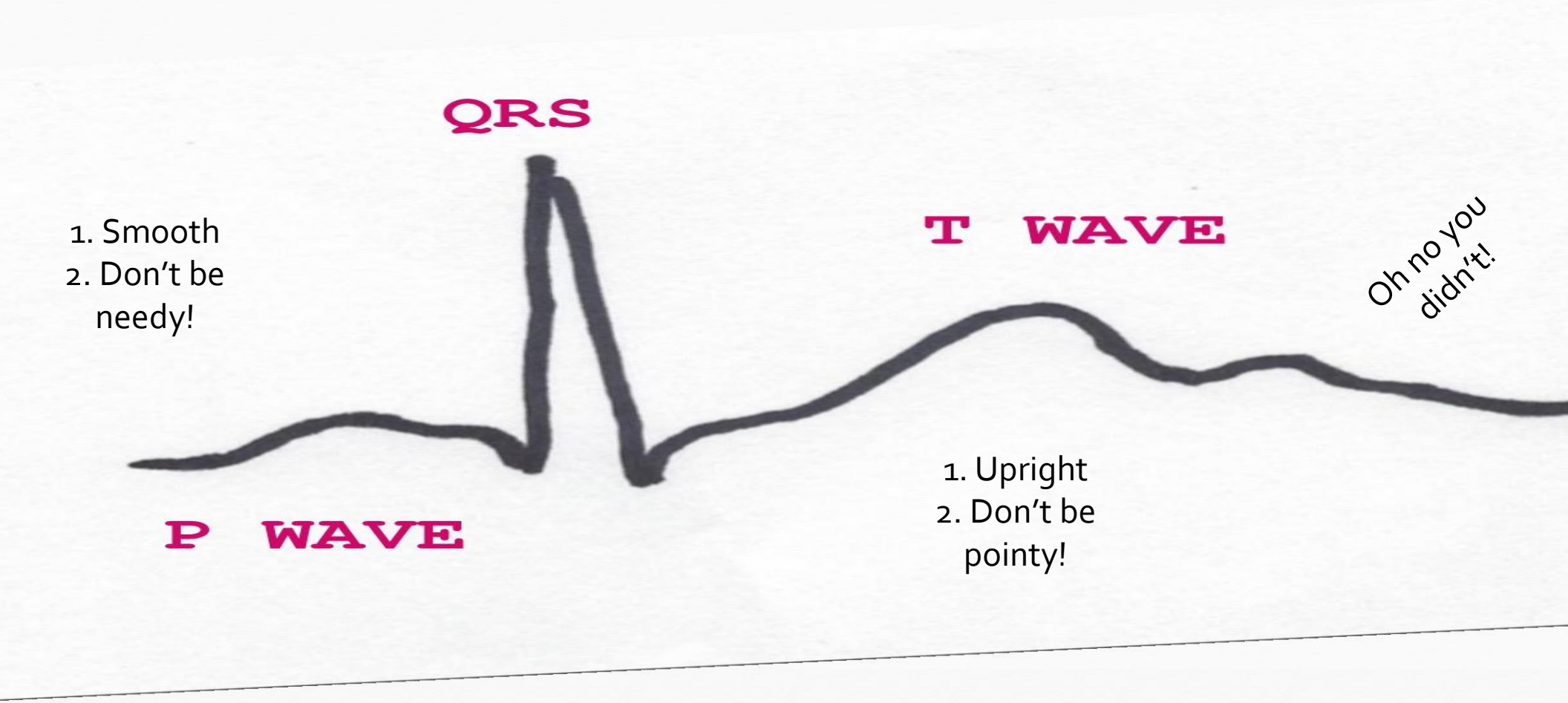
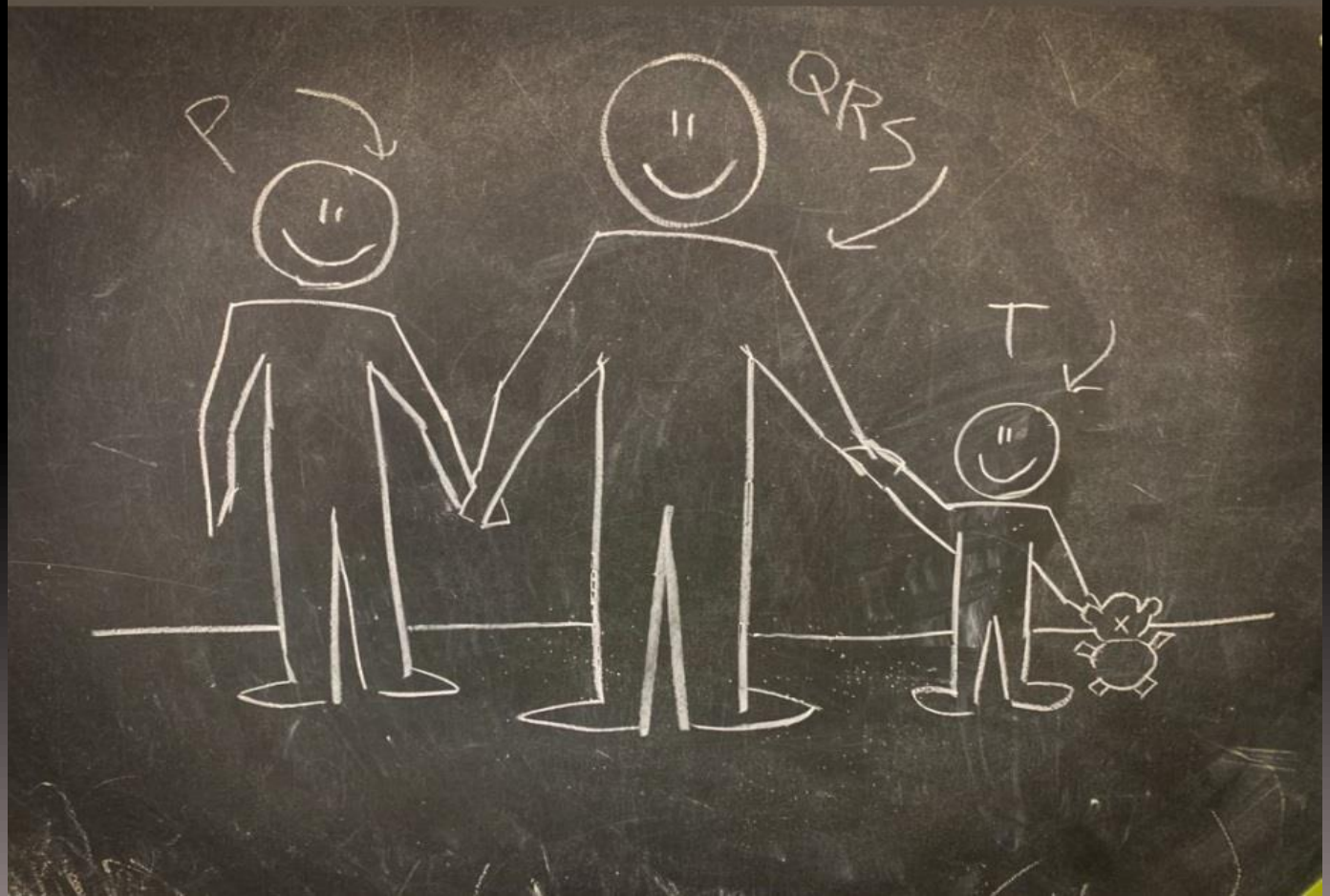
BASIC RHYTHMS

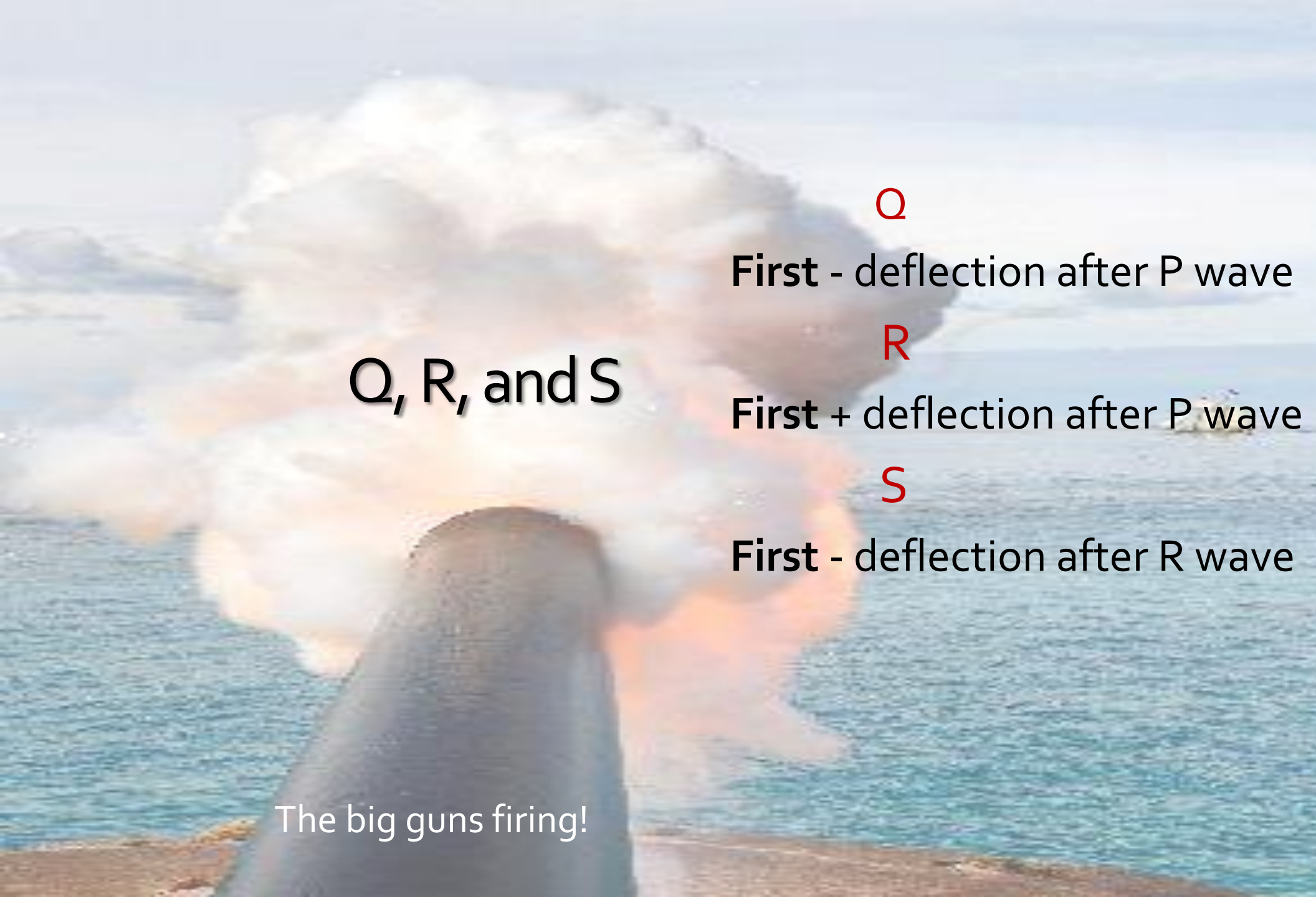
Jen Carlquist, PA-C

"You missed something..."

1. Not too tall
2. Not too wide




P
QRS
T



Q, R, and S

Q

First - deflection after P wave

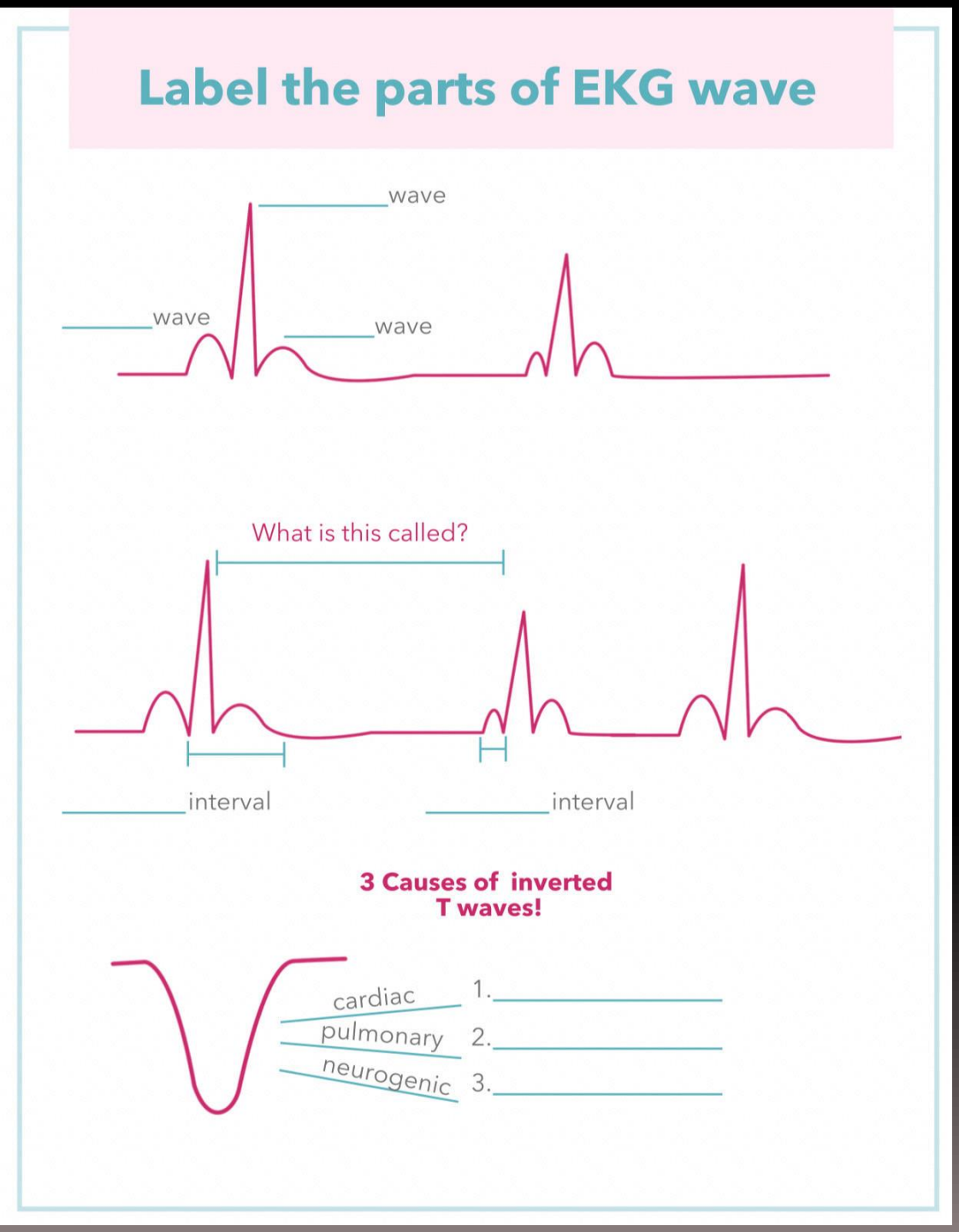
R

First + deflection after P wave

S

First - deflection after R wave

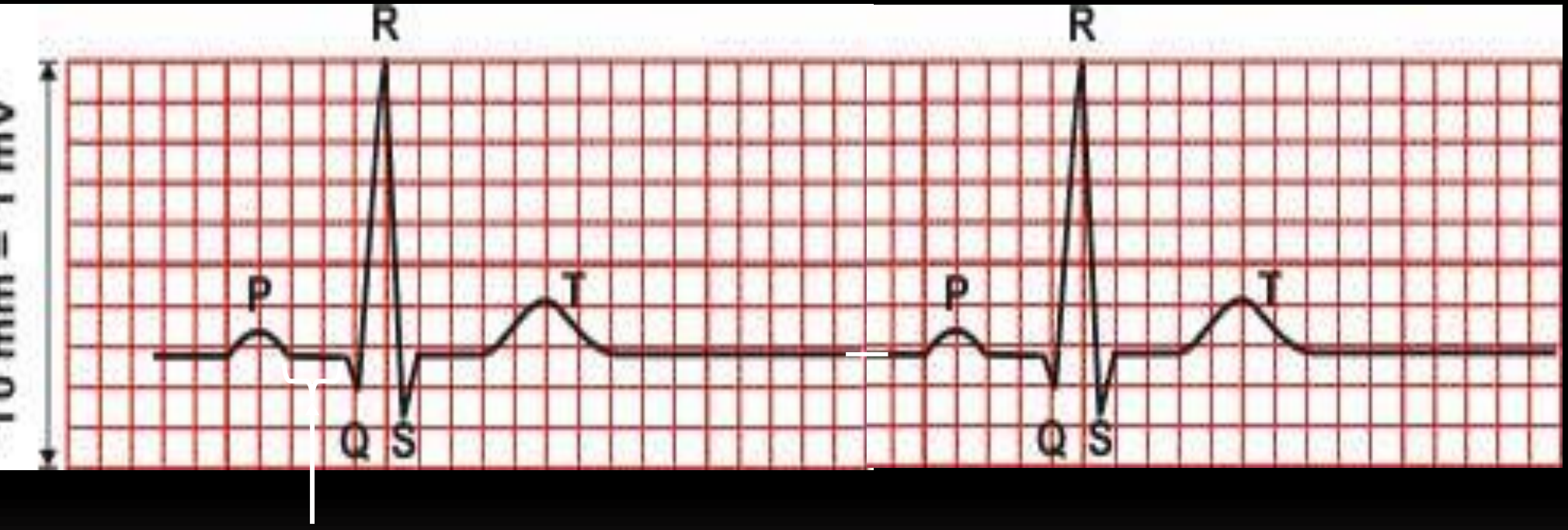
The big guns firing!



