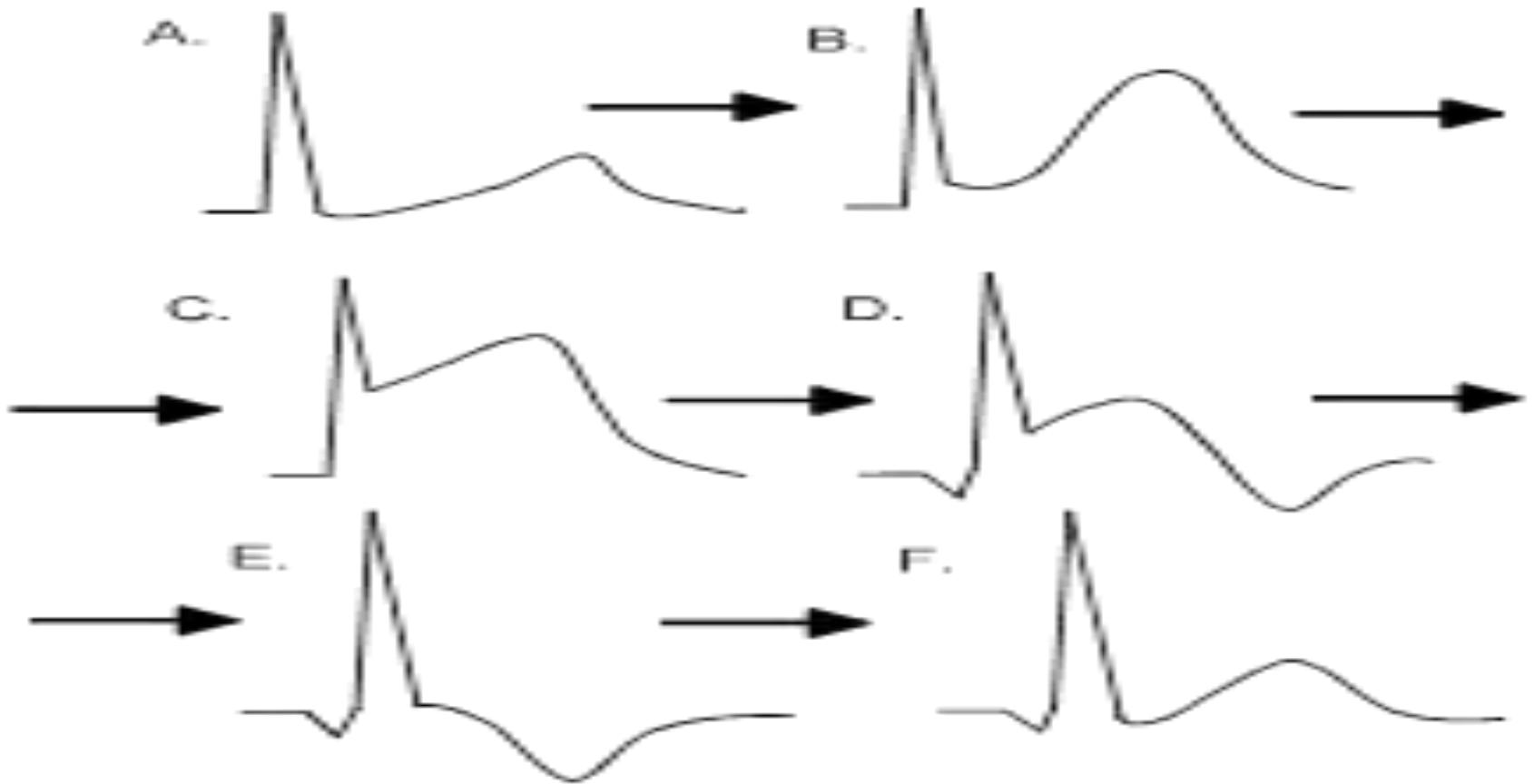


# Right Ventricular MI



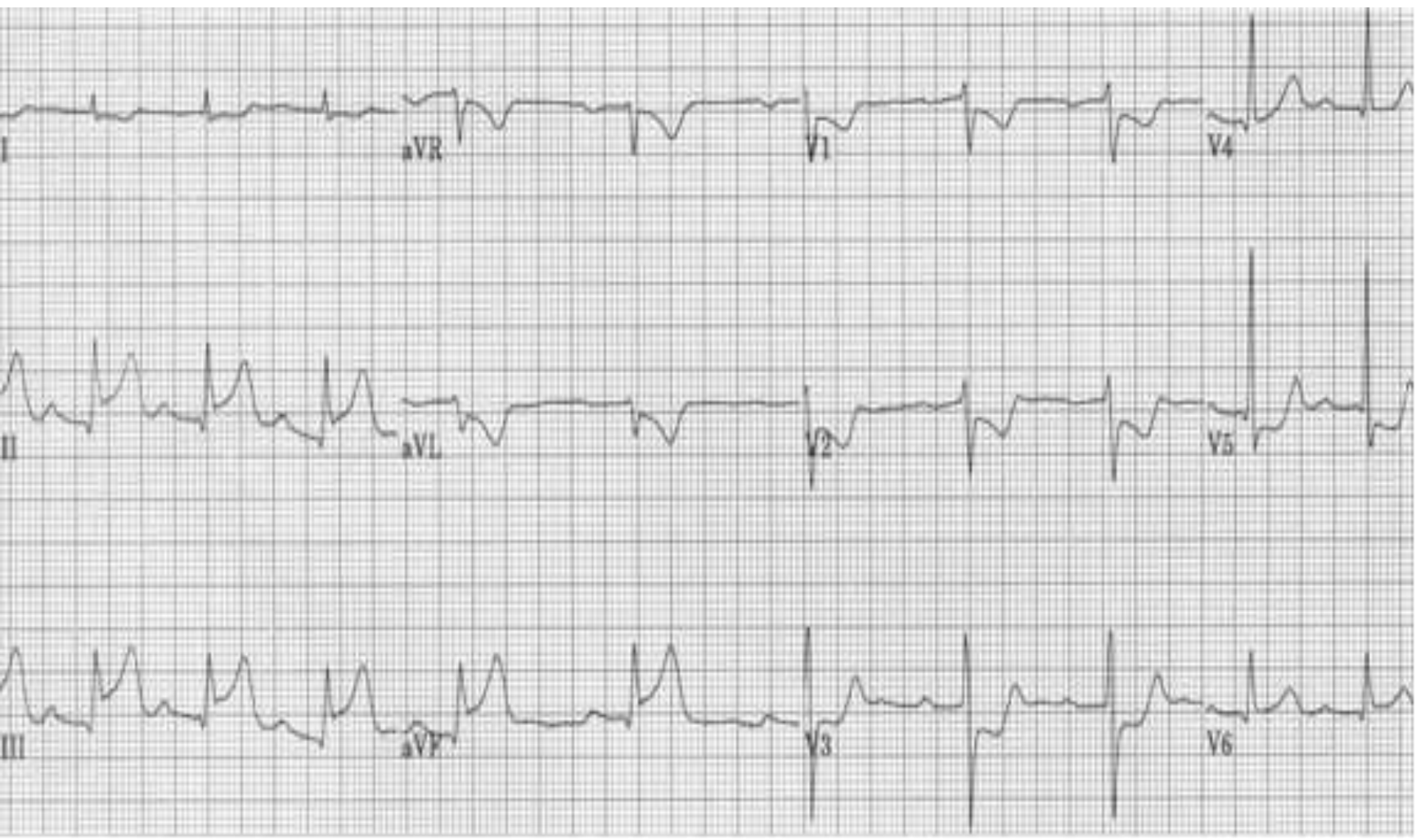


# INFARCTION & ISCHEMIA

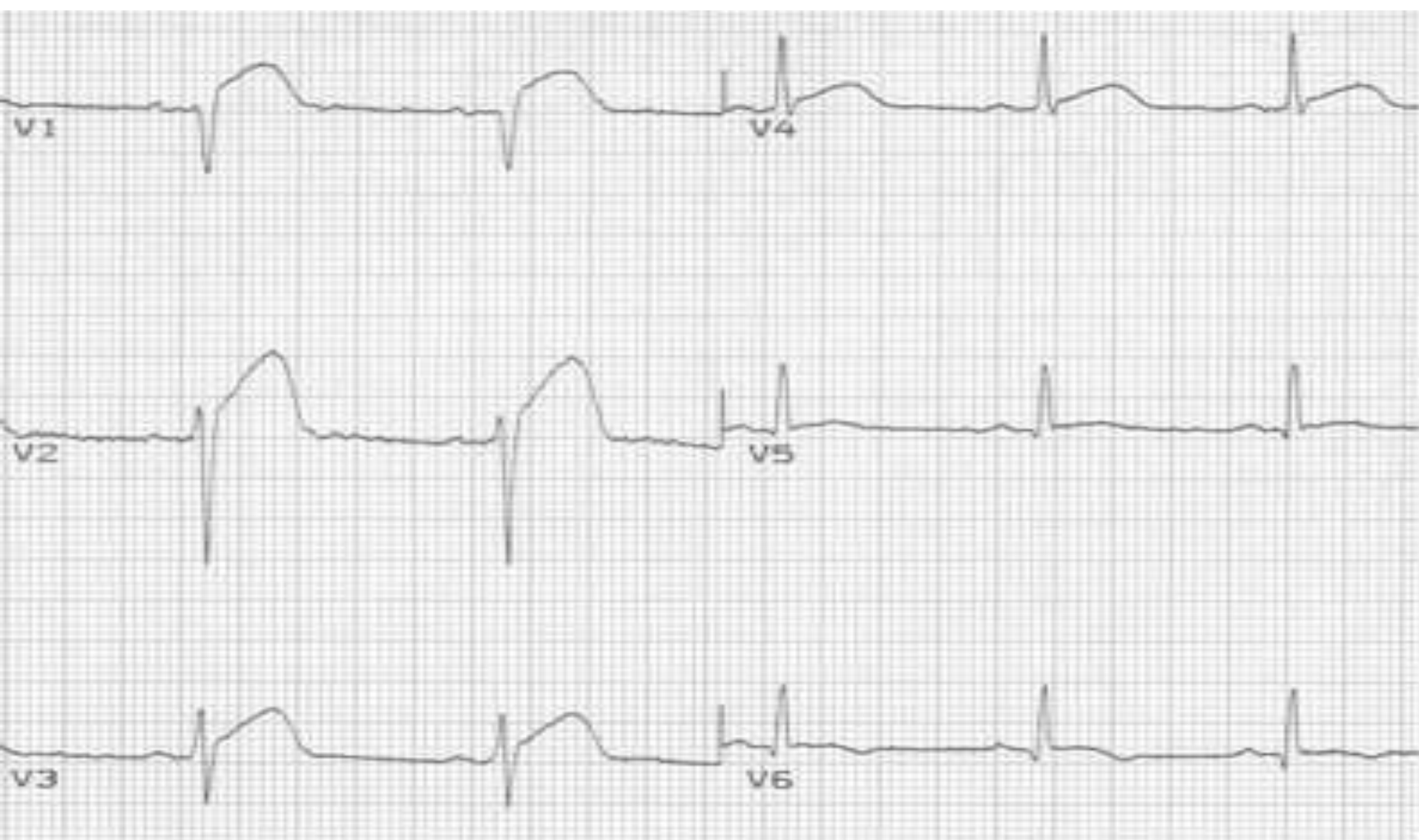


