



BASIC RHYTHMS

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PA-C

“You missed something...”



1. Not too tall
2. Not too wide

QRS

1. Smooth
2. Don't be needy!

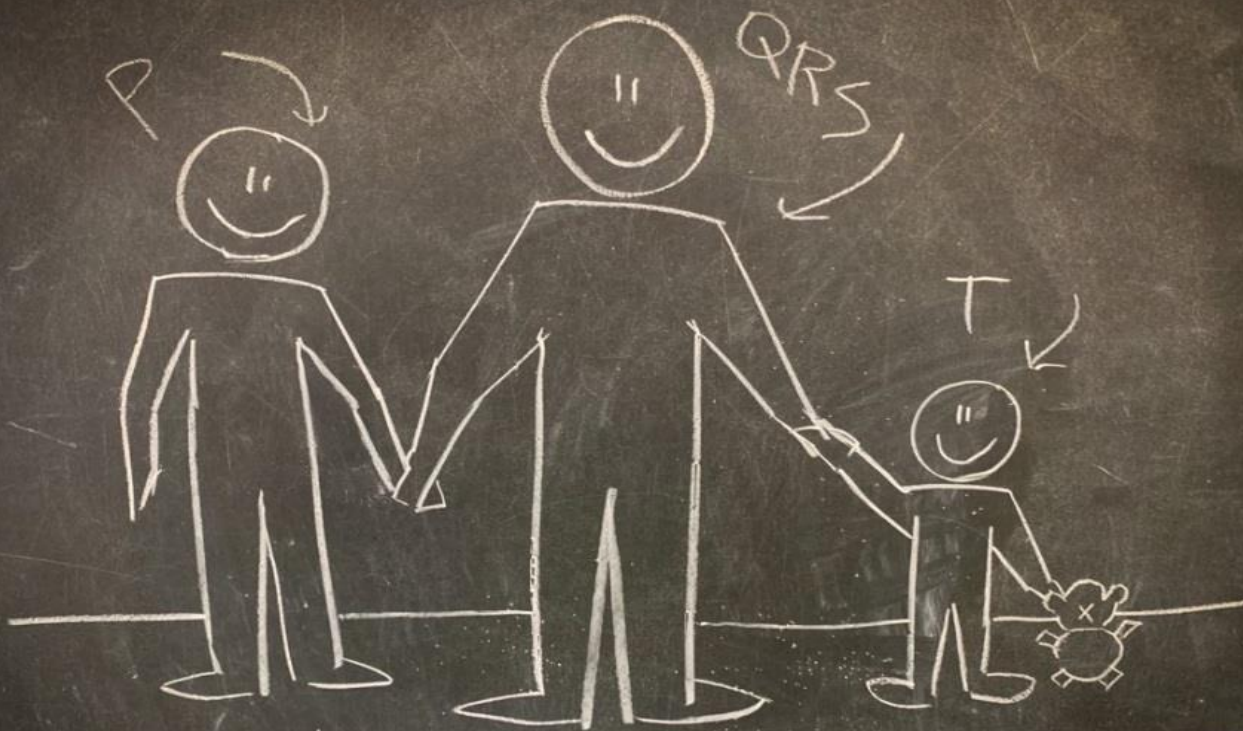
T WAVE

Oh no you didn't!

1. Upright
2. Don't be pointy!

P WAVE







Q, R, and S

Q

First - deflection after P wave

R

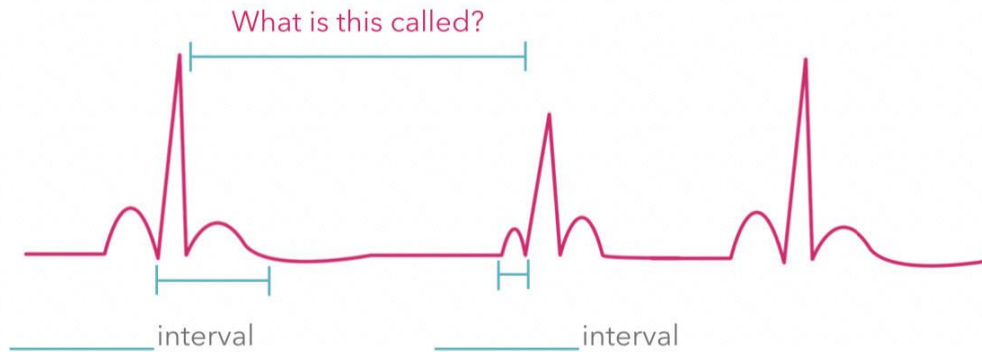
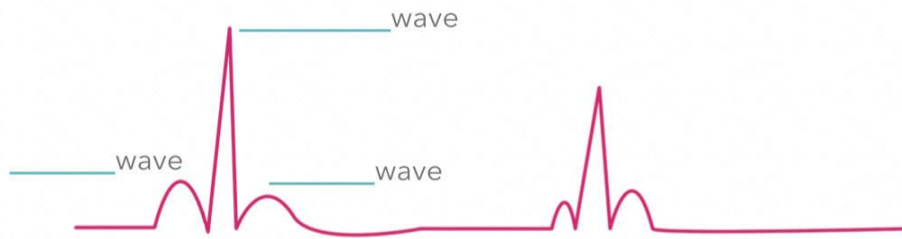
First + deflection after P wave

S

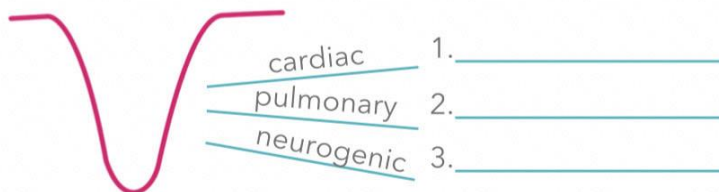
First - deflection after R wave

The big guns firing!

Label the parts of EKG wave



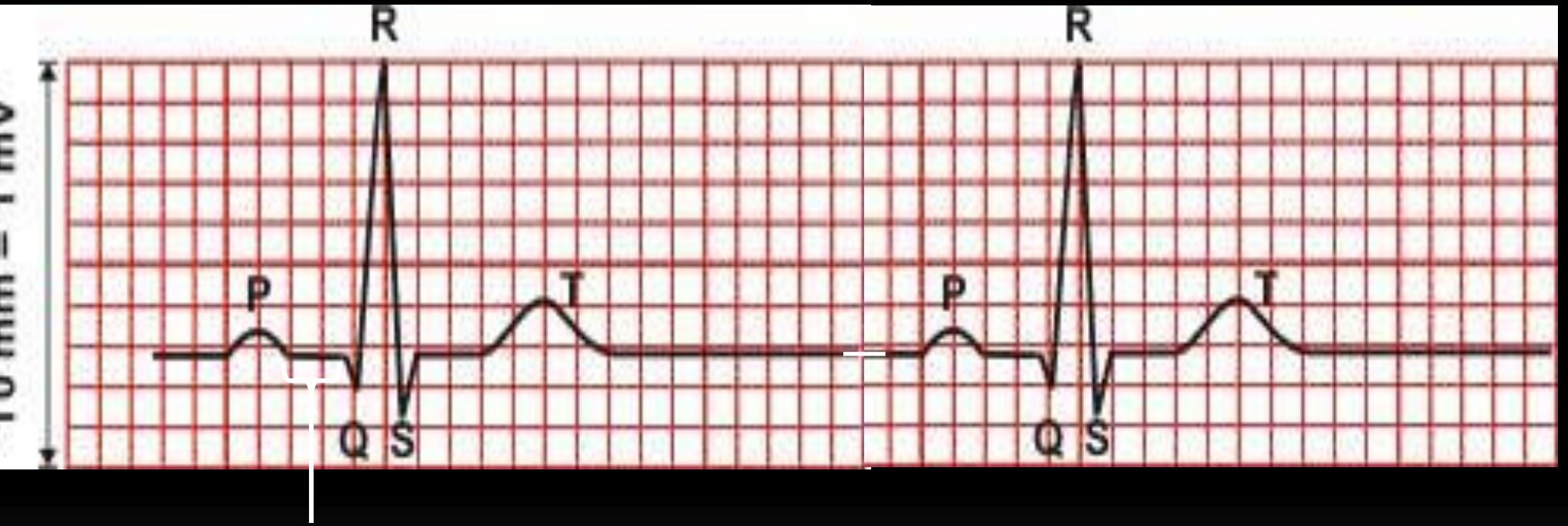
3 Causes of inverted T waves!



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...