Recap

- P
- QRS
- ST segment
- T
- Q waves

PR Interval

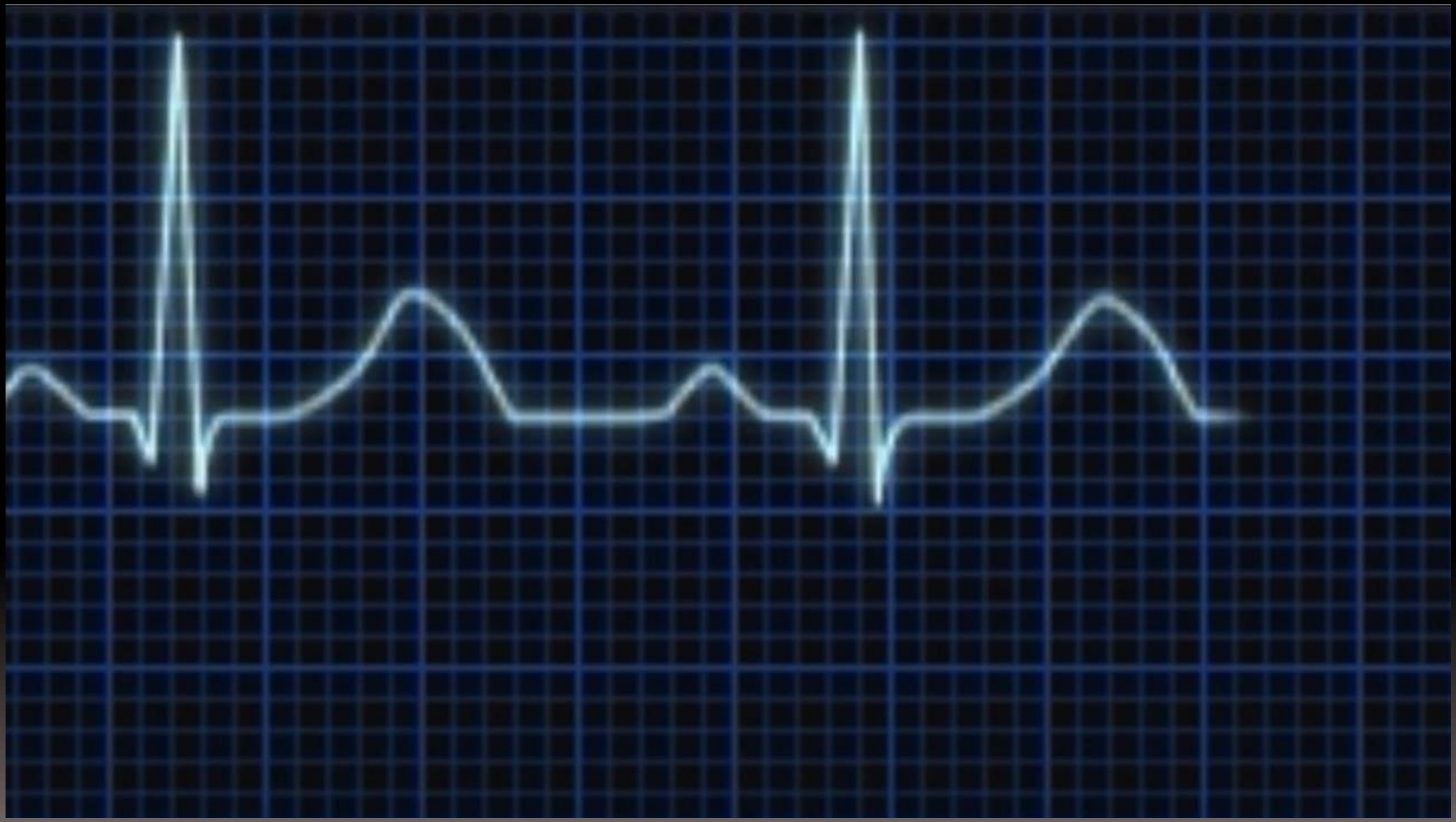


Normal = .12 - .20

How many boxes is that?

Analyzing a Rhythm Strip

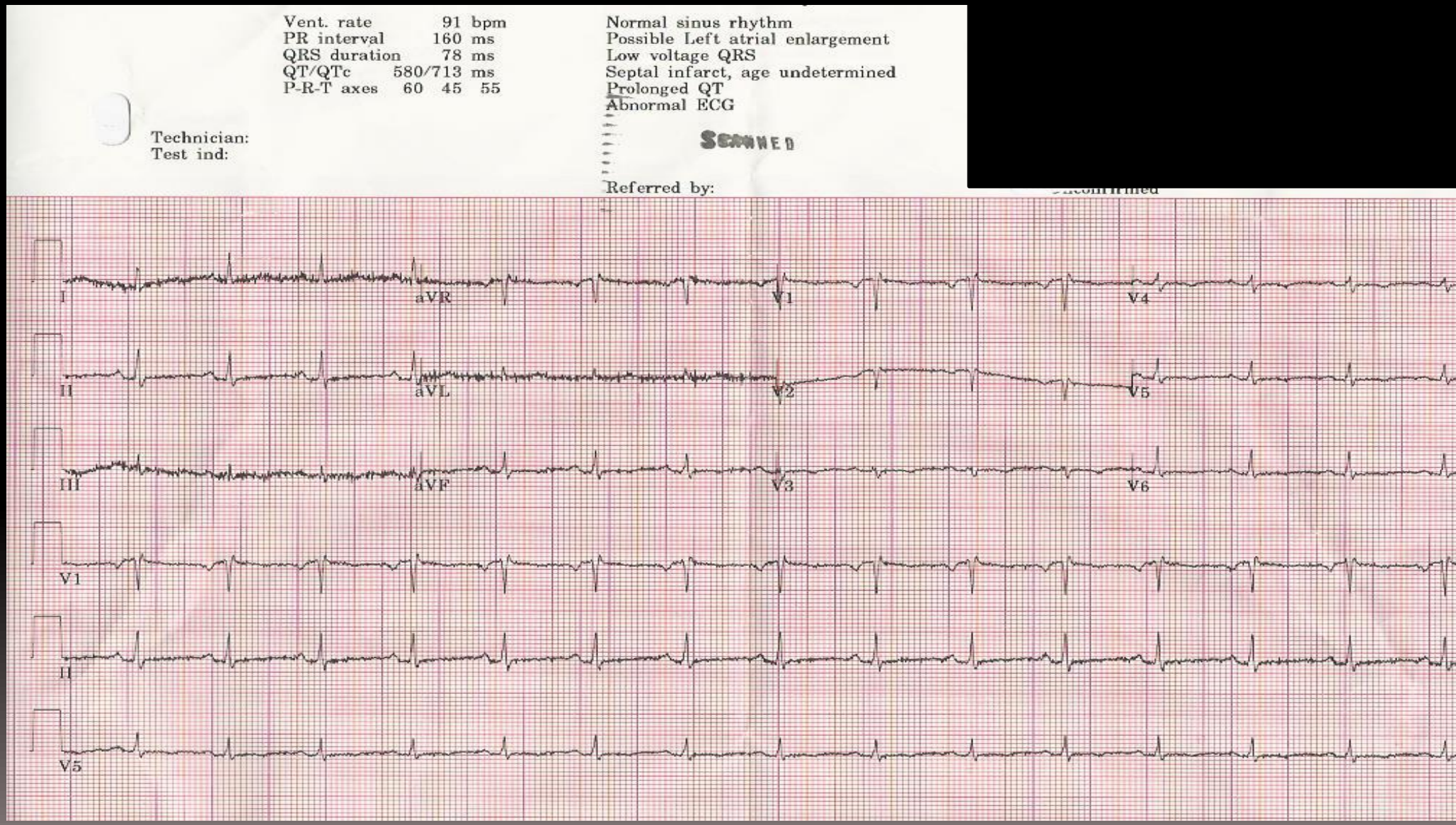
- ◯ 1. Regular or Irregular?
- ◯ 2. Calculate Rate
- ◯ 3. Screen for and identify p waves
- ◯ 4. Measure PR interval
- ◯ 5. Measure width of QRS Complex

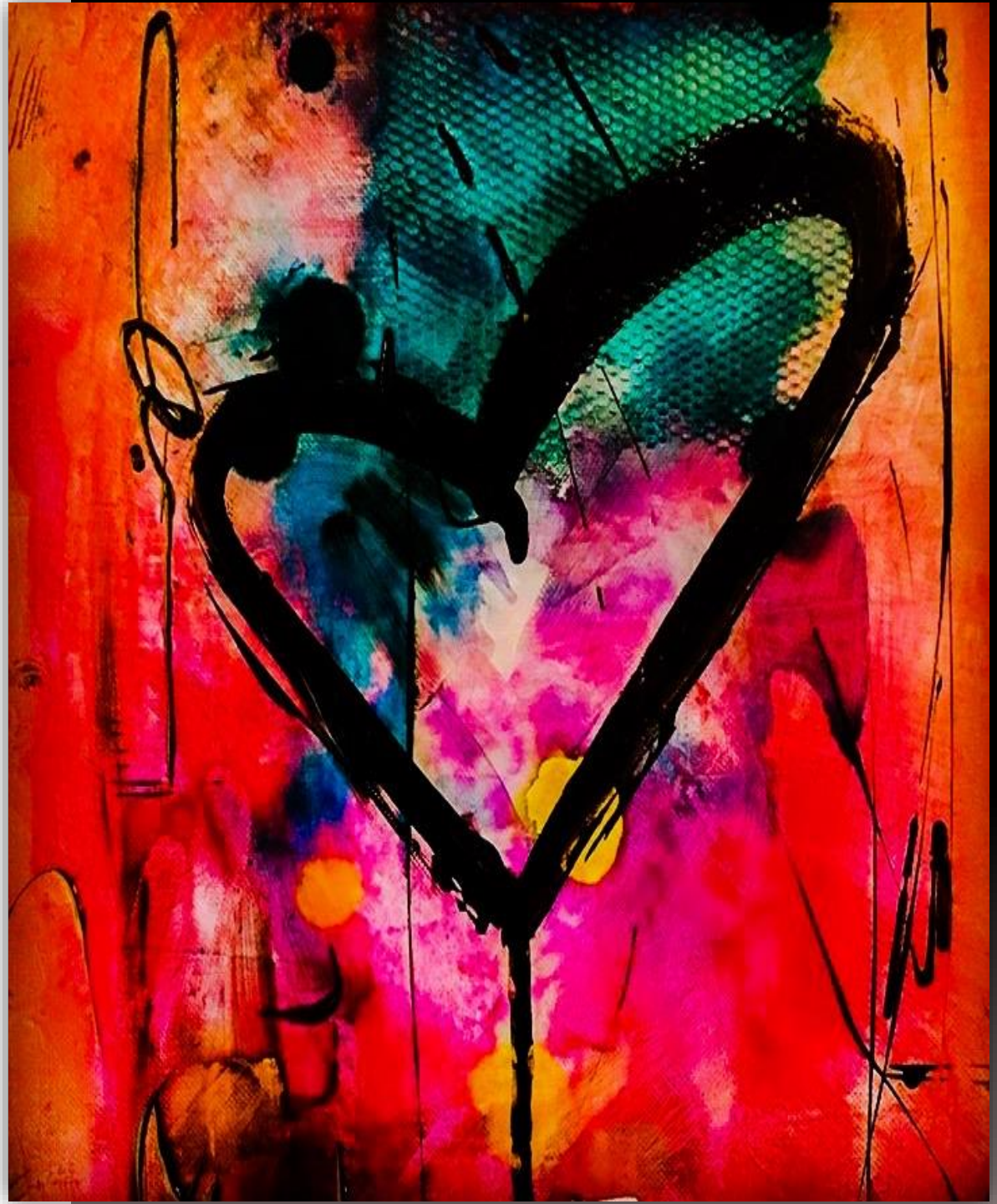


QRS – Shape, Size, Width

1. Impression
2. Rate 50-90
3. Rhythm - Regular vs Irregular
4. Intervals
5. P waves
6. QRS –m120 ms
7. Are they married?
8. ST Segments
9. T waves

The most prolonged qt ever…





TIME AFTER TIME

The Rule of 300

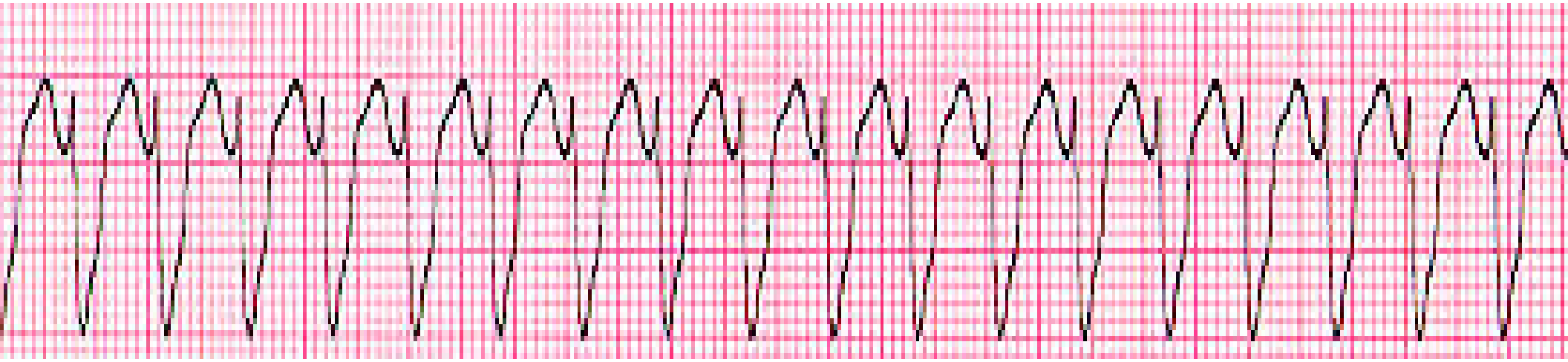
10 Second Rule

_____ and multiply by 6 to get the number of beats per 60 seconds.

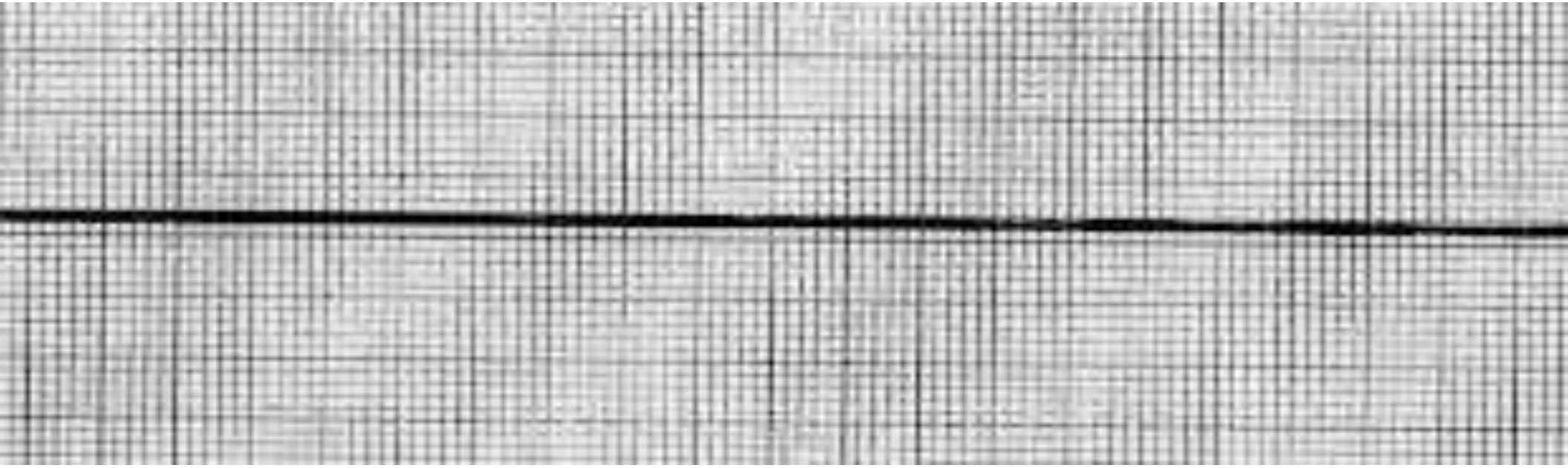
Great for irregular rhythms.