Evolution of Acute MI

# INF MI







# ST Segment Depression – “Infarcted”

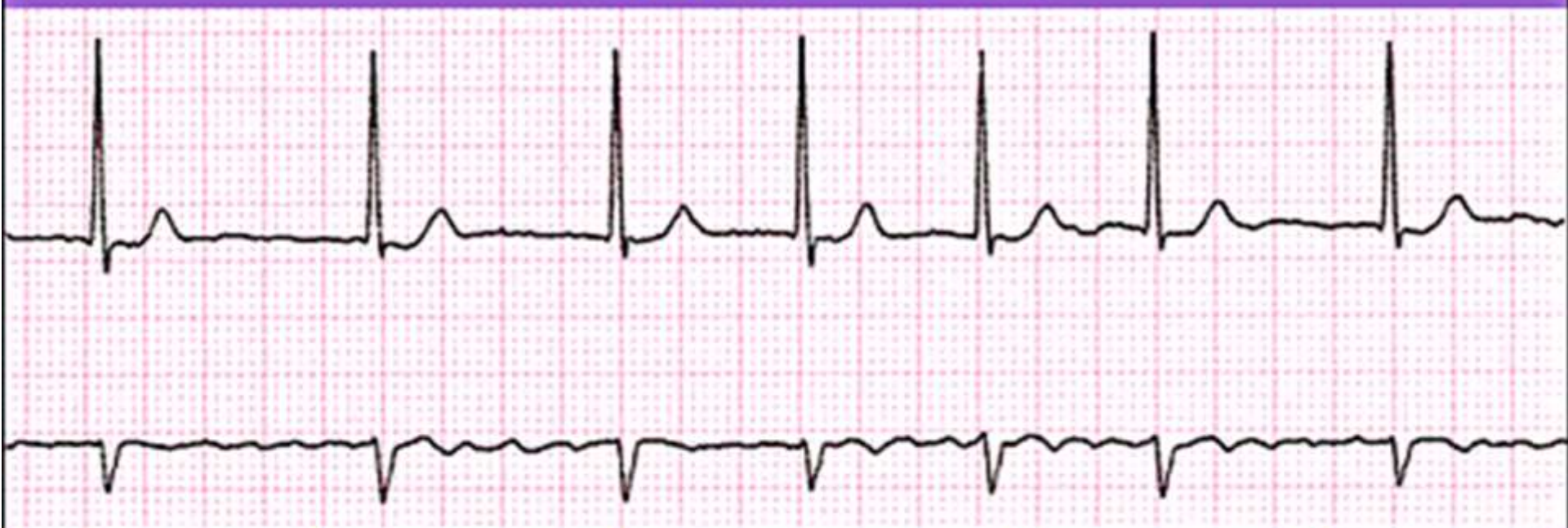
Heart rate	82	33%
PR interval	136	ms
QRS duration	80	ms
QT/QTc	360/420	ms
T-R-T axis	57 60	-10

Note the abnormalities in Mrs. F's EKG:





## Atrial Fibrillation



Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
A: 350-650 bpm V: Slow to rapid	Irregular	Fibrillatory (fine to course)	N/A	<.12

## Atrial Flutter



Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
A: 220-430 bpm V: <300 bpm	Regular or variable	Sawtoothed appearance	N/A	<.12