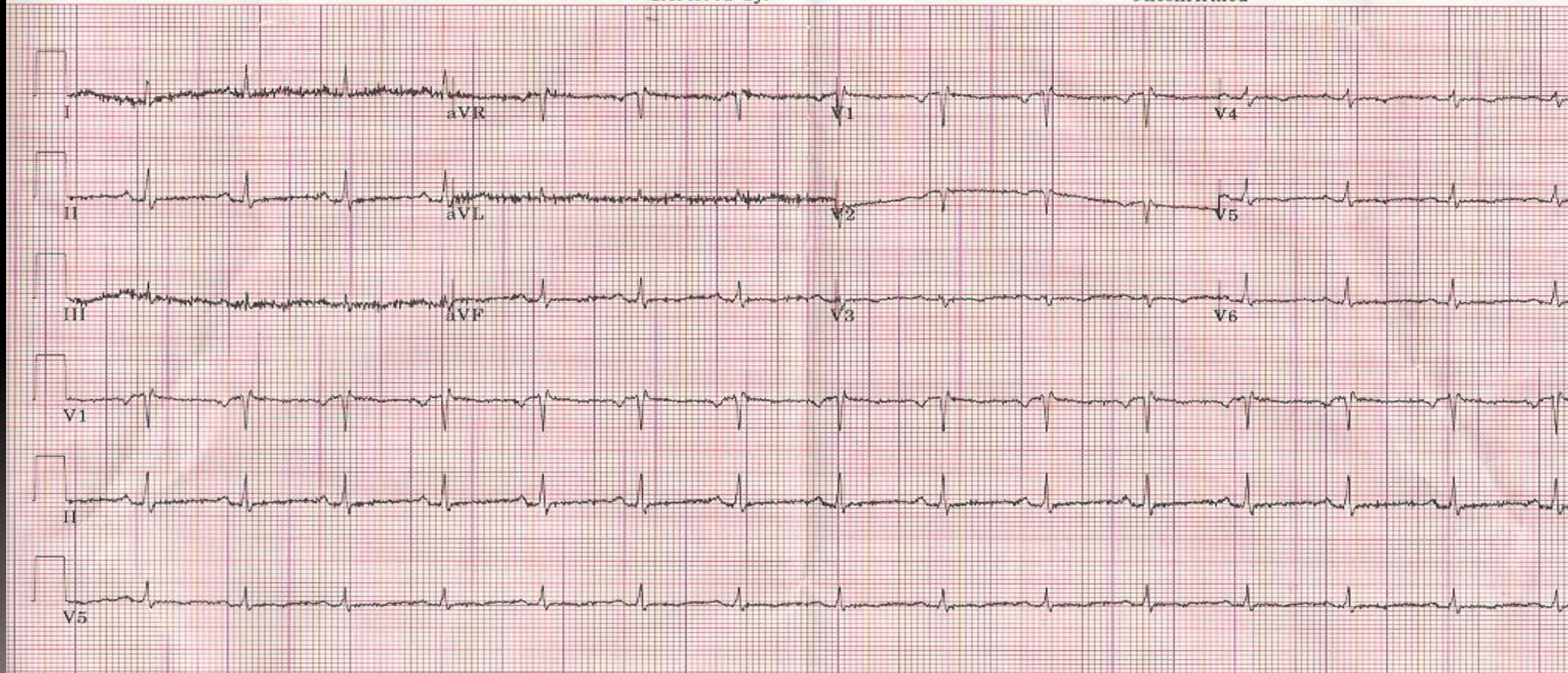
Vent. rate 91 bpm
PR interval 160 ms
QRS duration 78 ms
QT/QTc 580/713 ms
P-R-T axes 60 45 55

Normal sinus rhythm
Possible Left atrial enlargement
Low voltage QRS
Septal infarct, age undetermined
Prolonged QT
Abnormal ECG

Technician:
Test ind:

SCANNED

Referred by:





TIME
AFTER
TIME

The Rule of 300



10 Second Rule

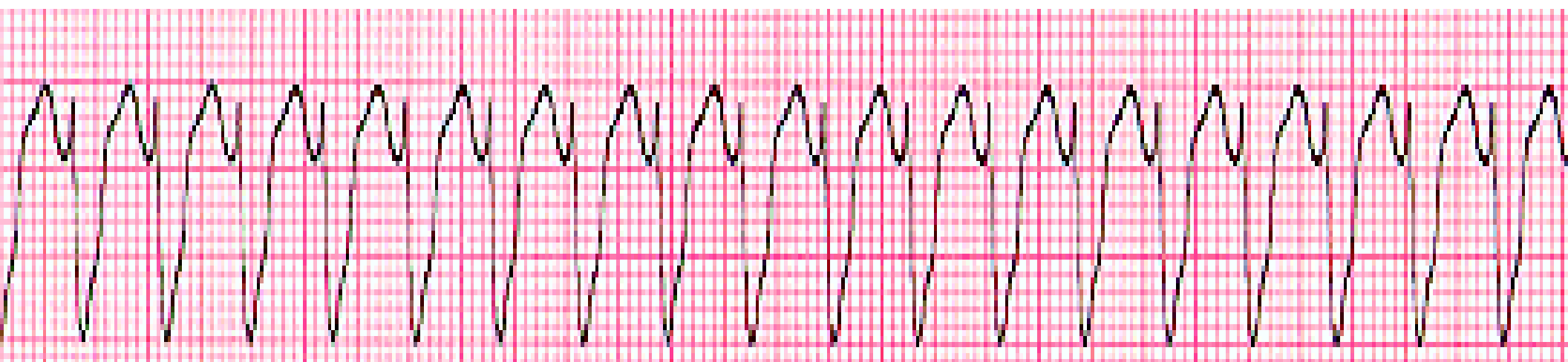
_____ and multiply by 6 to get the number of beats per 60 seconds.

Great for irregular rhythms.

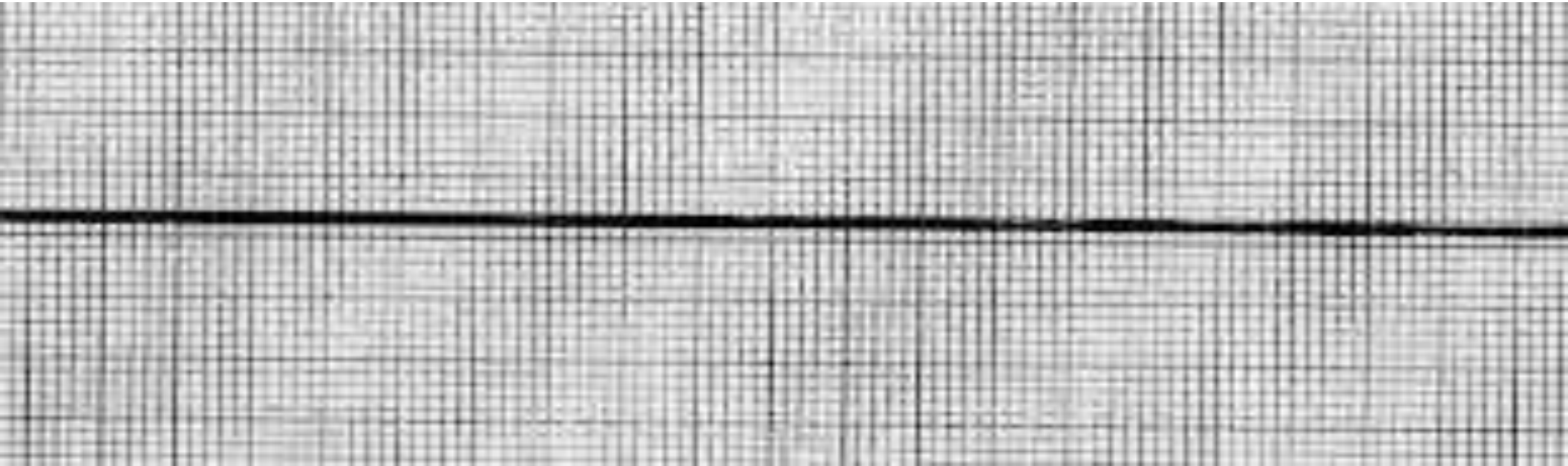


Sight rhythms

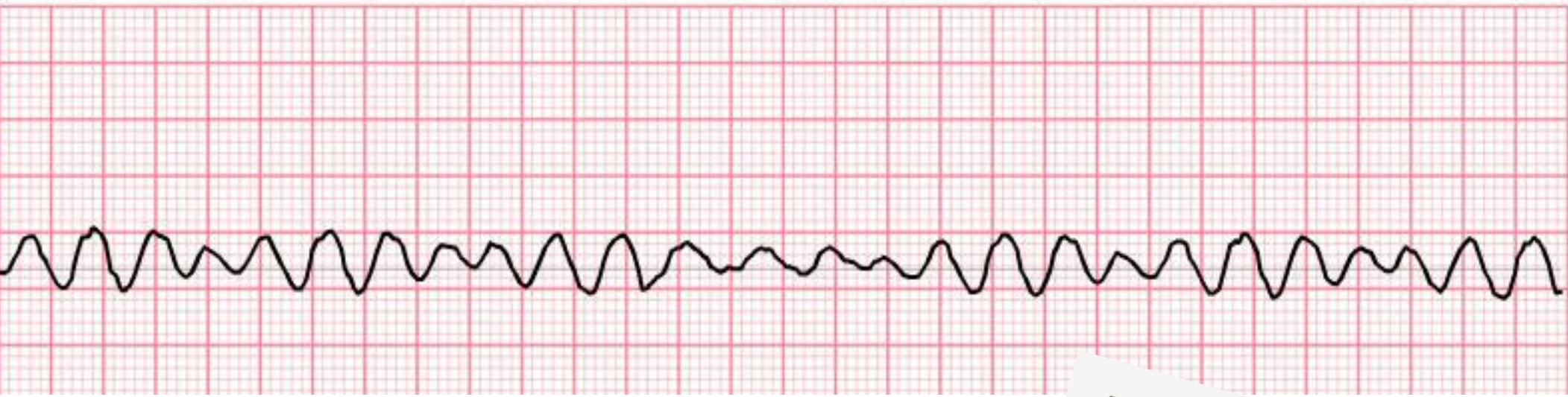
What is this?



What about this?