Sight rhythms

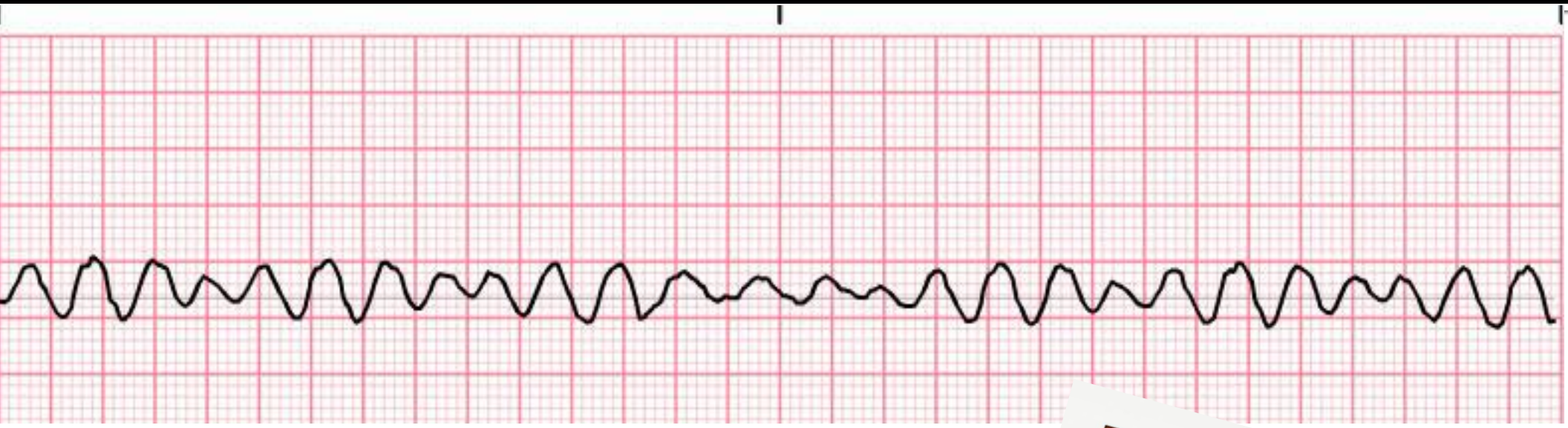
What is this?



What about this?

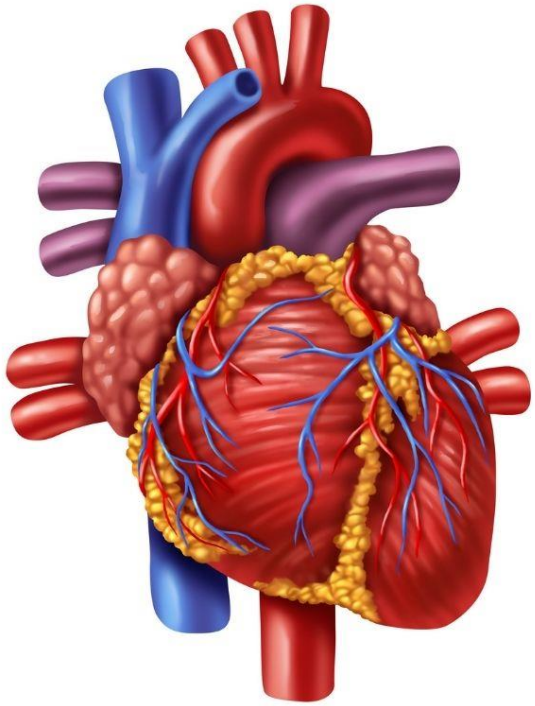


What is this?



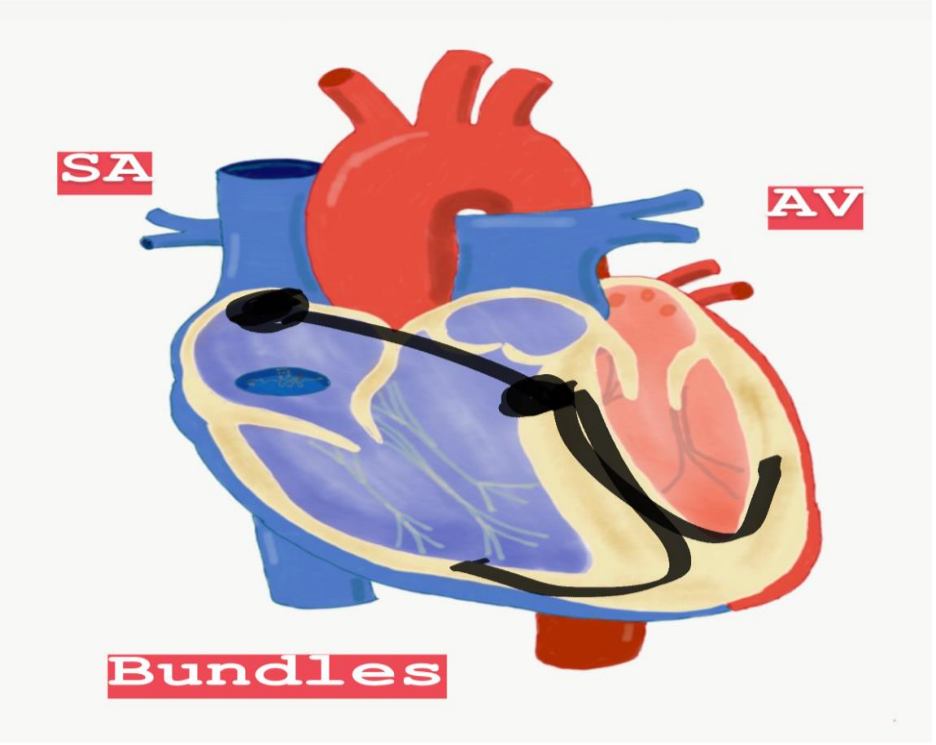
From the Atrium

Atrial arrhythmias



Atrial things

- Atrial flutter
- A Fib, Afib with RVR
- SVT
- Sinus Tachycardia
- WPW
- PAC's



Normal Sinus Rhythm (NSR)

Rate: 60-100 BPM

Regularity: Regular

P wave: Present

PR interval: Normal

QRS width: Normal

Sinus Arrhythmia

Rate: 60-100 BPM

Regularity: Varies w/ respiration

P wave: Normal

PR interval: Normal

QRS width: Normal

_____ is the usual cause of sinus arrhythmia.

Sinus Bradycardia

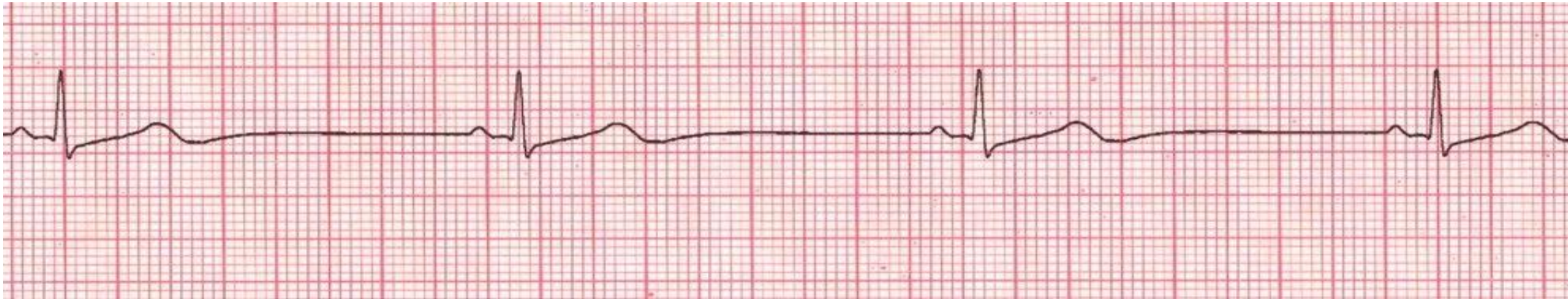
Rate: <60 BPM

Regularity: Regular

P wave: Present

PR interval: Normal to prolonged

QRS width: Normal to prolonged



How can we cause this? _____Thinking about a pacemaker? Stop this _____.

Sinus Tachycardia

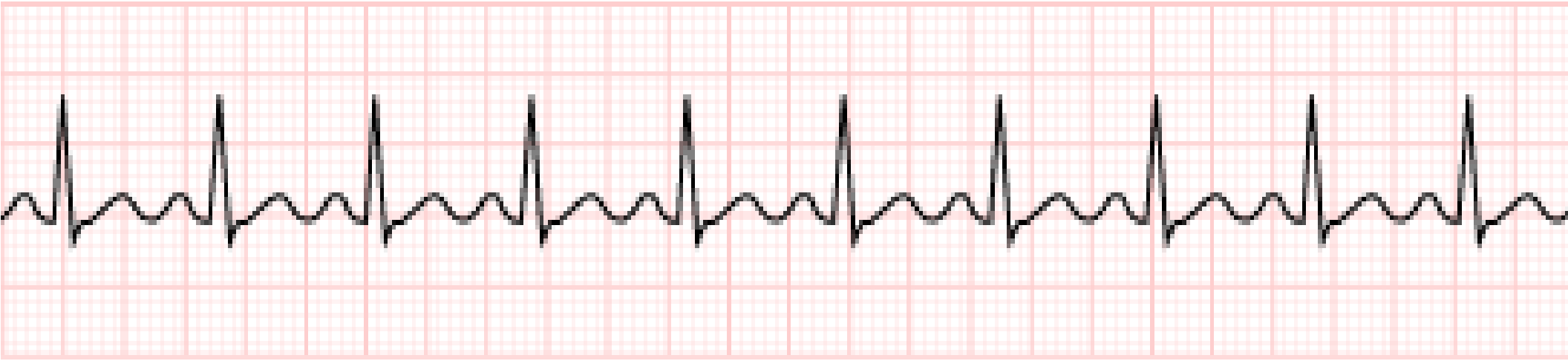
Rate: >100 BPM

Regularity: Regular

P wave: Present

PR interval: Normal to short

QRS width: Normal to short



What are two common causes? _____& _____. If over 150 think about _____.

Sinus Tachycardia

Rate: >100 – 160 BPM

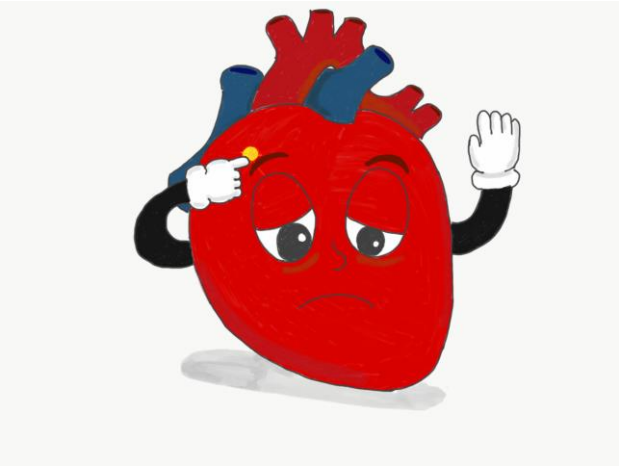
Regularity: Regular

P wave: Present, PR interval constant

_____ and _____ can cause sinus tachycardia.

What is this called?

Sinus Pause/Arrest



Rate: Varies

Regularity: Irregular

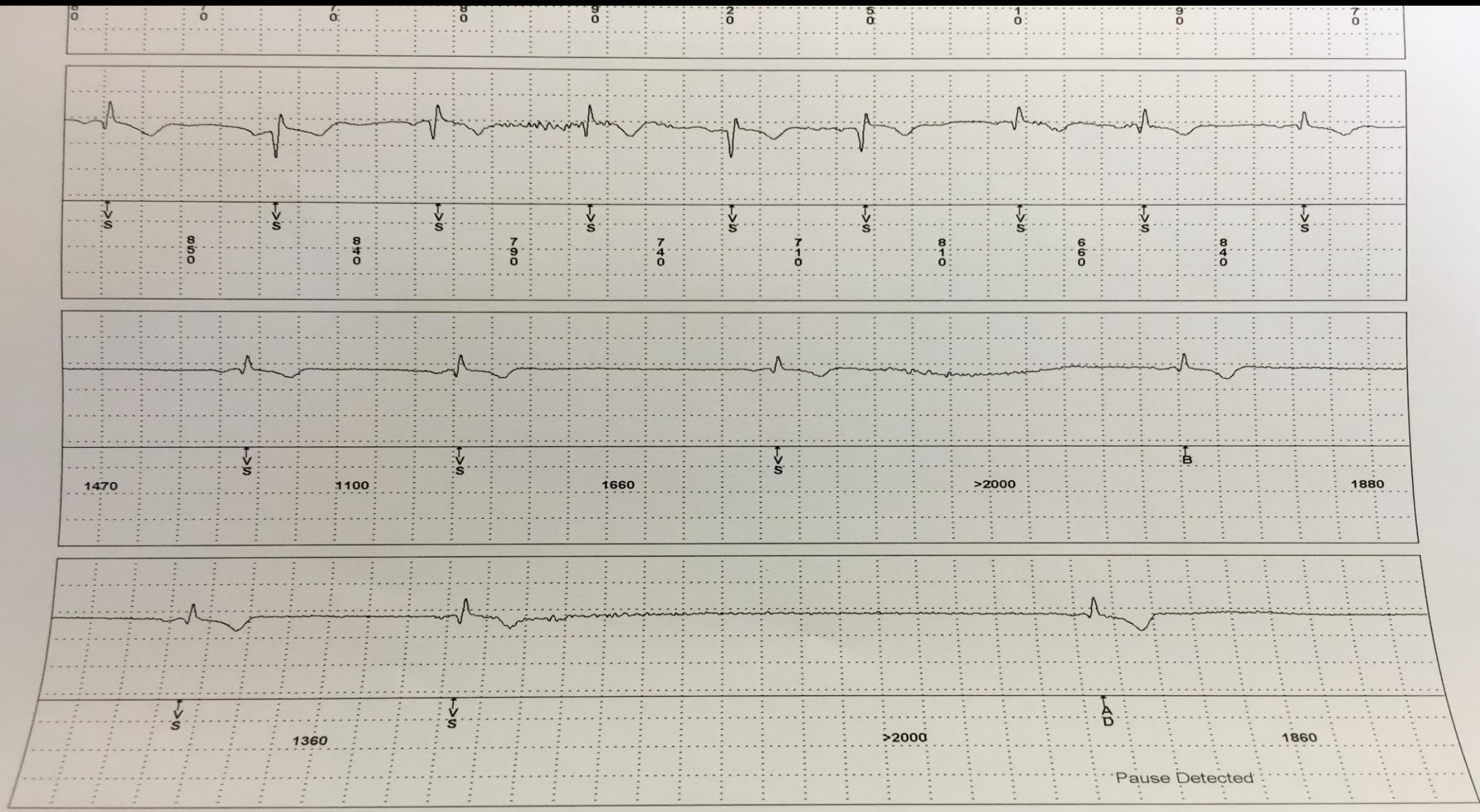
P wave: Present except in areas of pause/arrest