# The “Basic Blocks”

**First Degree AV Block**

**Second degree AV Block**

**Third Degree Block**

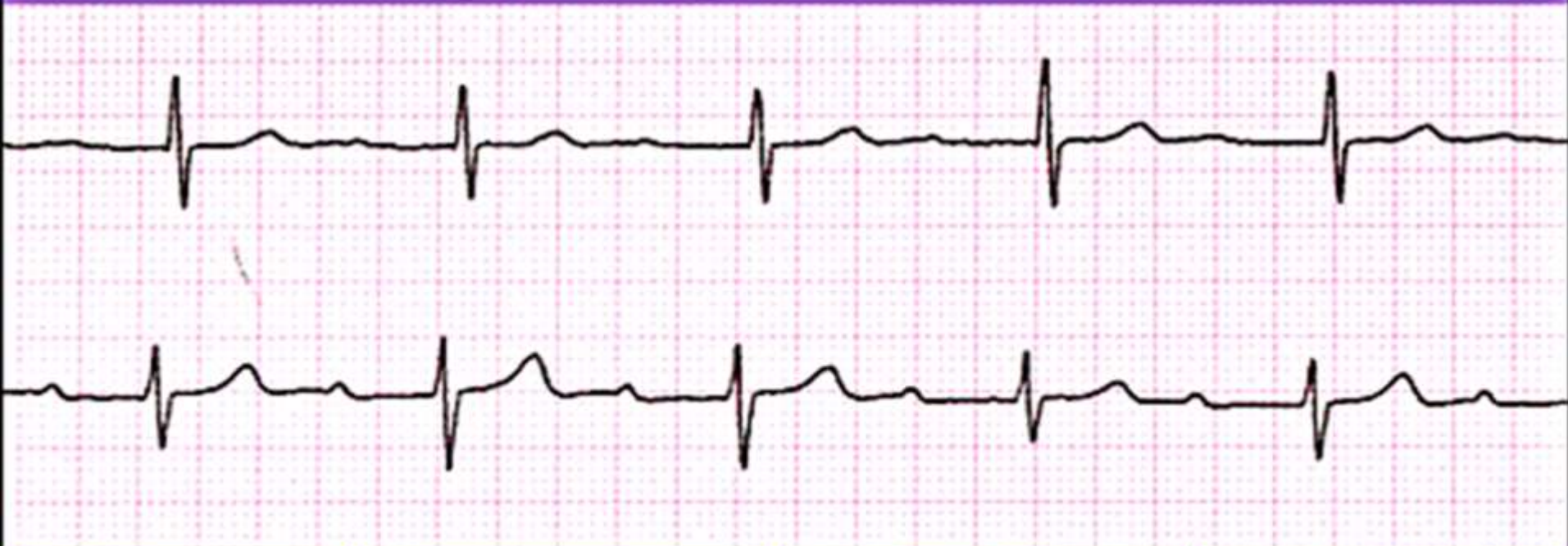
**(Complete Heart Block)**



Etiology, 1st and 2nd Level Assessment,  
Intervention

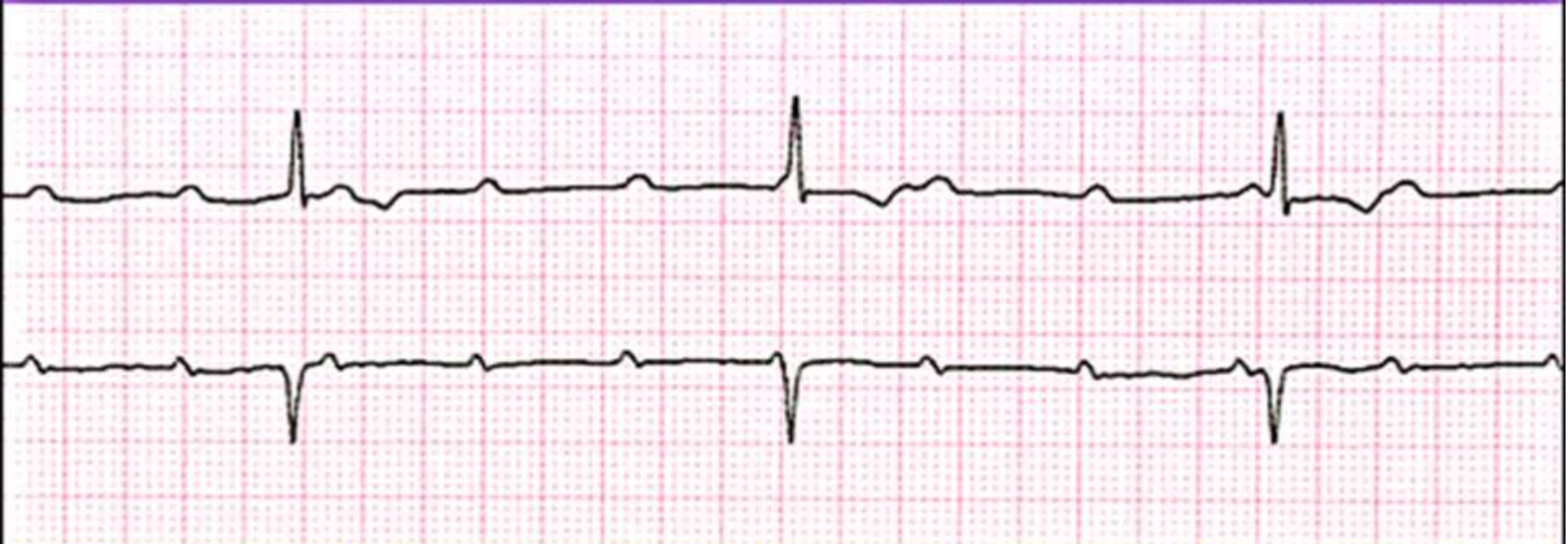


## First Degree AV Block



P Wave	PR Interval (in seconds)	QRS (in seconds)	Characteristics