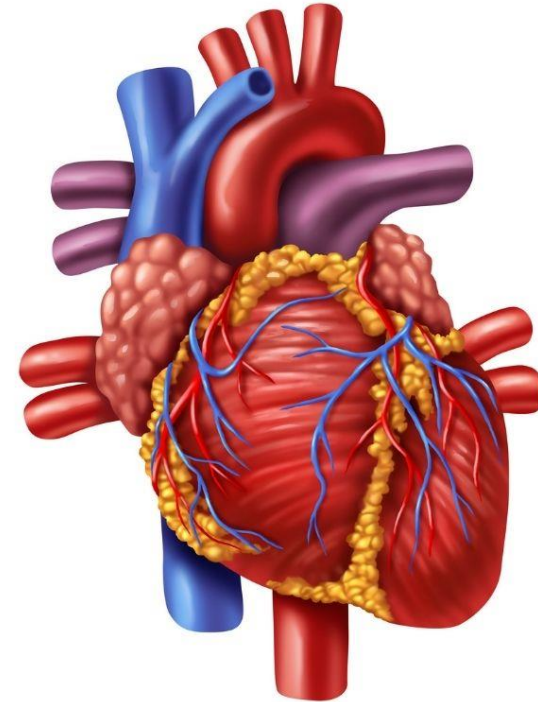


What is this?



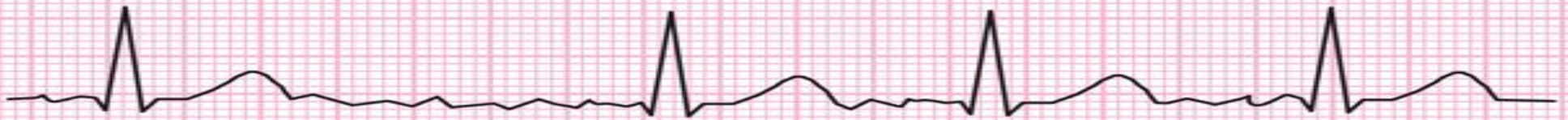
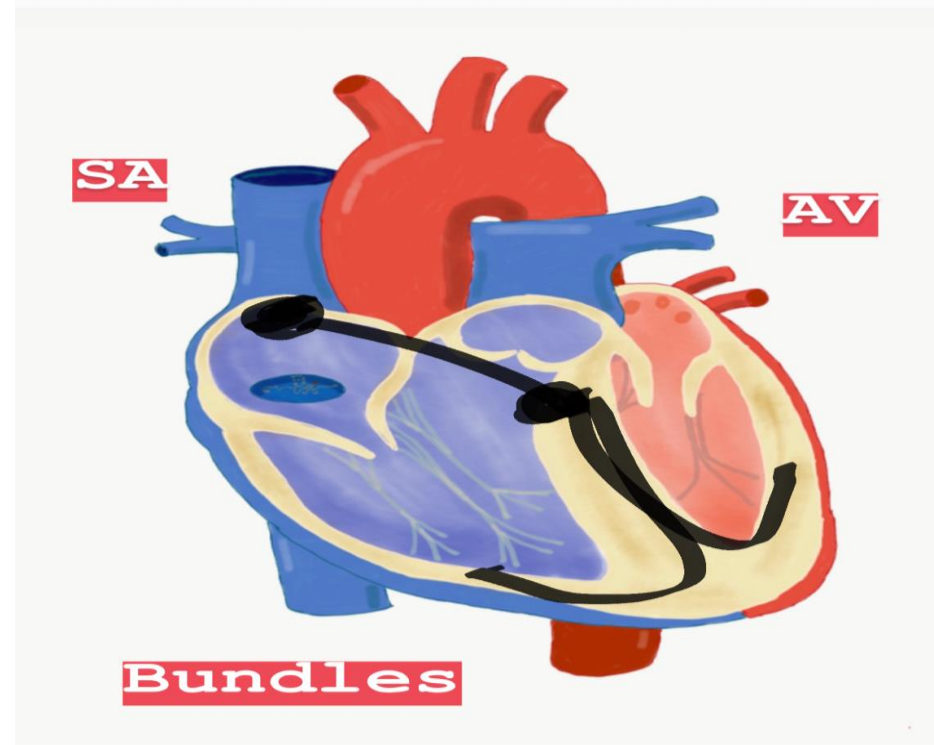
From the Atrium

Atrial arrhythmias



Atrial things

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



Normal Sinus Rhythm (NSR)

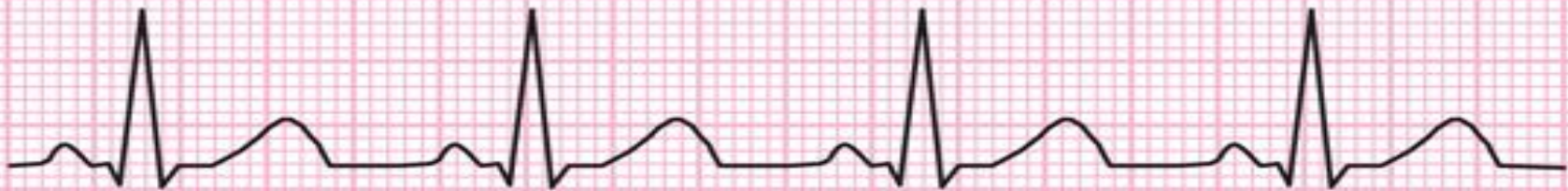
Rate: 60-100 BPM

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

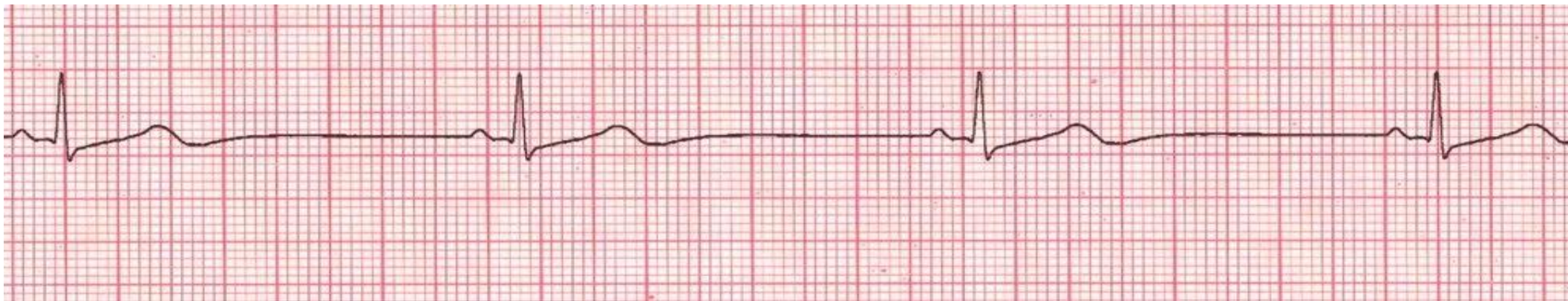
Rate: <60 BPM

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

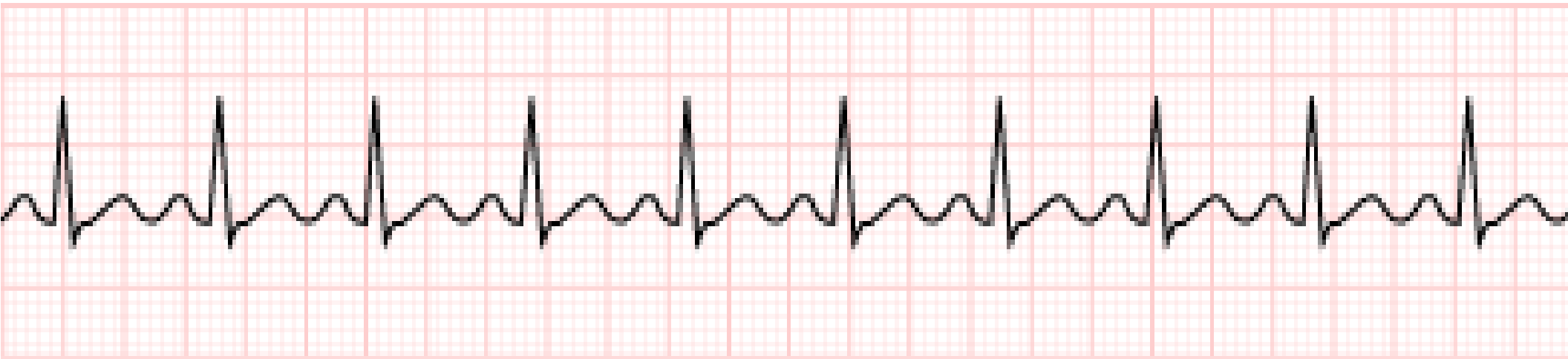
Rate: >100 BPM

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

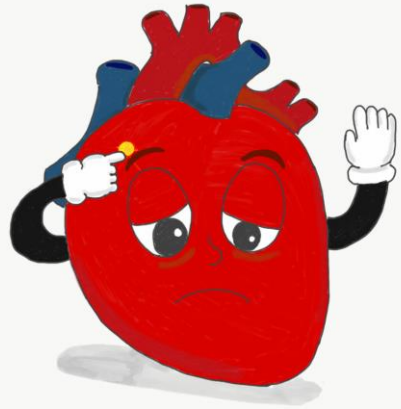


_____ and _____ can cause sinus tachycardia.

What is this called?