PR interval: Normal

QRS width: Normal

When do we need to think about a pacemaker? _____

Holter monitor

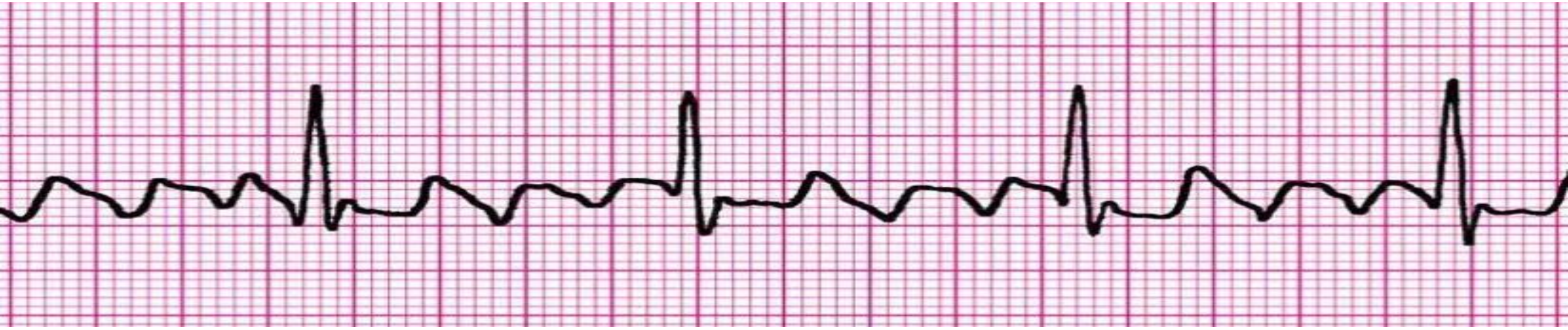


Wandering Atrial Pacemaker (WAP)

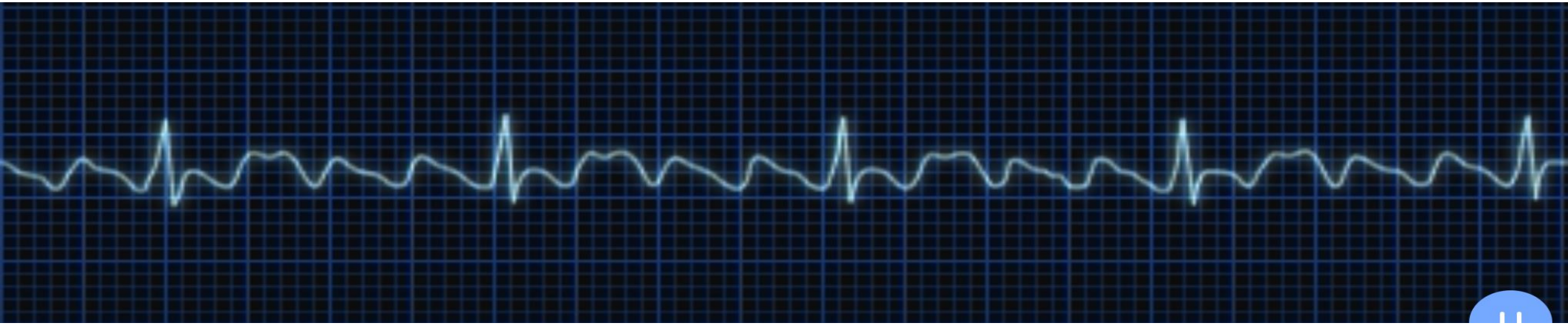
Rate: 100 BPM
Regularity: Irregularly irregular
P wave: At least 3 different morphologies
PR interval: Variable depending on focus

Atrial Flutter

Rate: Atrial commonly 250–350 BPM
ventricular commonly 125–175 BPM
Regularity: Usually regular
P wave: Saw toothed,
"F waves"
PR interval: Variable
QRS width: Normal



More Atrial Flutter

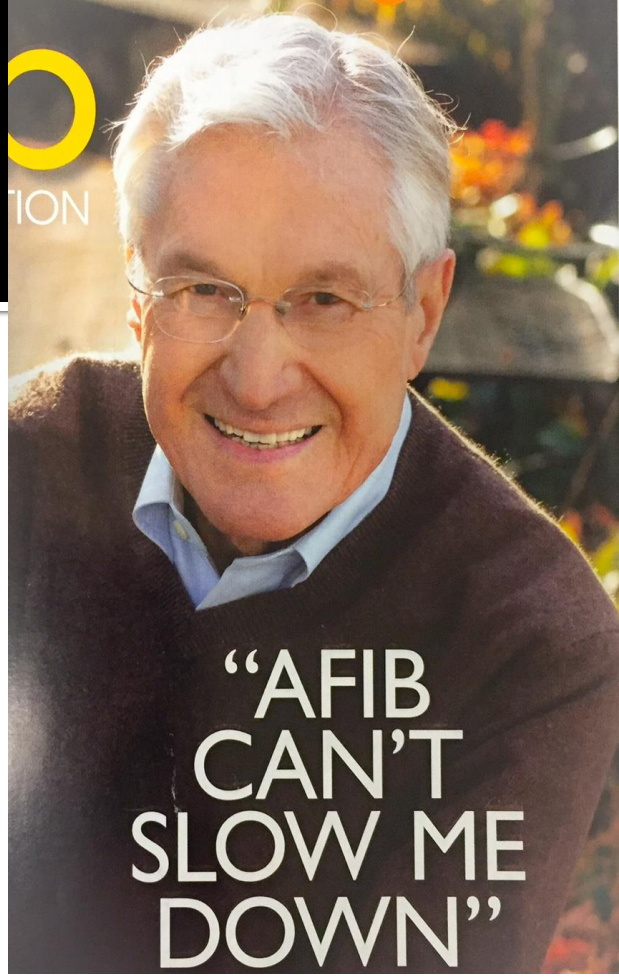


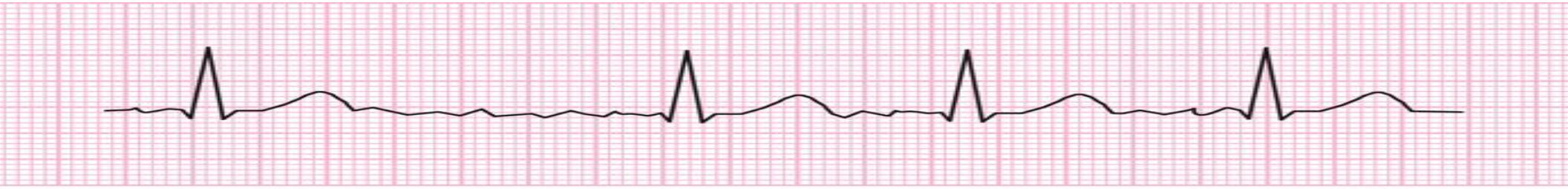
Atrial Fibrillation

Rate: Variable, ventricular response can be fast or slow.

Regularity: Irregularly irregular

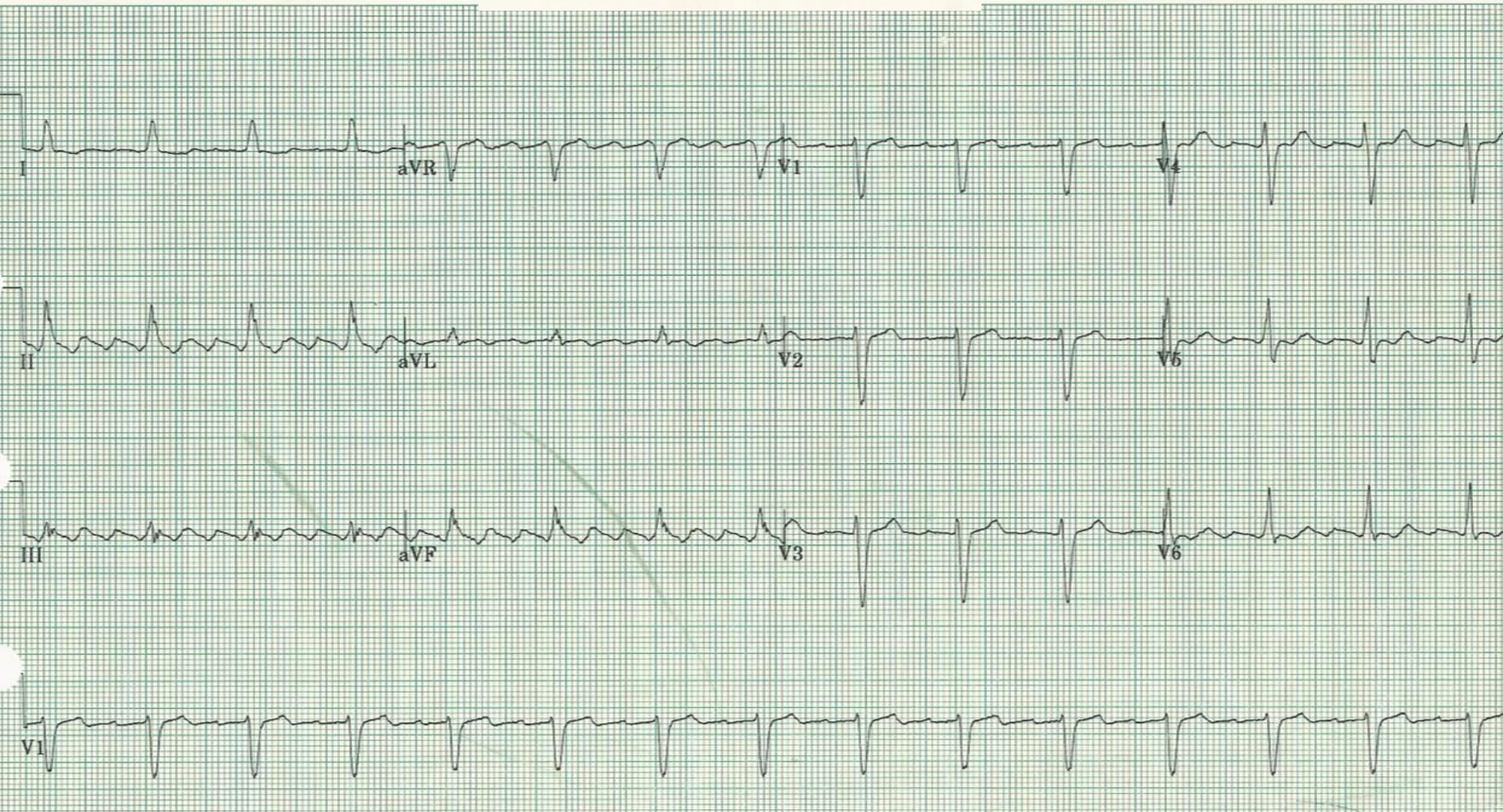
P wave: None; chaotic atrial activity





Patients lose their _____ in atrial fibrillation.

Vent. rate	89 bpm	Atrial flutter with 3:1 AV conduction
PR interval	* ms	Nonspecific intraventricular conduction delay
QRS duration	124 ms	Nonspecific ST and T wave abnormality
QT/QTc	390/474 ms	Abnormal ECG
P-R-T axes	78 53 91	



Atrial Fibrillation

Rate: Variable, ventricular response can be fast or slow. Atrial rate is usually over 350 BPM.
Regularity: Irregularly irregular
P wave: None; chaotic atrial activity

Patients lose their _____ in atrial fibrillation.

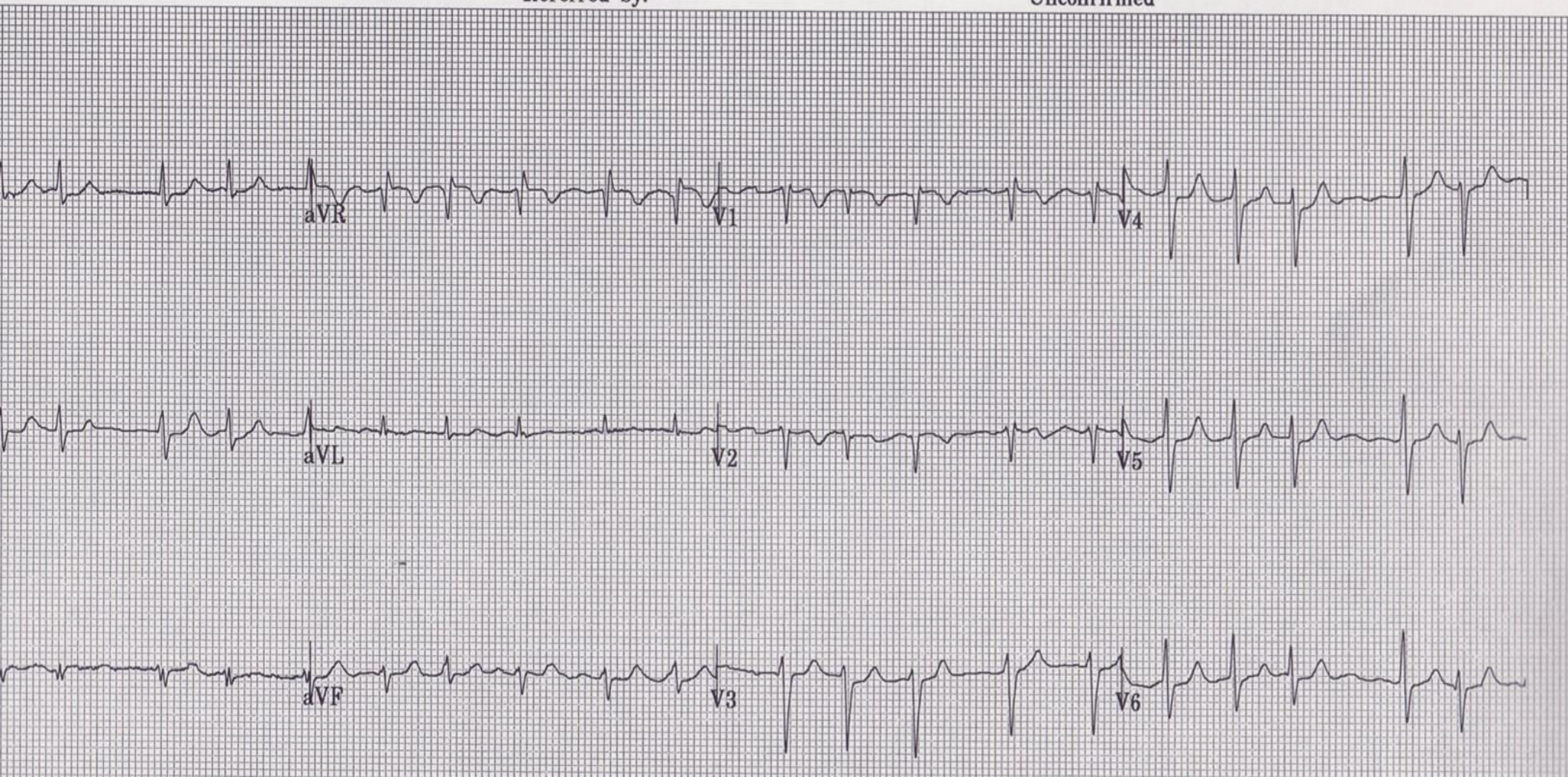
Vent. rate	127	bpm
PR interval	*	ms
QRS duration	82	ms
QT/QTc	266/386	ms
P-R-T axes	* -24	52

Atrial fibrillation with rapid ventricular response with premature aberrantly conducted complexes
Nonspecific ST abnormality, probably digitalis effect
Abnormal ECG