Before each QRS, identical	$>.20$	$>.12$	Regular rhythm

## Third Degree (complete) AV Block



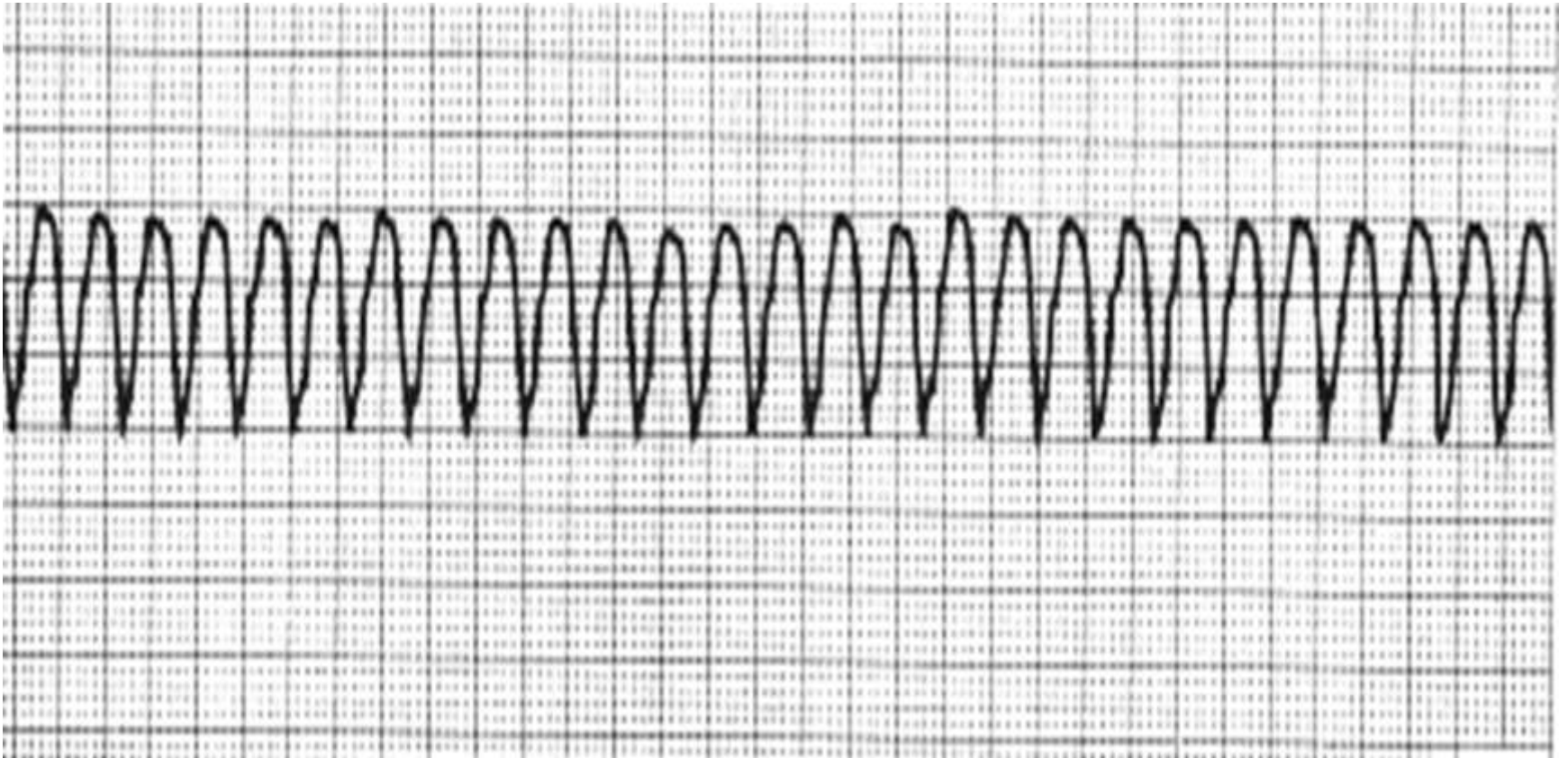
P Wave	PR Interval (in seconds)	QRS (in seconds)	Characteristics
Normal but not related to QRS	None	N/A	No relationship between P&RS