Sinus Pause/Arrest



Rate: Varies

Regularity: Irregular

P wave: Present except in areas of pause/arrest

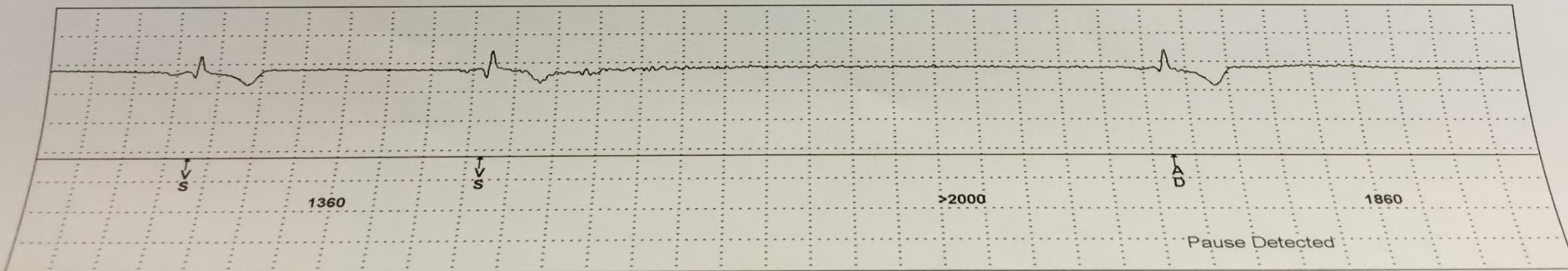
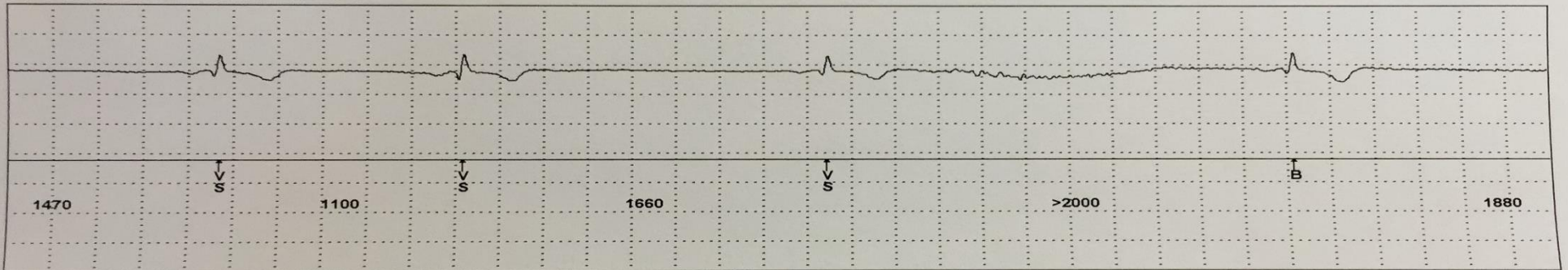
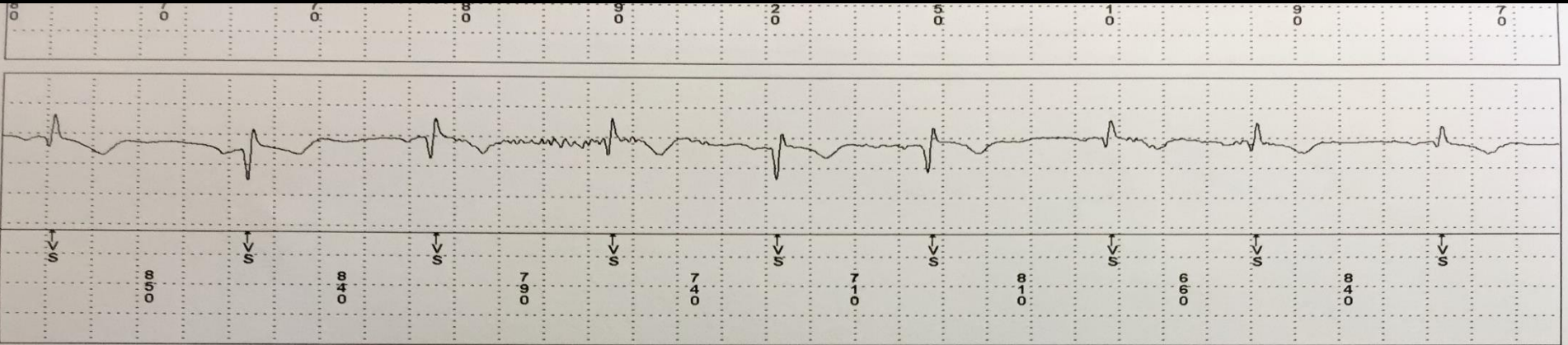
PR interval: Normal

QRS width: Normal



When do we need to think about a pacemaker? _____

Holter monitor



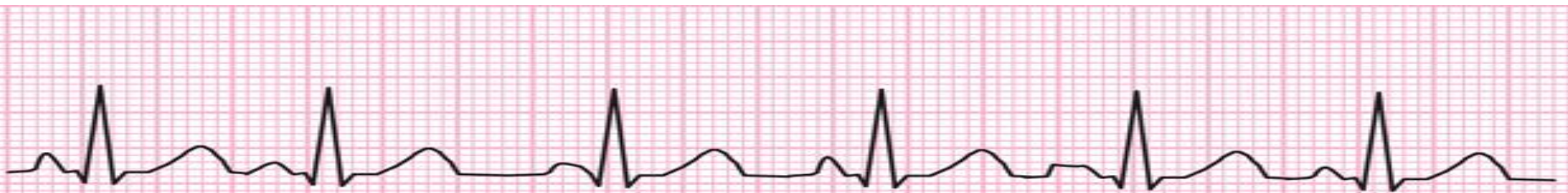
Wandering Atrial Pacemaker (WAP)

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

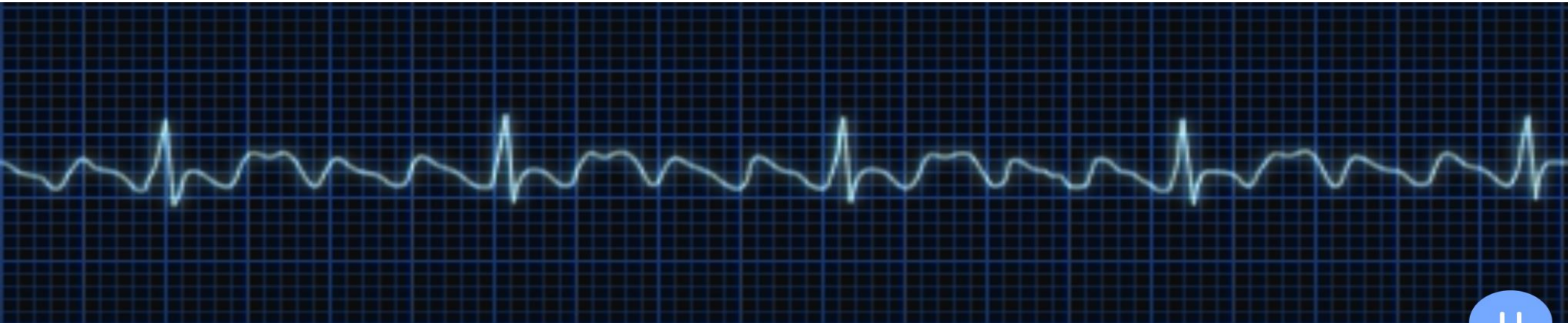
P wave: Saw toothed,
“F waves”

PR interval: Variable

QRS width: Normal



More Atrial Flutter

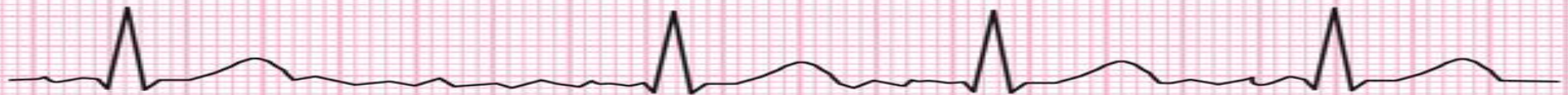
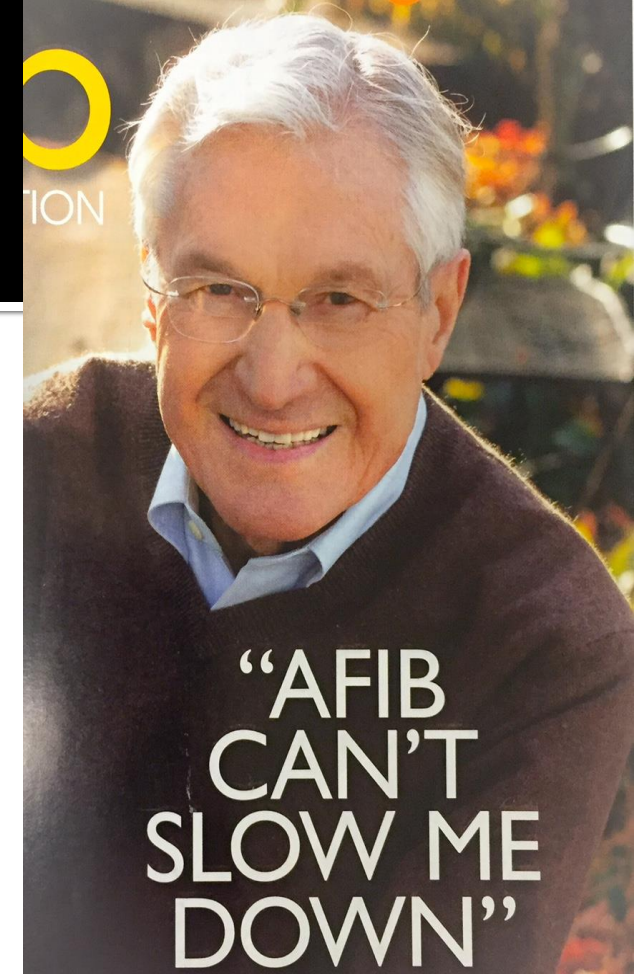