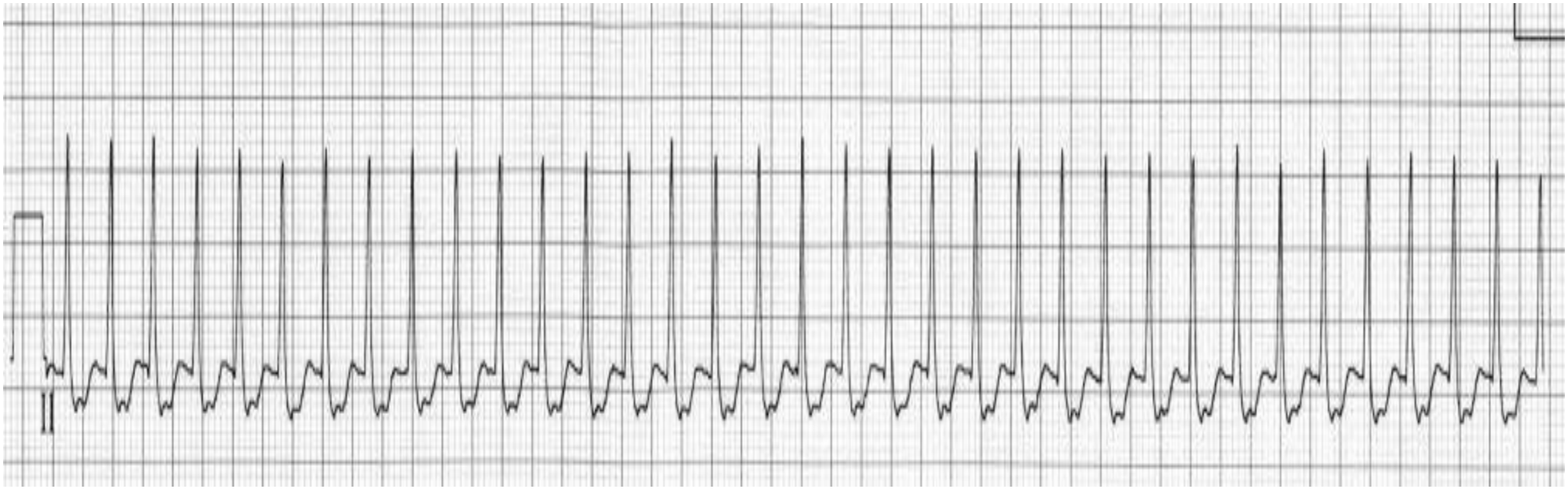
Technician:
Test ind:

Referred by:

Unconfirmed

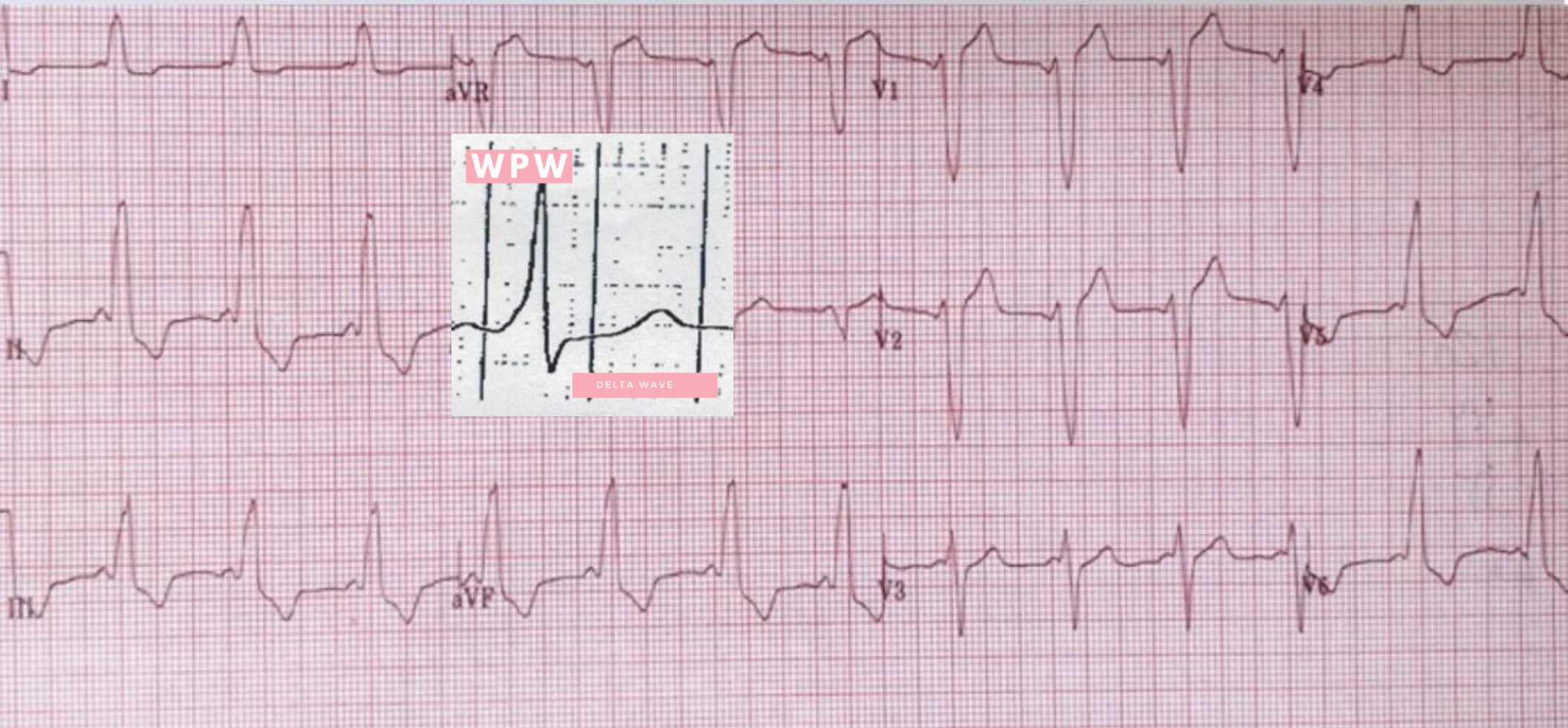


SVT



These patients will most likely have a _____ blood pressure.

Vent. rate	86 bpm	Normal sinus rhythm
PR interval	136 ms	Nonspecific intraventricular block
QRS duration	164 ms	Inferior infarct, age undetermined
QT/QTc	400/478 ms	Abnormal ECG
P-R-T axes	* 70 259	



Conjunction Junction

Junctional Rhythm

Rate: 40–60 BPM
Regularity: Regular
P wave: Variable (none, antegrade, or retrograde)

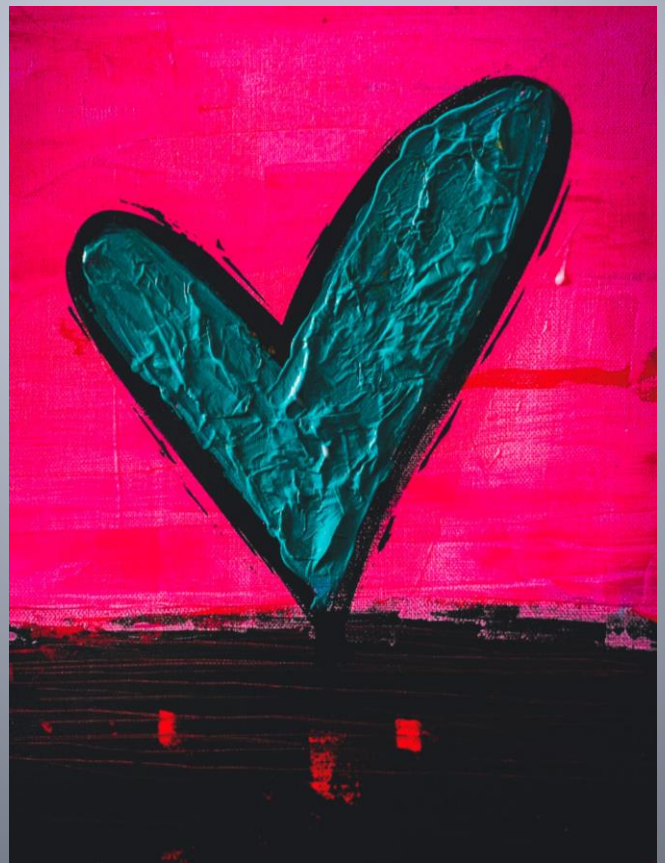
The _____ is in charge of the heart.

Accelerated Junctional Rhythm

Rate: 60–100 BPM
Regularity: Regular
P wave: Variable (none, antegrade, or retrograde)

The heart rate is the same as sinus. How do we know the junction is in charge?

Ventricular things



Ventricular things

- V-tach
- Vfib
- Torsades
- PVC's

Idioventricular Rhythm

Rate: 20–40 BPM
Regularity: Regular
P wave: None
PR interval: None
QRS width: Wide (≥0.12 sec), bizarre appearance

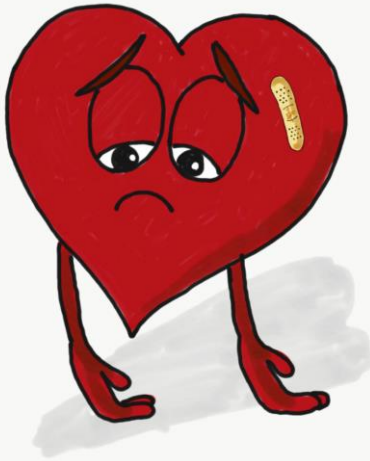
Agonal

Rate: 0-20 BPM

P wave: None

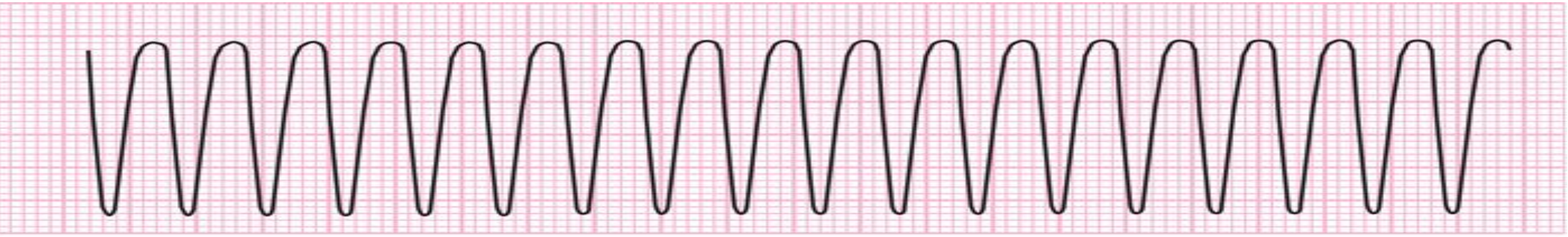
PR interval: None

QRS width: Wide (≥0.12 sec), bizarre appearance



Ventricular Tachycardia (VTach)

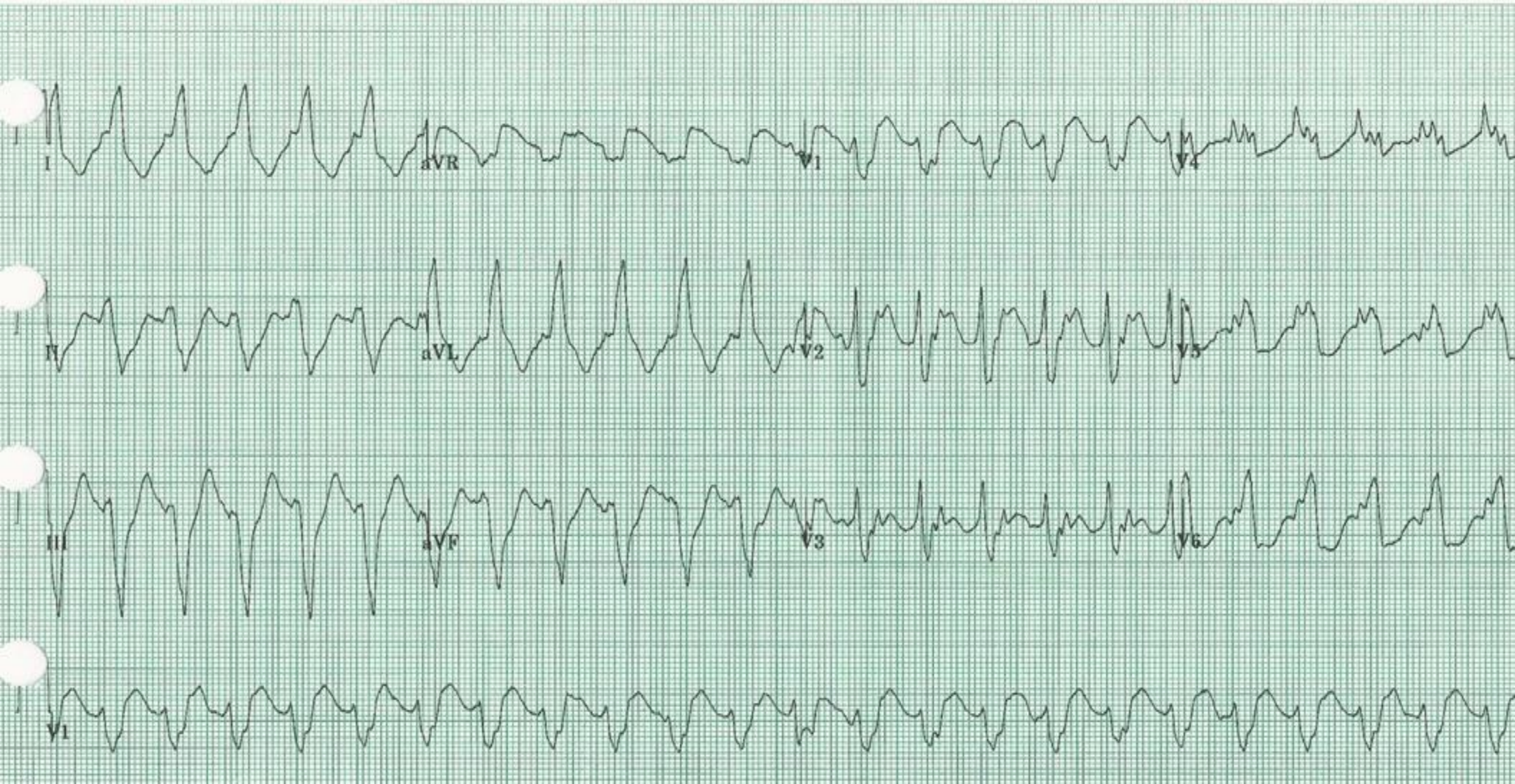
Rate: 100–200 BPM
Regularity: Regular
PR interval: None
QRS width: Wide, bizarre



Vent. rate	146 bpm	Sinus tachycardia with fusion complexes
PR interval	128 ms	Wolff-Parkinson-White
QRS duration	210 ms	Abnormal ECG
QT/QTc	344/536 ms	
P-R-T axes	107 -52 169	

Referred by:

Unconf



Torsades de Pointes

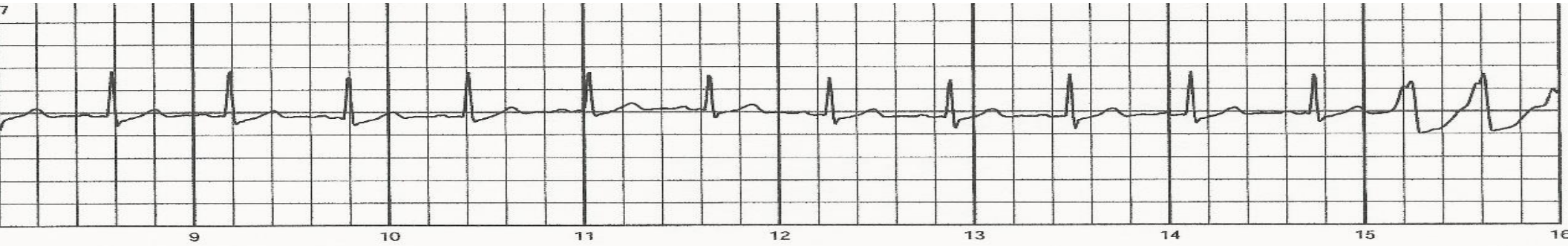
Rate: 200–250 BPM
Regularity: Irregular
P wave: None
P:QRS ratio: None
PR interval: None
QRS width: Variable
Grouping: Variable sinusoidal pattern
Dropped beats: None

_____ can cause torsades.

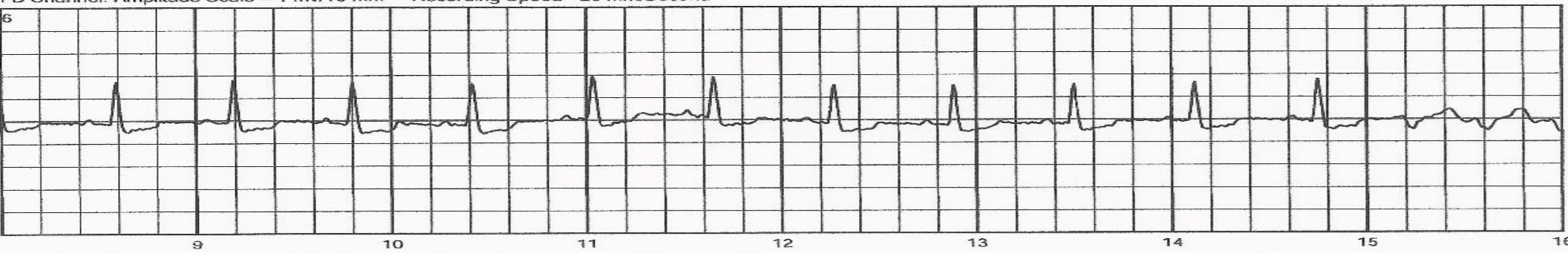
Torsades De Pointes

- Changing polarity of the QRS complex from positive to negative and back to positive again
- Its still VTACH – why do I need to identify it further?