# 3 or More PVCs = Ventricular Tachycardia

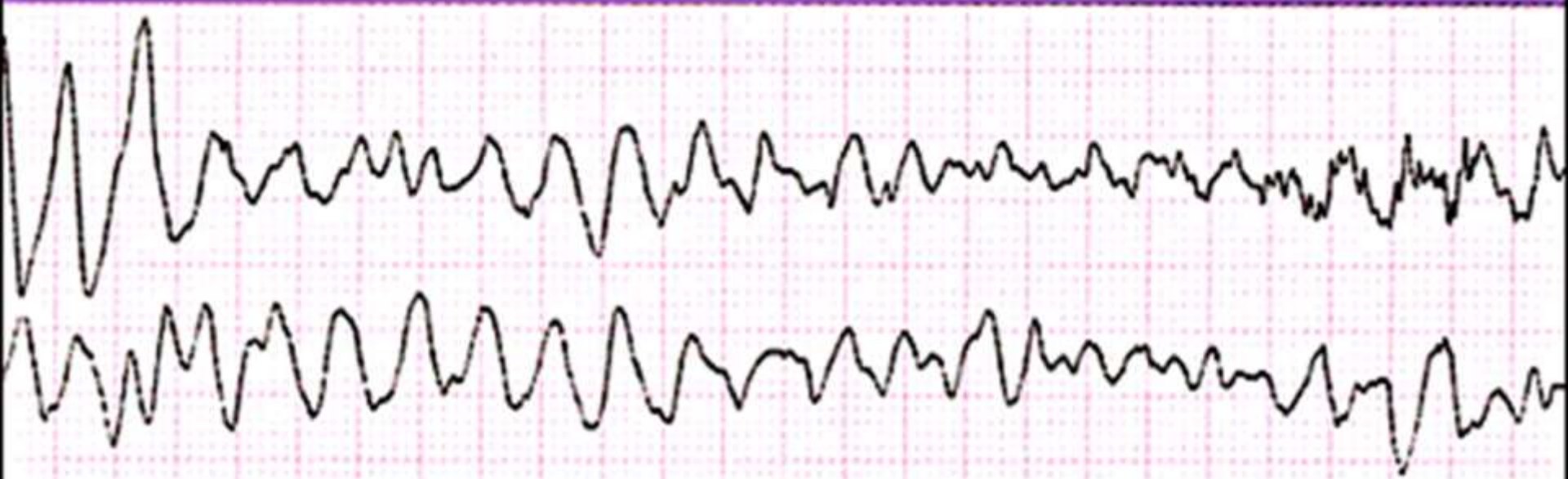


# “Sustained V Tach”





## Ventricular Fibrillation



Heart Rate	Rhythm	P Wave	PR interval (in seconds)	QRS (in seconds)
300-600	Extremely irregular	Absent	N/A	Fibrillatory baseline

**THANK YOU**