Atrial Fibrillation

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

Regularity: Irregularly irregular

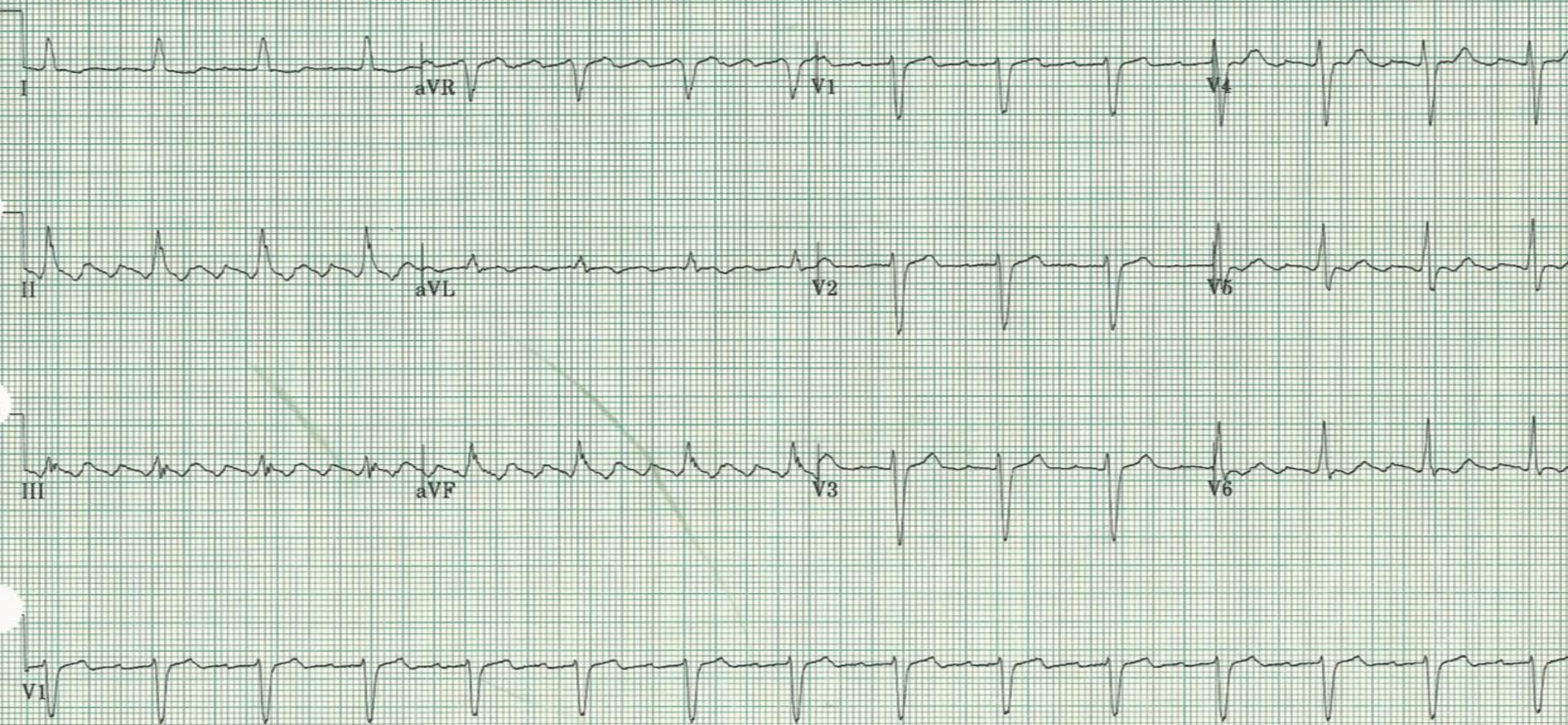
P wave: None; chaotic atrial activity



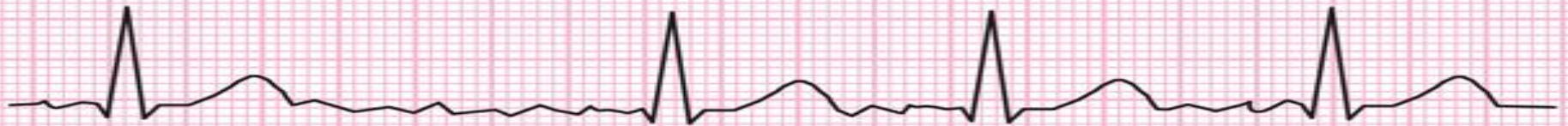
Patients lose their _____ in atrial fibrillation.

Vent. rate 89 bpm
PR interval * ms
QRS duration 124 ms
QT/QTc 390/474 ms
P-R-T axes 78 53 91

Atrial flutter with 3:1 AV conduction
Nonspecific intraventricular conduction delay
Nonspecific ST and T wave abnormality
Abnormal ECG



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

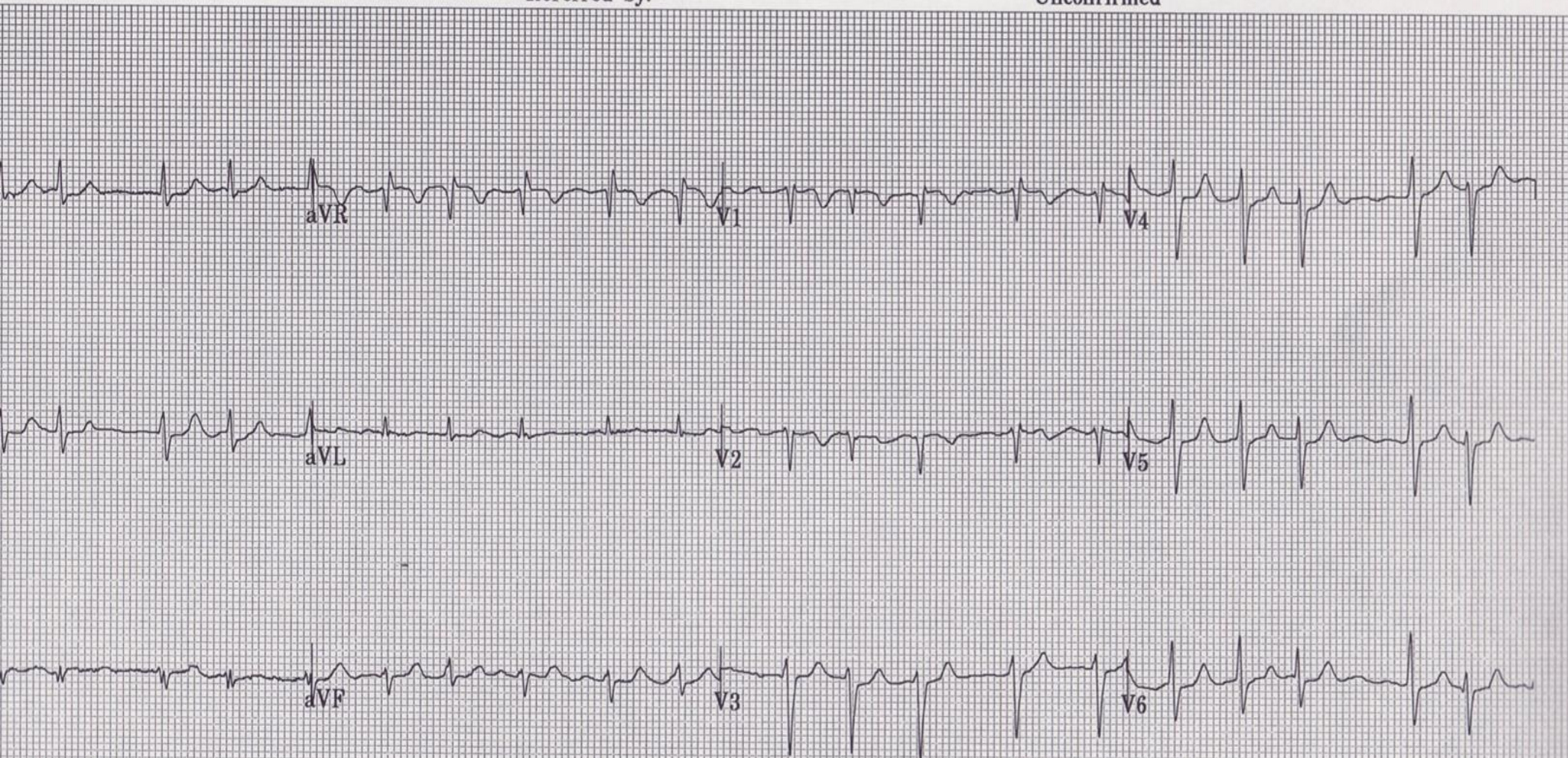
Atrial fibrillation with rapid ventricular response with premature aberrantly conducted complexes
Nonspecific ST abnormality, probably digitalis effect
Abnormal ECG