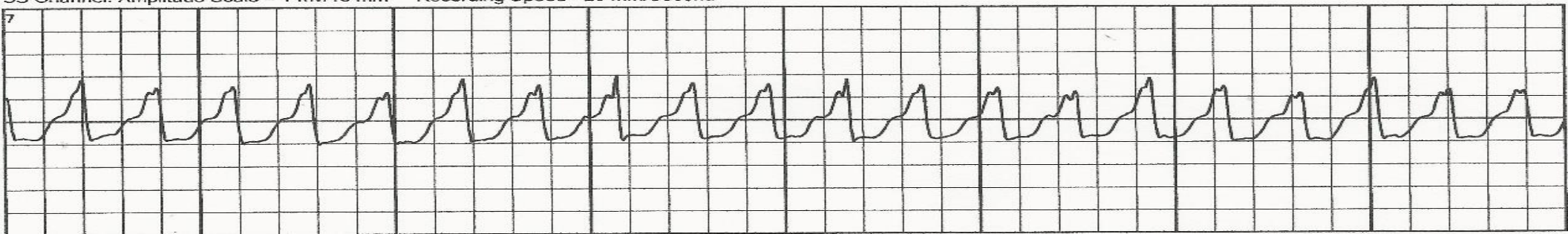
What is happening here?



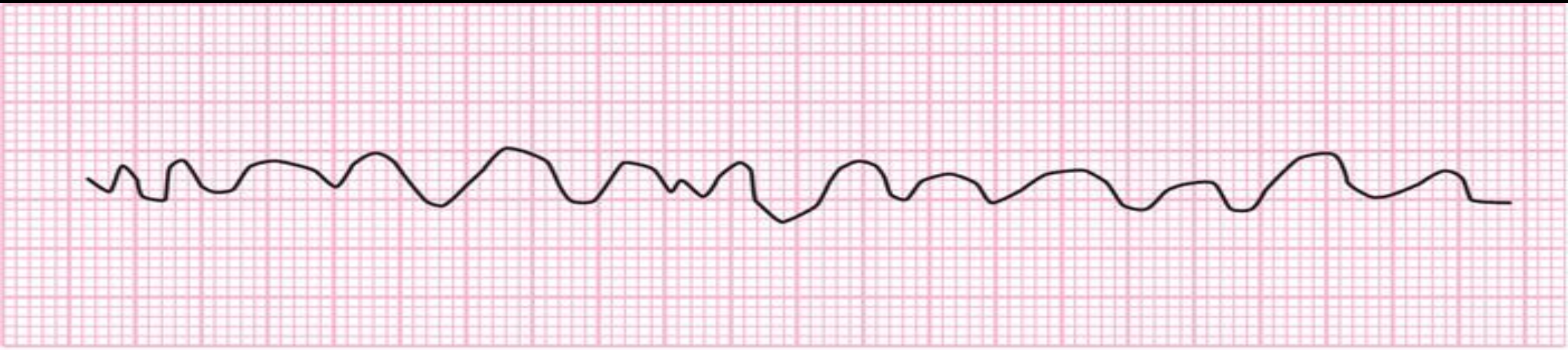
FB Channel: Amplitude Scale = 1 mv/10 mm Recording Speed - 25 mm/Second



SS Channel: Amplitude Scale = 1 mv/10 mm Recording Speed - 25 mm/Second



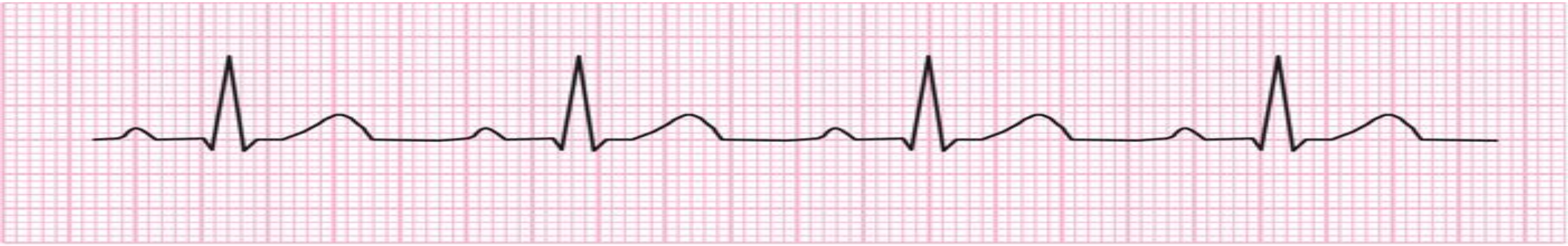
Ventricular Fibrillation (VFib)



A REVIEW:

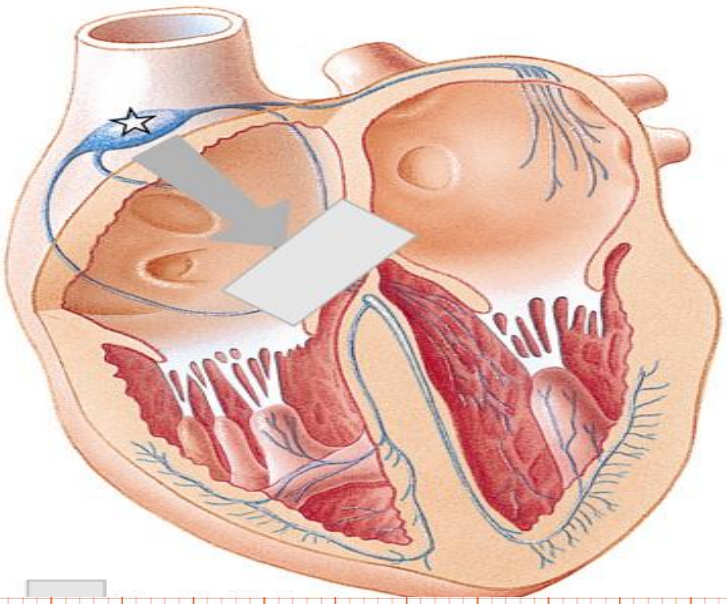
Heart blocks

First-Degree Heart Block



Regularity: Regular
P wave: Normal
PR interval: Prolonged
>0.20 sec
QRS width: Normal

First Degree AV Block



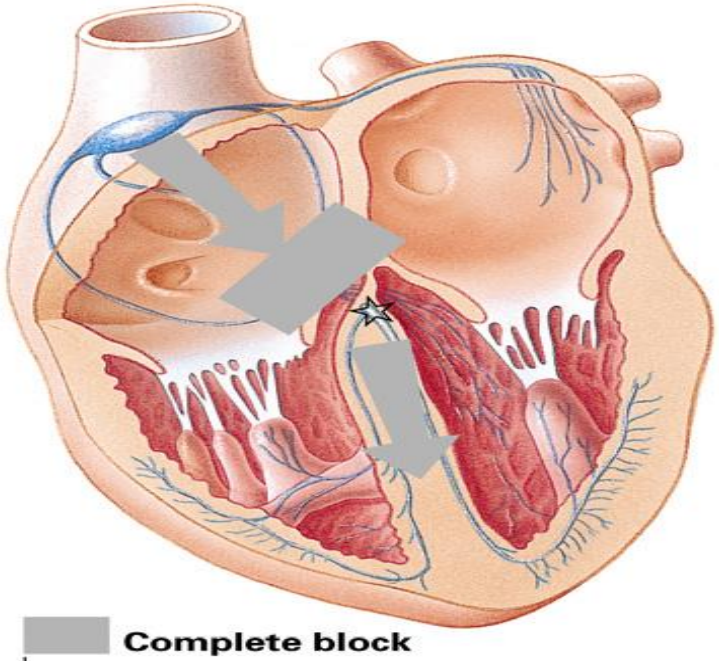
2nd Degree AV Block - Type I

Regularity: Regularly irregular
P wave: Present
PR interval: Variable
QRS width: Normal
Dropped beats: Yes

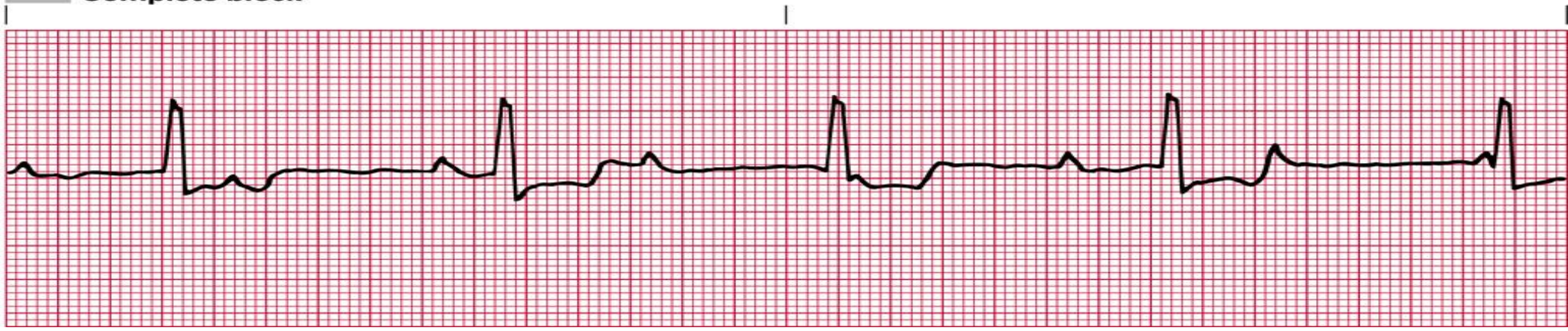
Mobitz II Second-Degree Heart Block

Regularity: Regularly irregular
P wave: Normal
PR interval: Normal
QRS width: Normal
Dropped beats: Yes

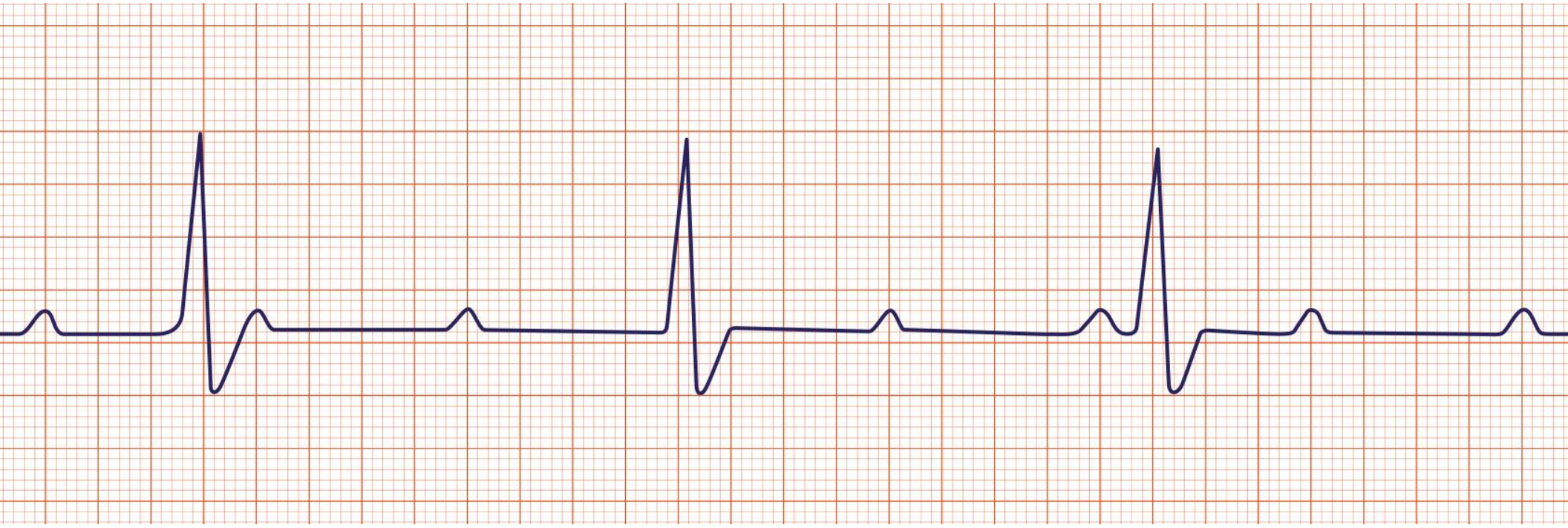
3rd Degree AVB Complete



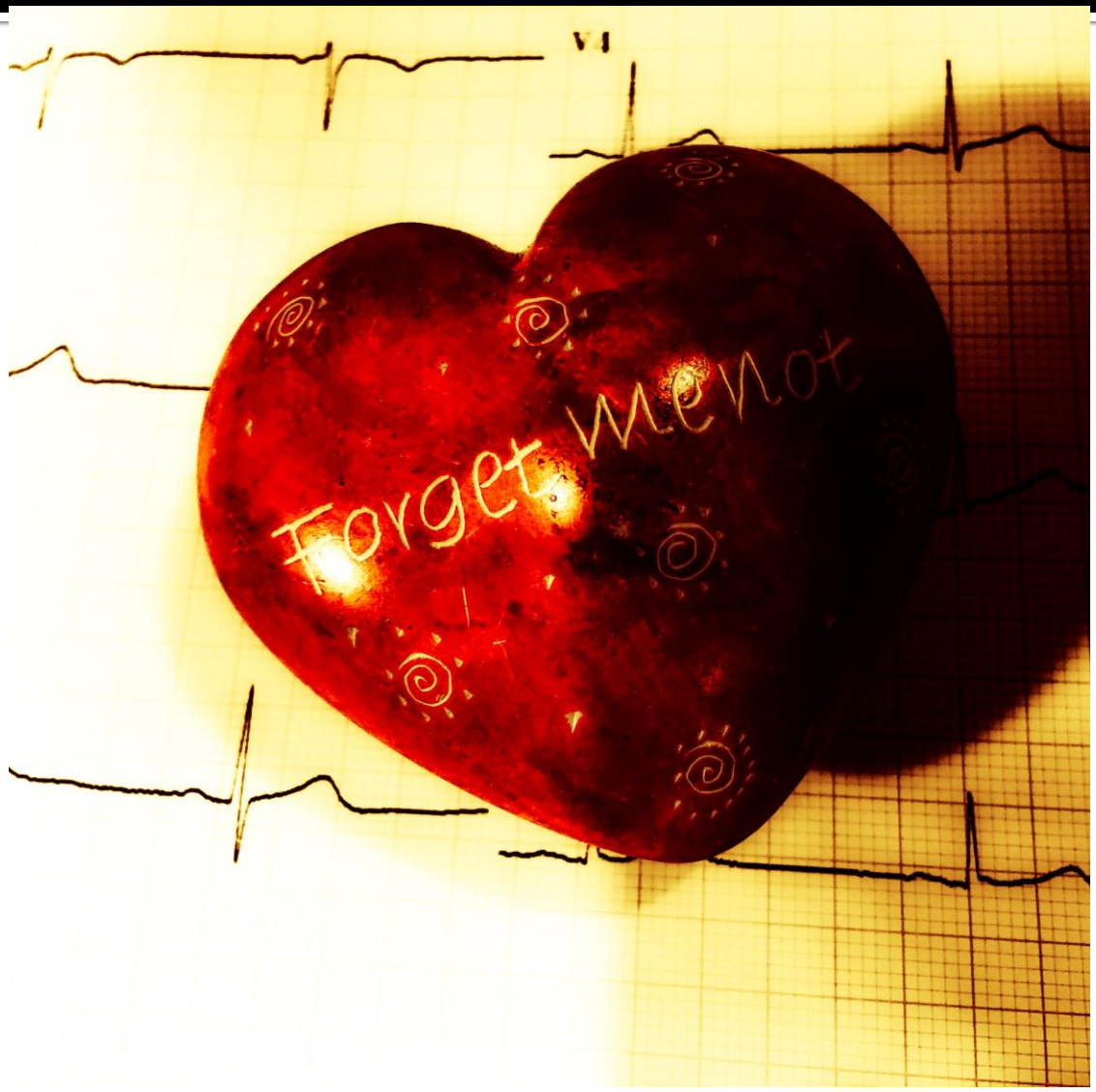
Rate: Separate rates for underlying (sinus) rhythm and escape rhythm
Regularity: Regular, but P rate and QRS rates are different
P wave: Present
P:QRS ratio: Variable
PR interval: Variable, no pattern
QRS width: Normal or wide
Grouping: None
Dropped beats: None

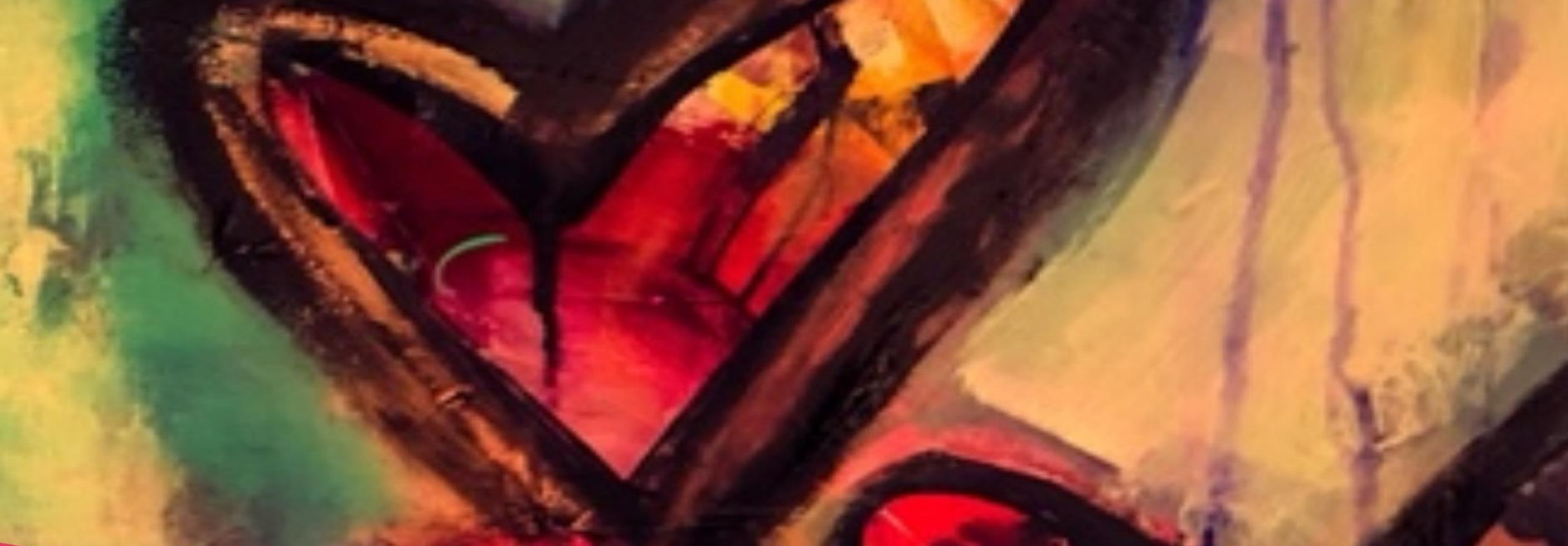


3rd Degree AVB Complete



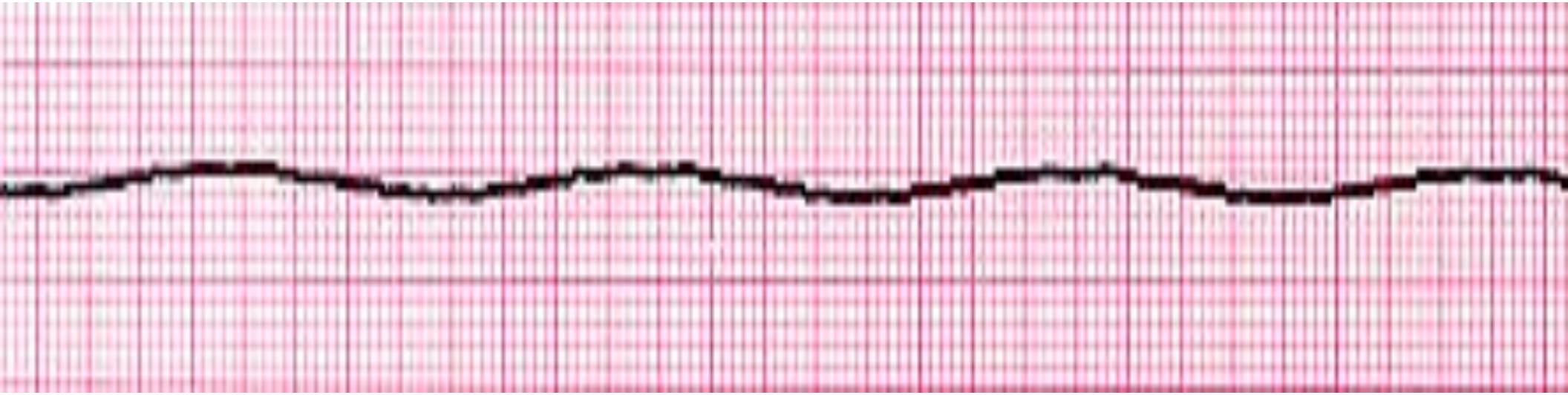
Thank you!





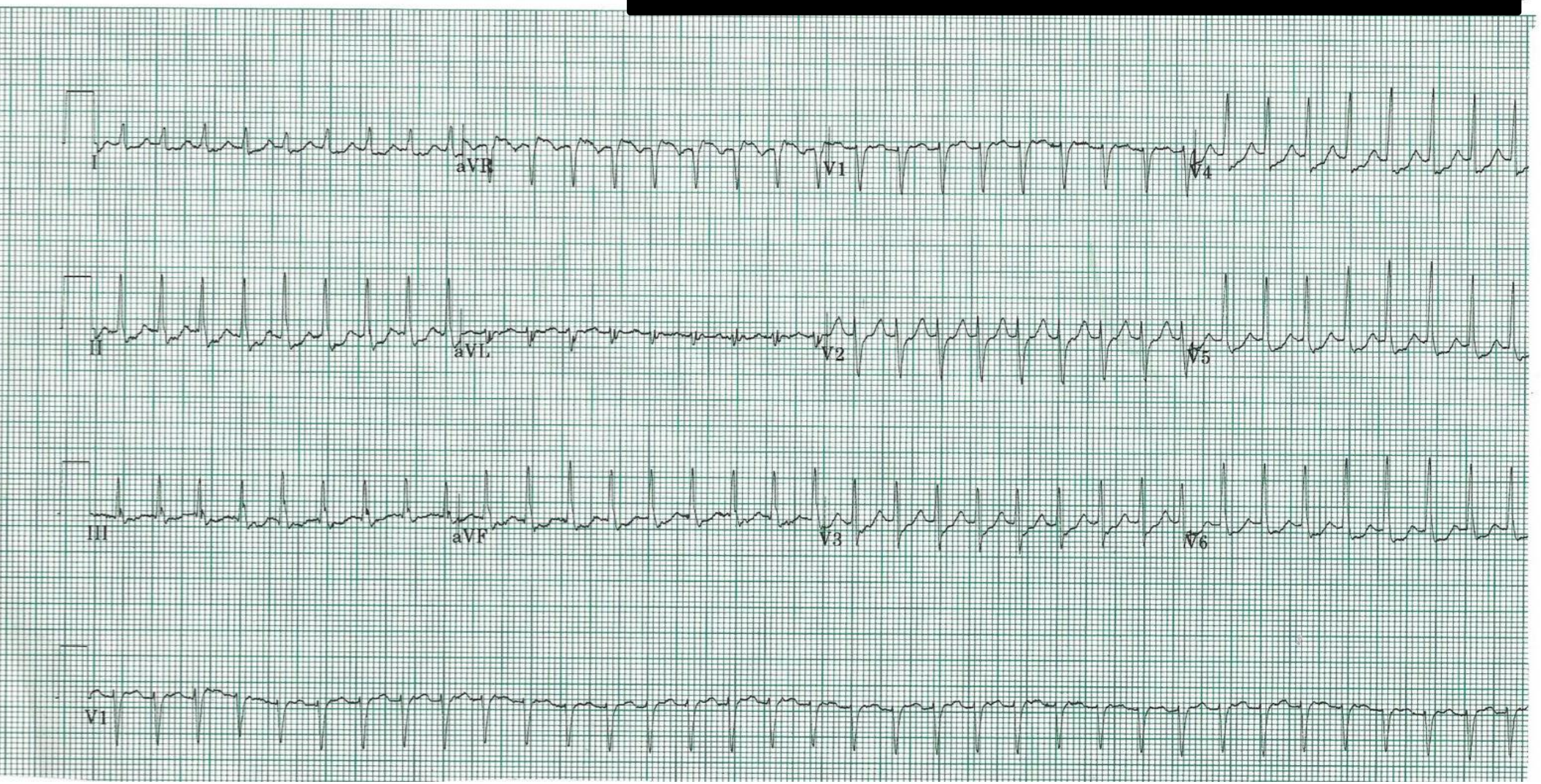
Practice Strips

GCS of 3

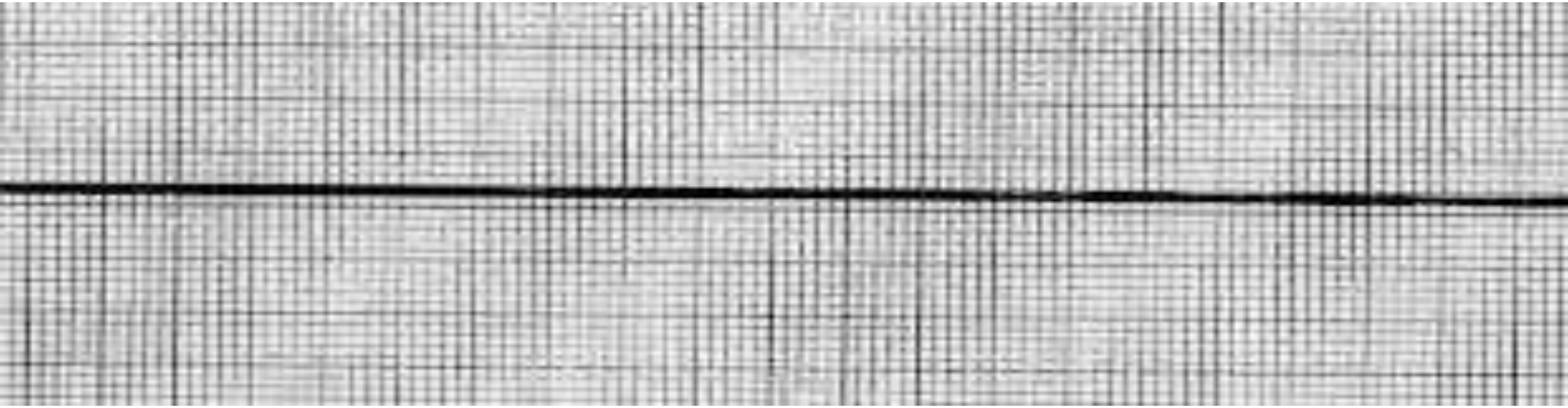


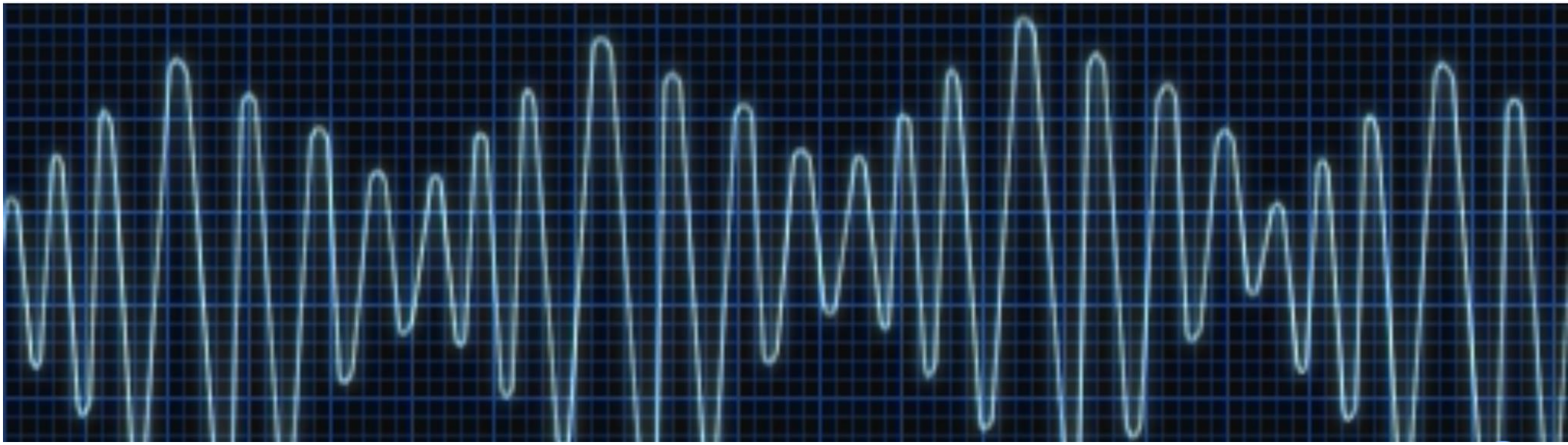
Vent. rate	215	bpm
PR interval	*	ms
QRS duration	90	ms
QT/QTc	210/397	ms
P-R-T axes	* 73	-83