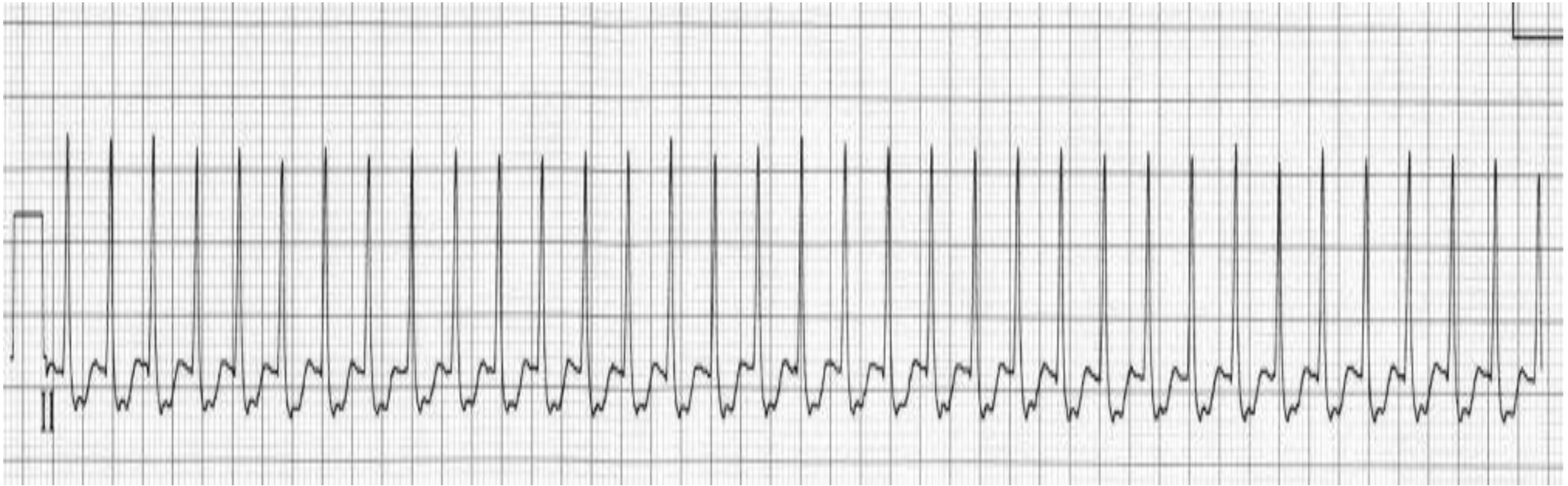
Technician:
Test ind:

Referred by:

Unconfirmed



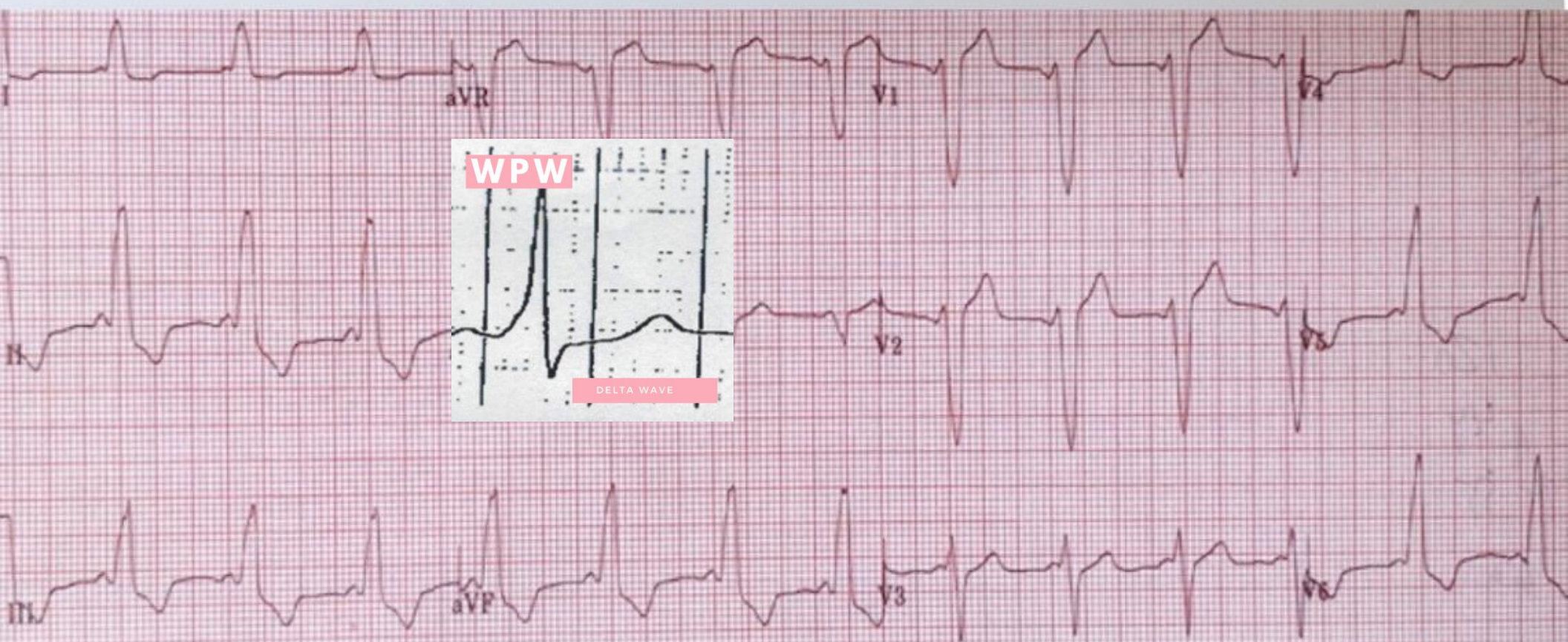
SVT



These patients will most likely have a _____ blood pressure.

Vent. rate 86 bpm
PR interval 136 ms
QRS duration 164 ms
QT/QTc 400/478 ms
P-R-T axes * 70 259

Normal sinus rhythm
Nonspecific intraventricular block
Inferior infarct, age undetermined
Abnormal ECG



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

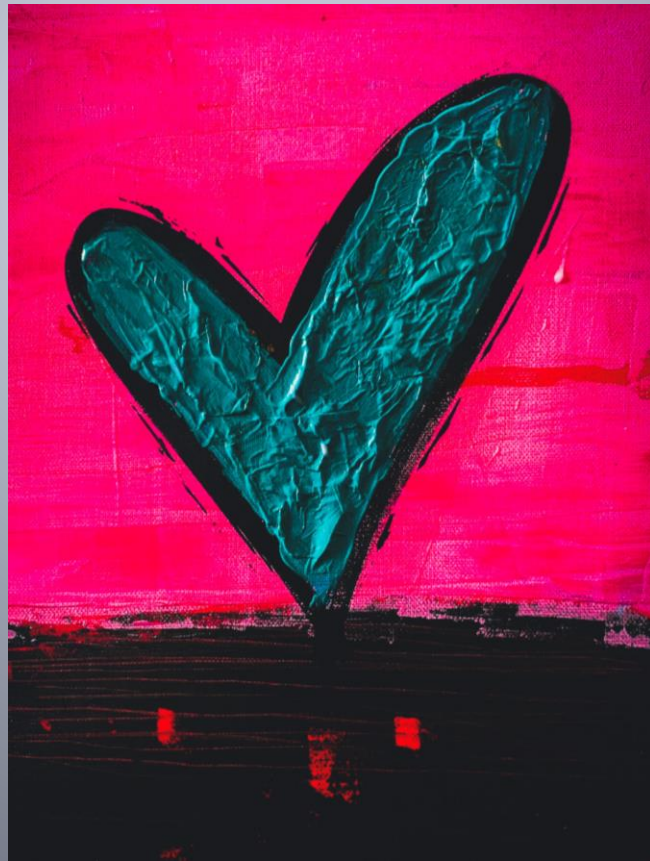


Rate: 60–100 BPM
Regularity: Regular
P wave: Variable (none, antegrade, or retrograde)



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

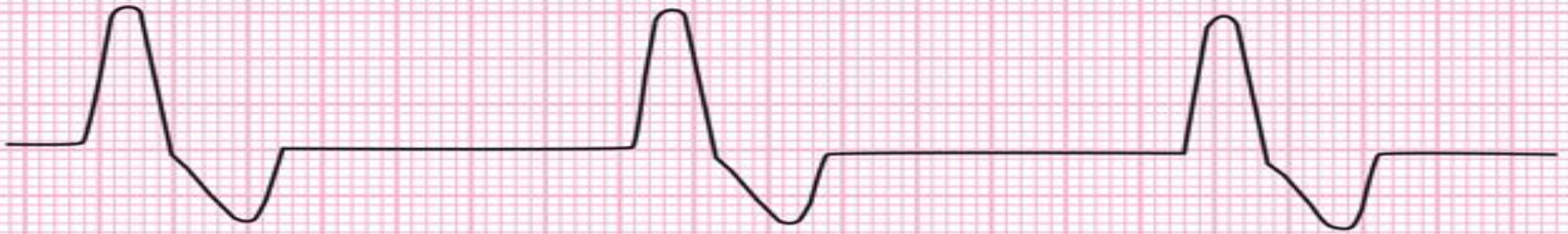
Rate: 20–40 BPM

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



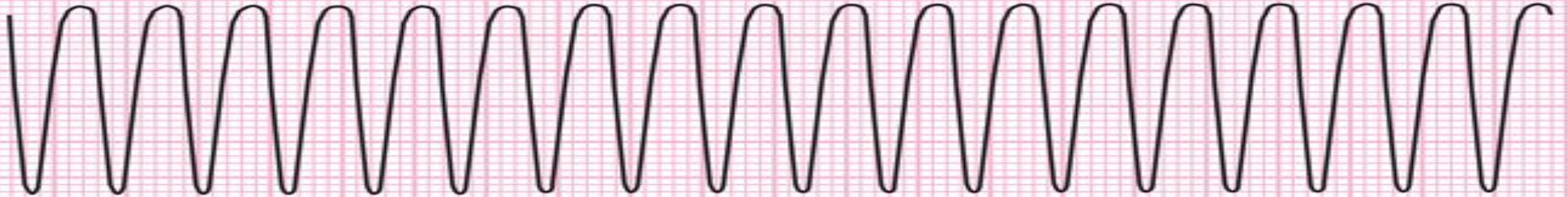
Ventricular Tachycardia (VTach)

Rate: 100–200 BPM

Regularity: Regular

PR interval: None

QRS width: Wide, bizarre

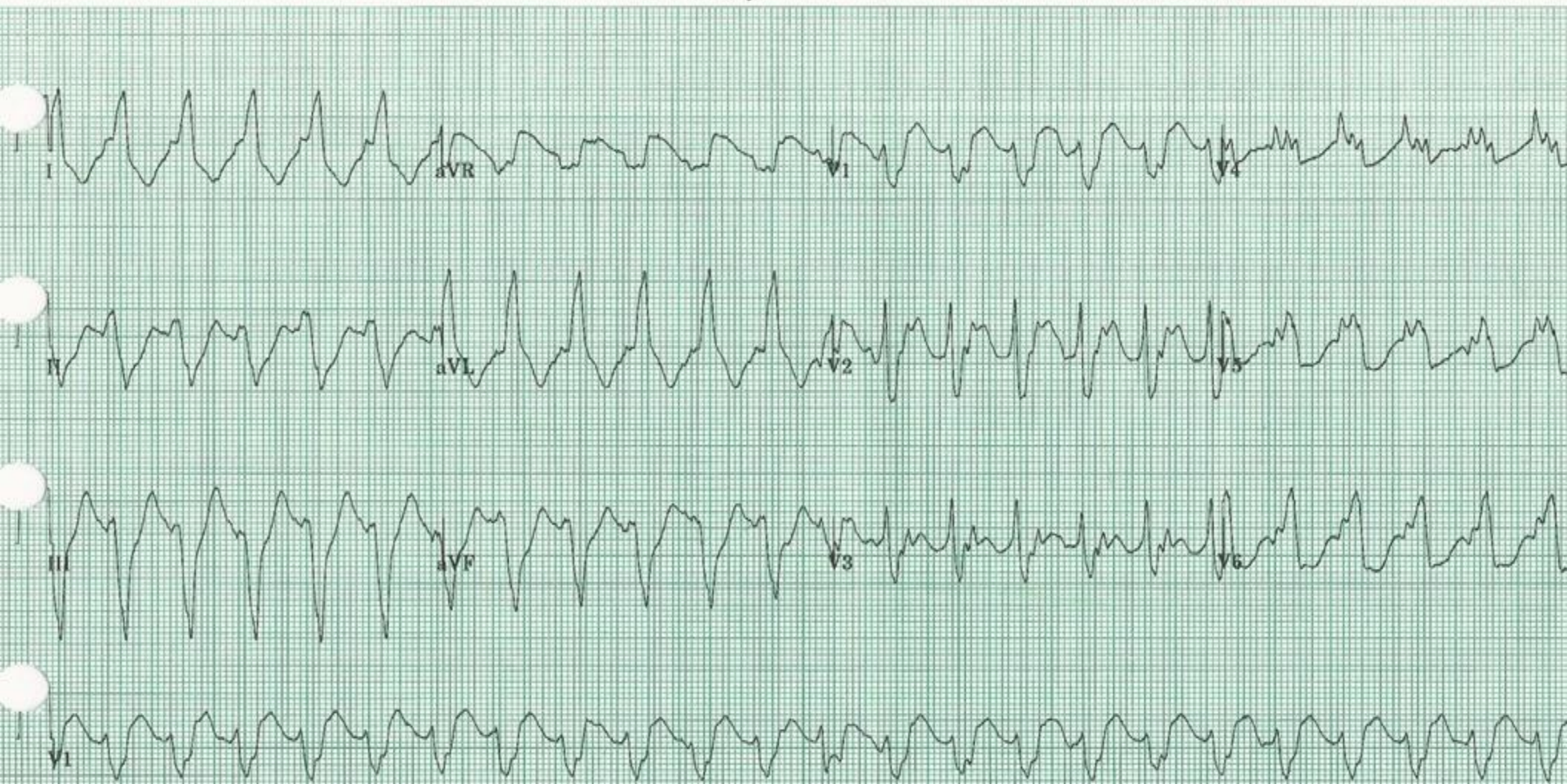


Vent. rate 146 bpm
PR interval 128 ms
QRS duration 210 ms
QT/QTc 344/536 ms
P-R-T axes 107 -52 169

Sinus tachycardia with fusion complexes
Wolff-Parkinson-White
Abnormal ECG

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



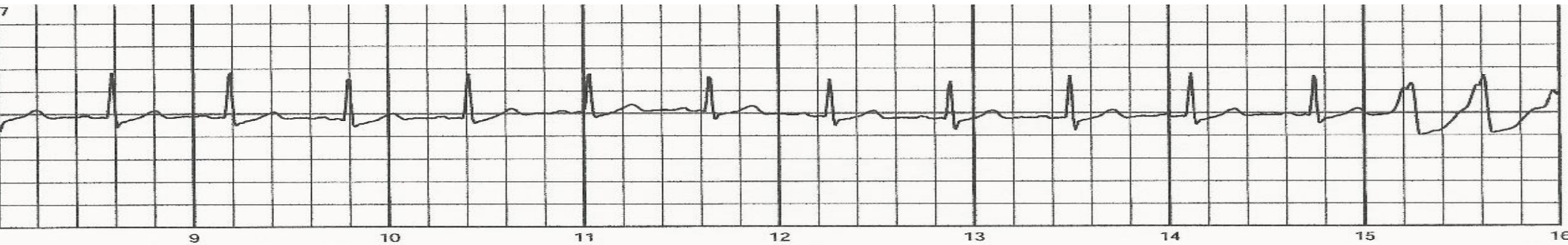
_____ can cause torsades.

Torsades De Pointes

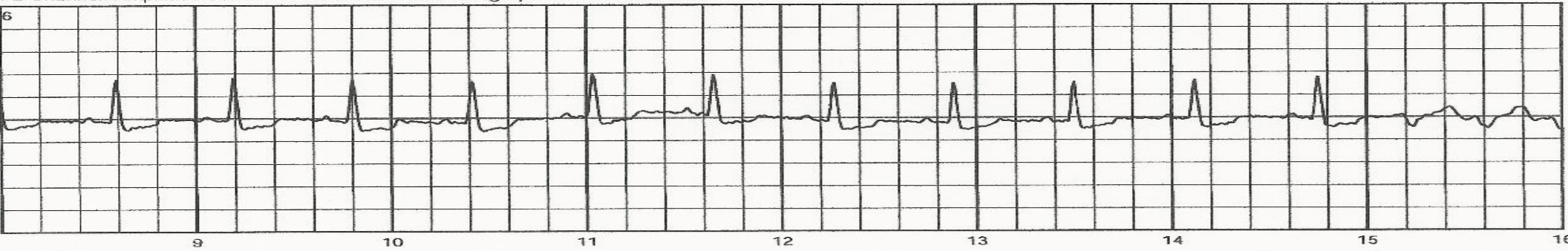
- Changing polarity of the QRS complex from positive to negative and back to positive again
- Its still VTACH – why do I need to identify it further?



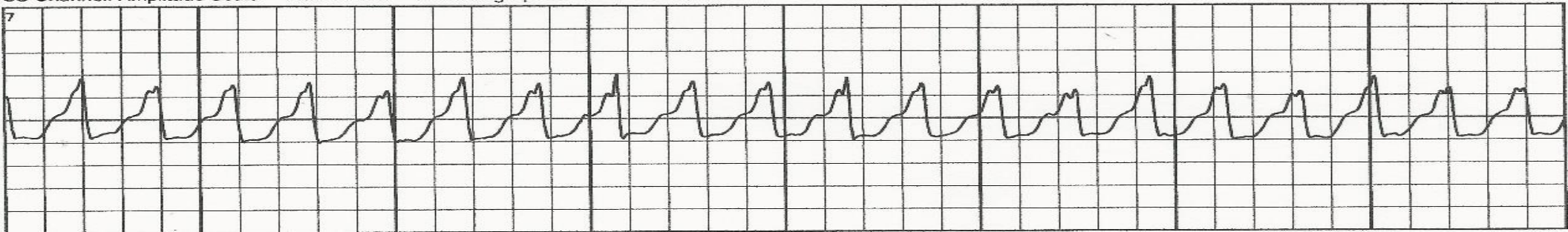
What is happening here?



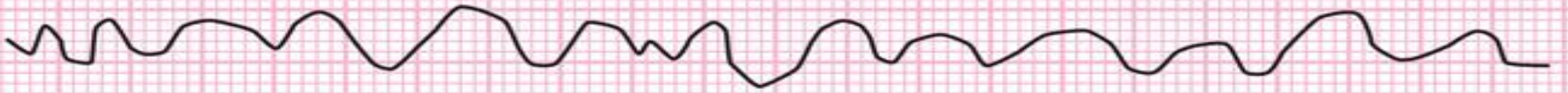
FB Channel: Amplitude Scale = 1 mv/10 mm Recording Speed - 25 mm/Second



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



Ventricular Fibrillation (VFib)

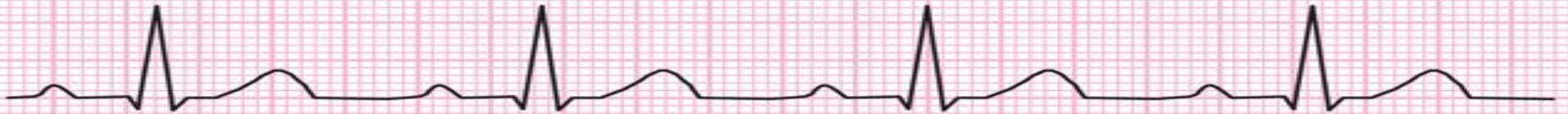


A golden, textured surface with a heart-shaped hole in the center. The hole is filled with a bright, glowing light. A diagonal pink band cuts across the bottom left corner of the image.