SVT



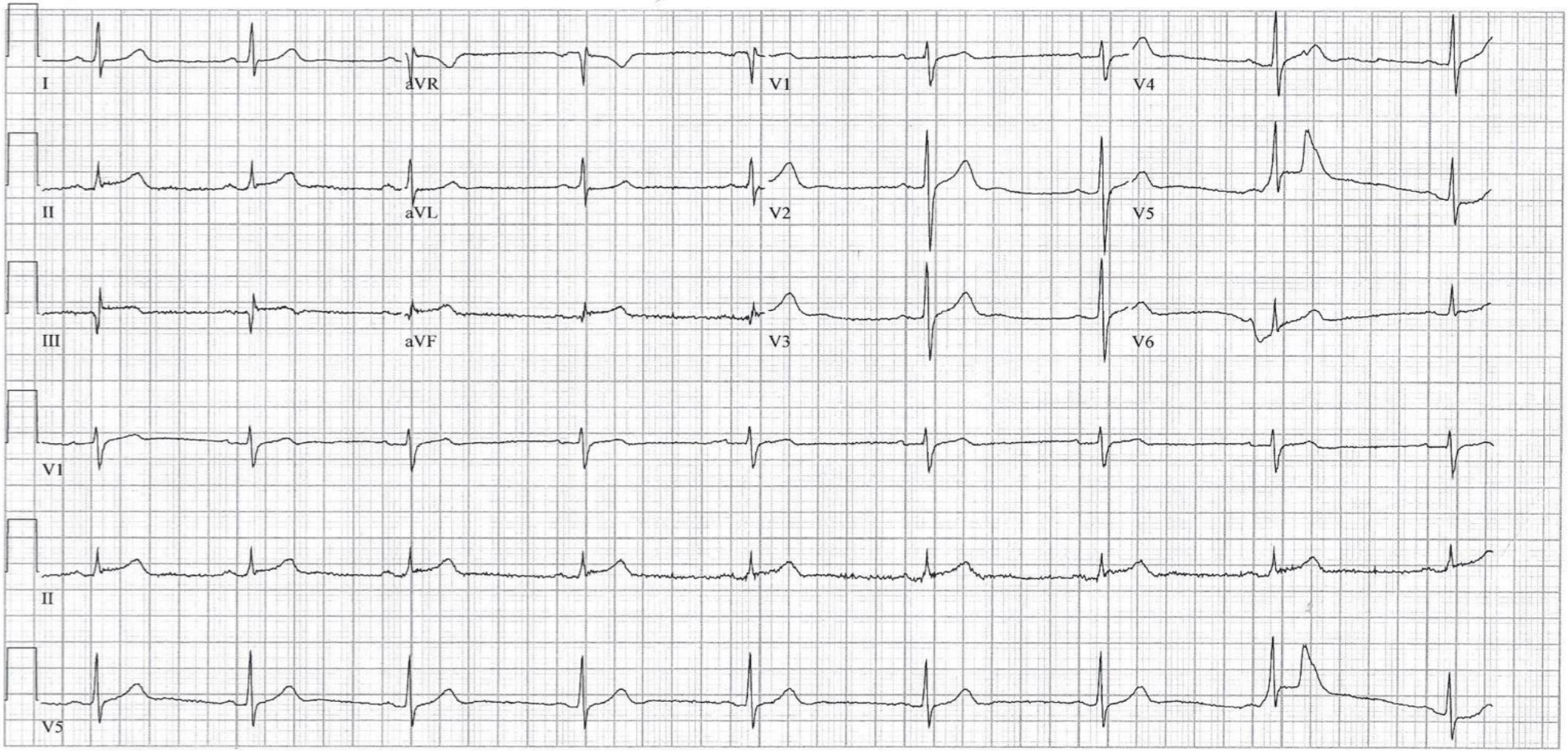
Also GCS of 3



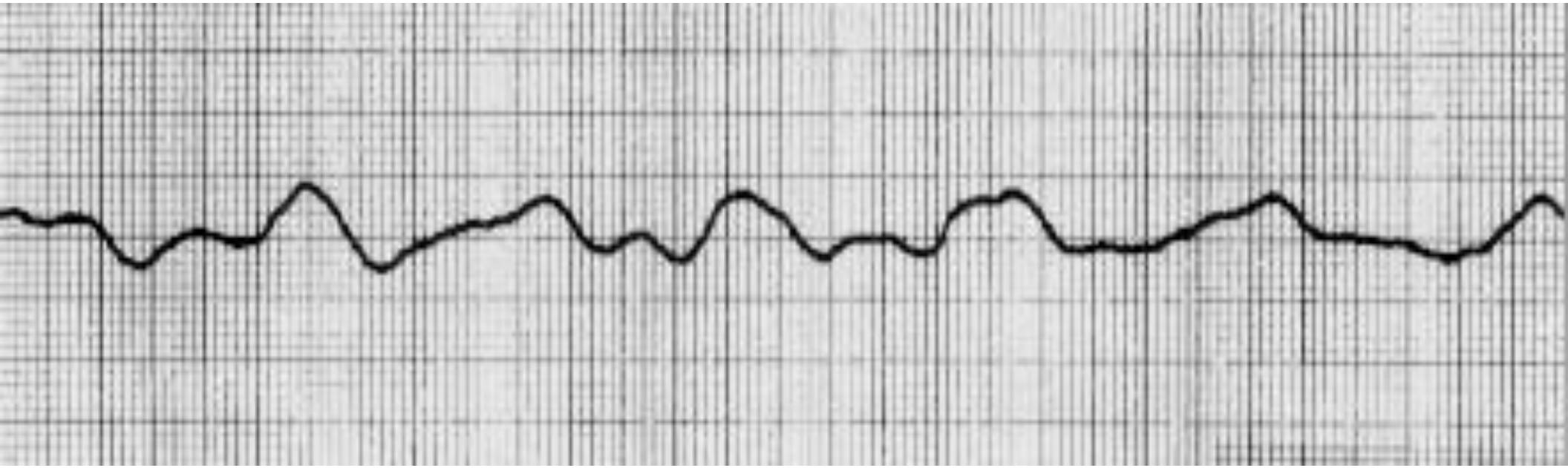


Vent. rate	52	BPM
PR interval	172	ms
QRS duration	92	ms
QT/QTc	414/385	ms
P-R-T axes	35 29	40

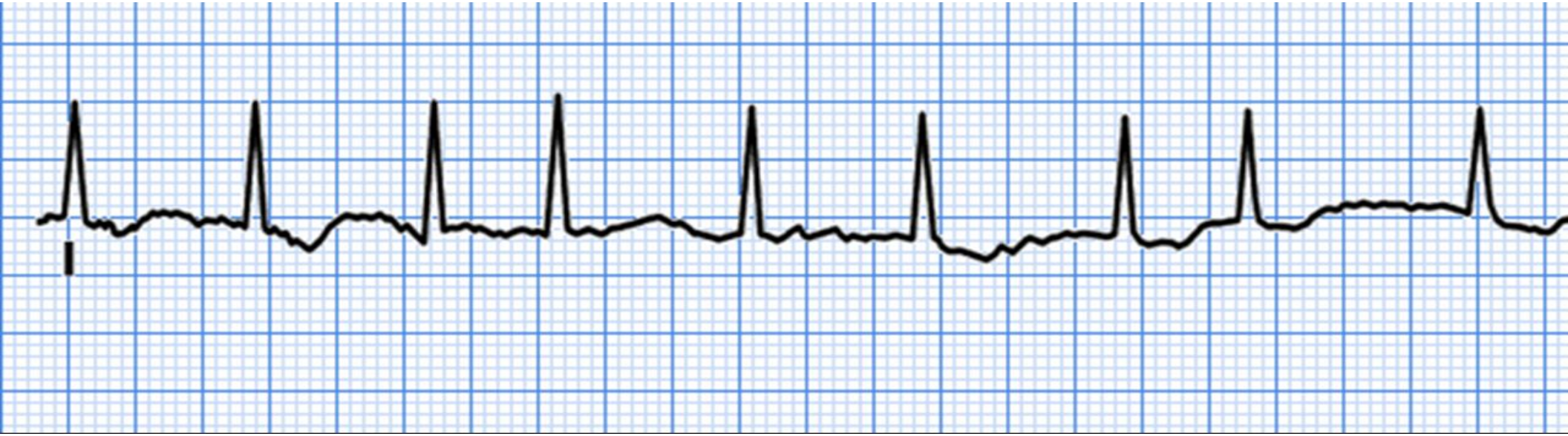
Sinus Brady



Better check those leads…

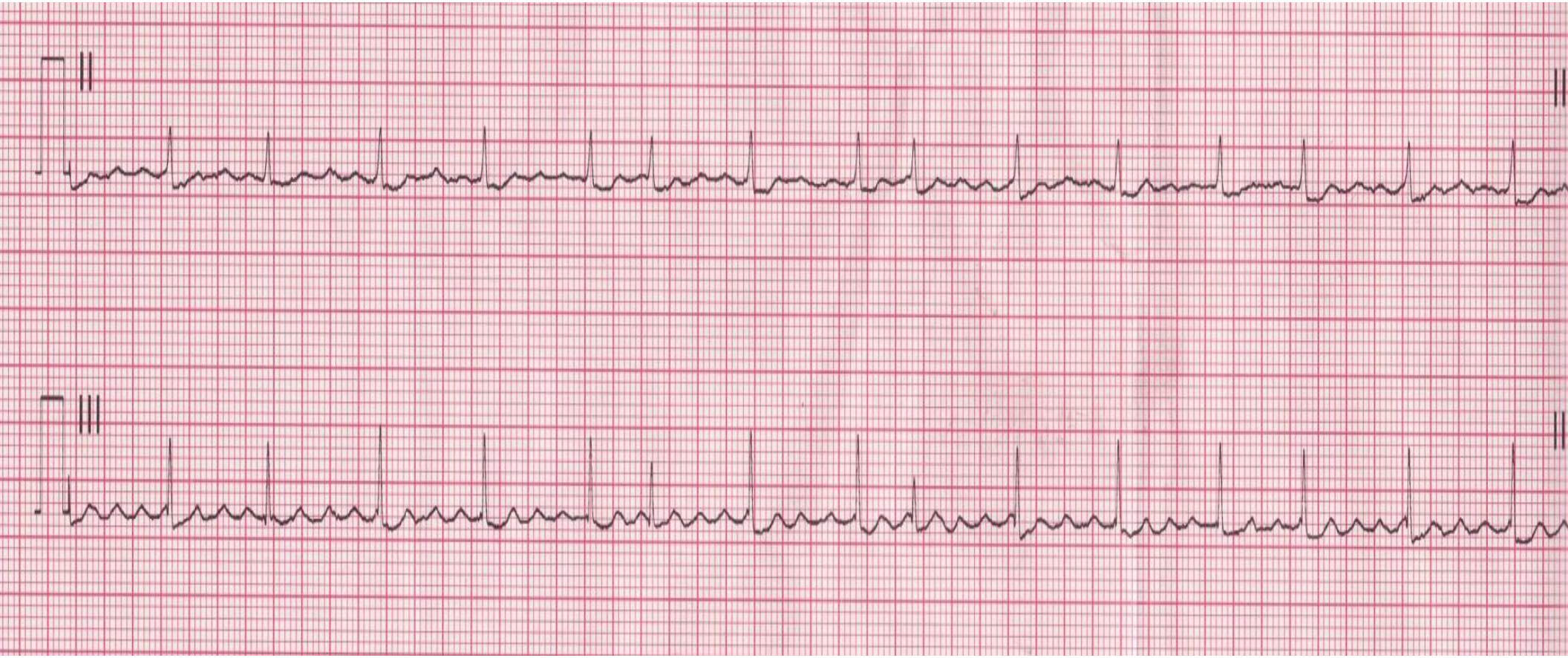


Irregularly irregular...

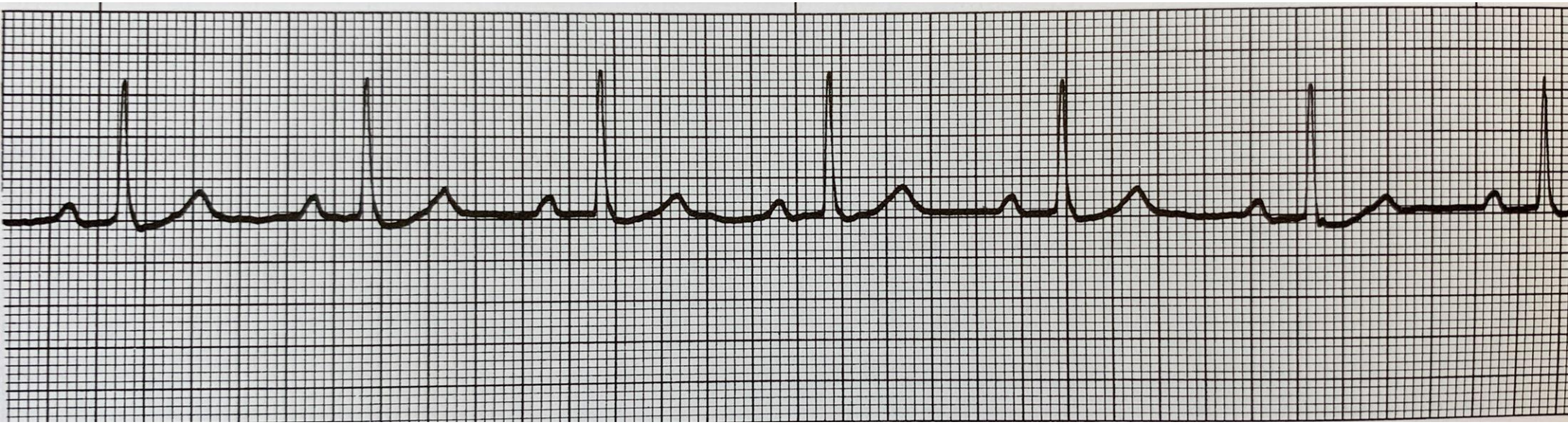


3rd degree block

“I don’t feel well…”



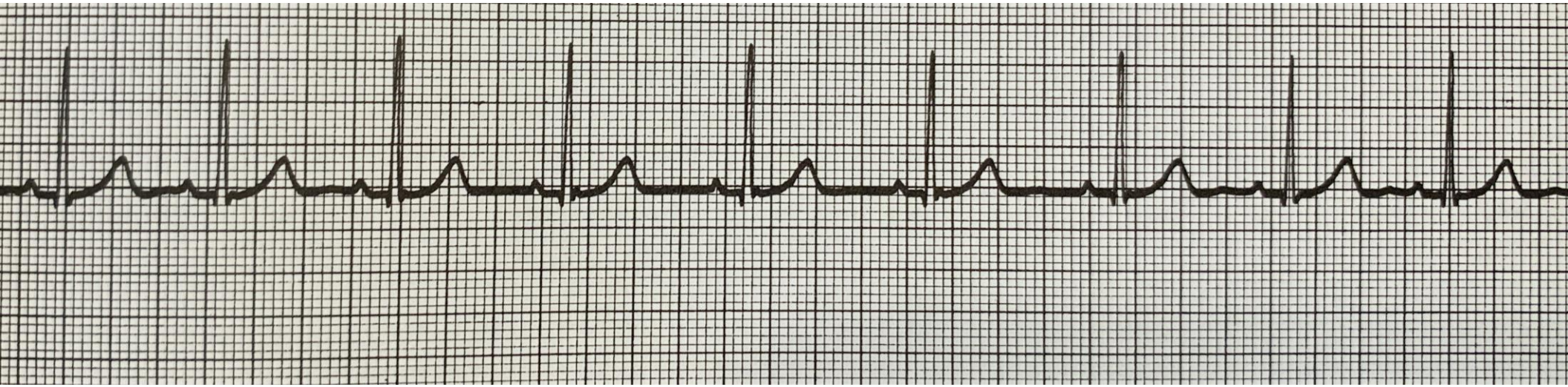
1st degree block



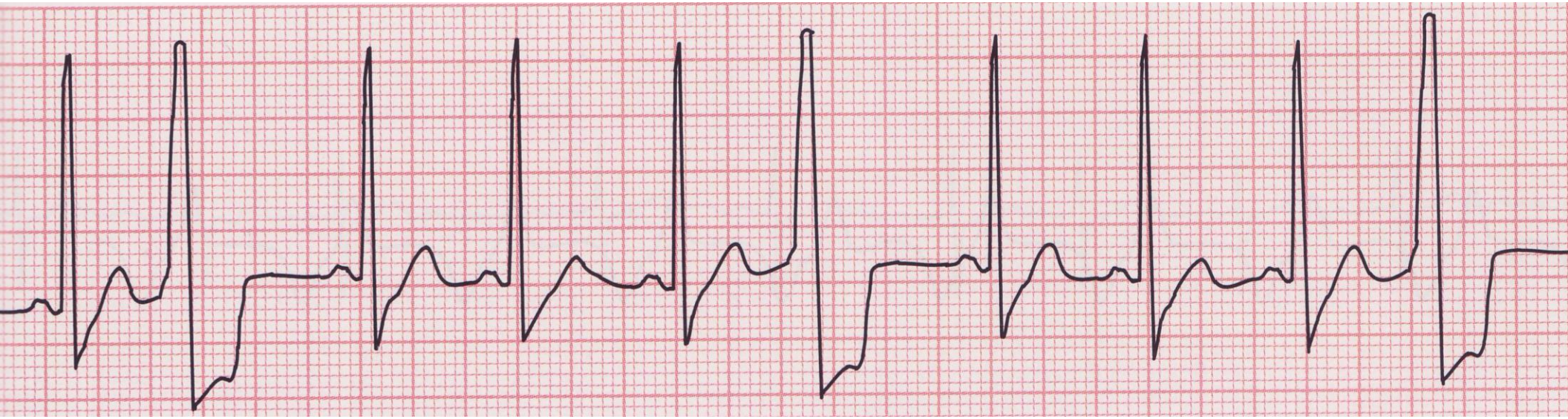
Palpitations....

Sinus Arrythmia

This happens with breathing…



Quadrageminy



Sinus Tachycardia