A REVIEW:

Heart blocks

First-Degree Heart Block



Regularity: Regular

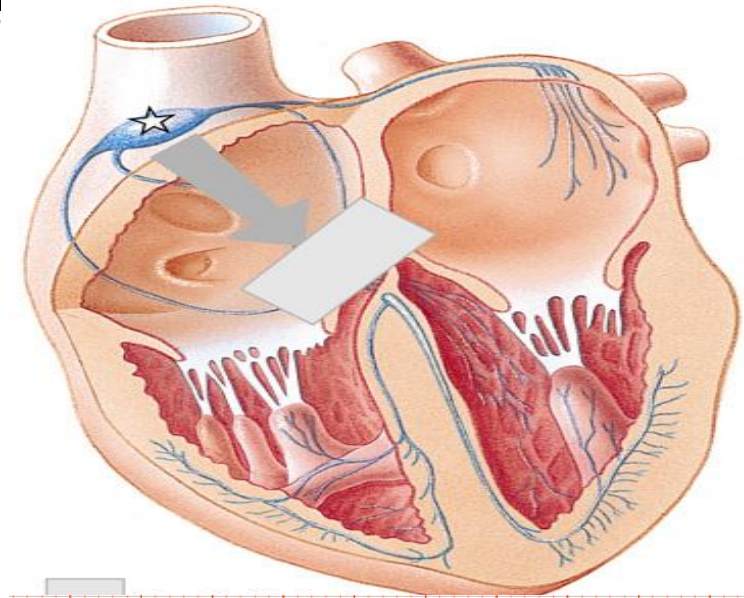
P wave: Normal

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

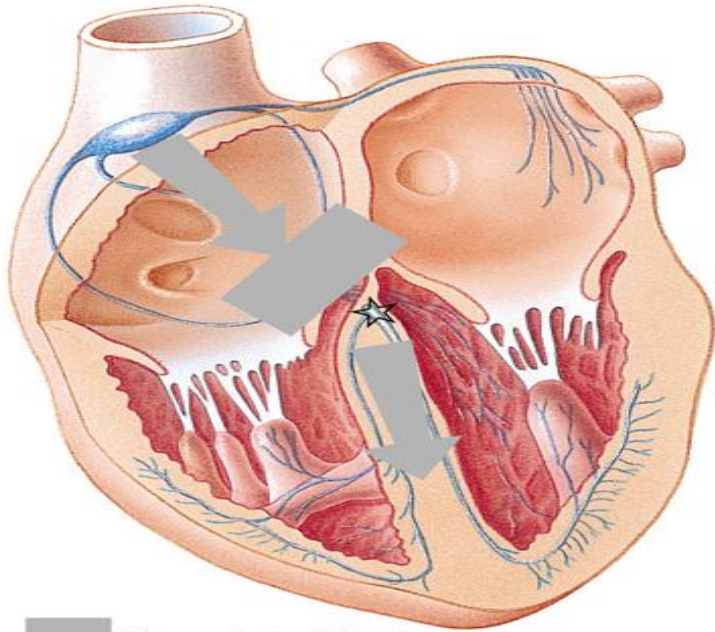
PR interval: Normal

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

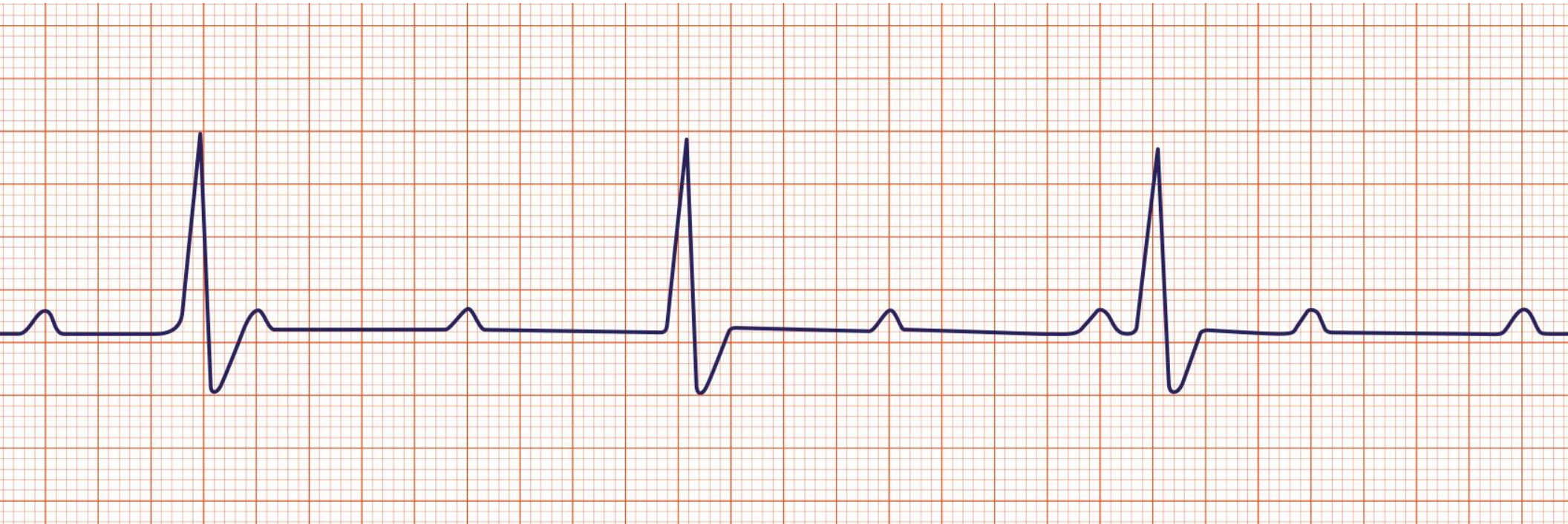
Dropped beats: None

Complete block

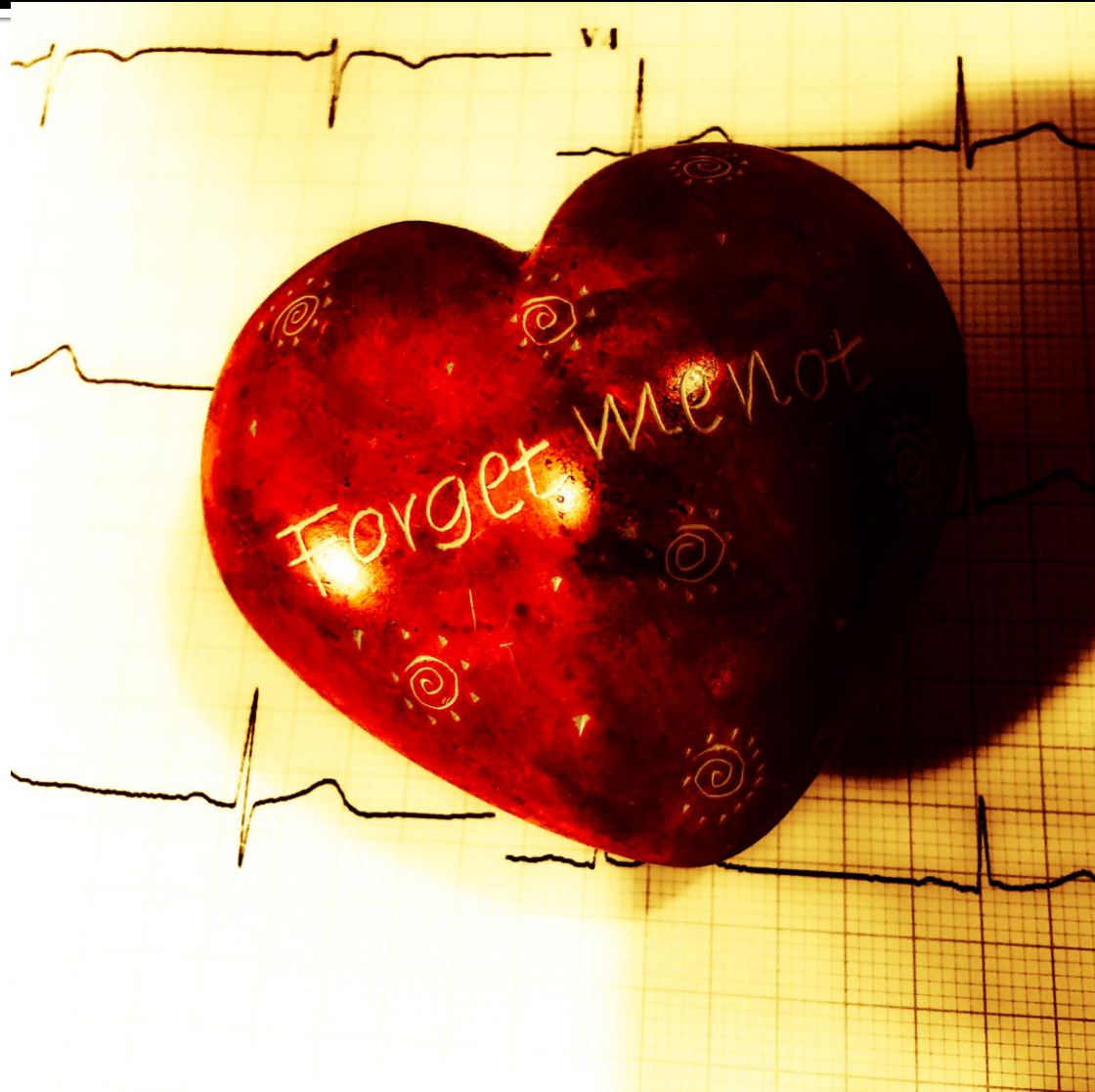




3rd Degree AVB Complete



Thank you!





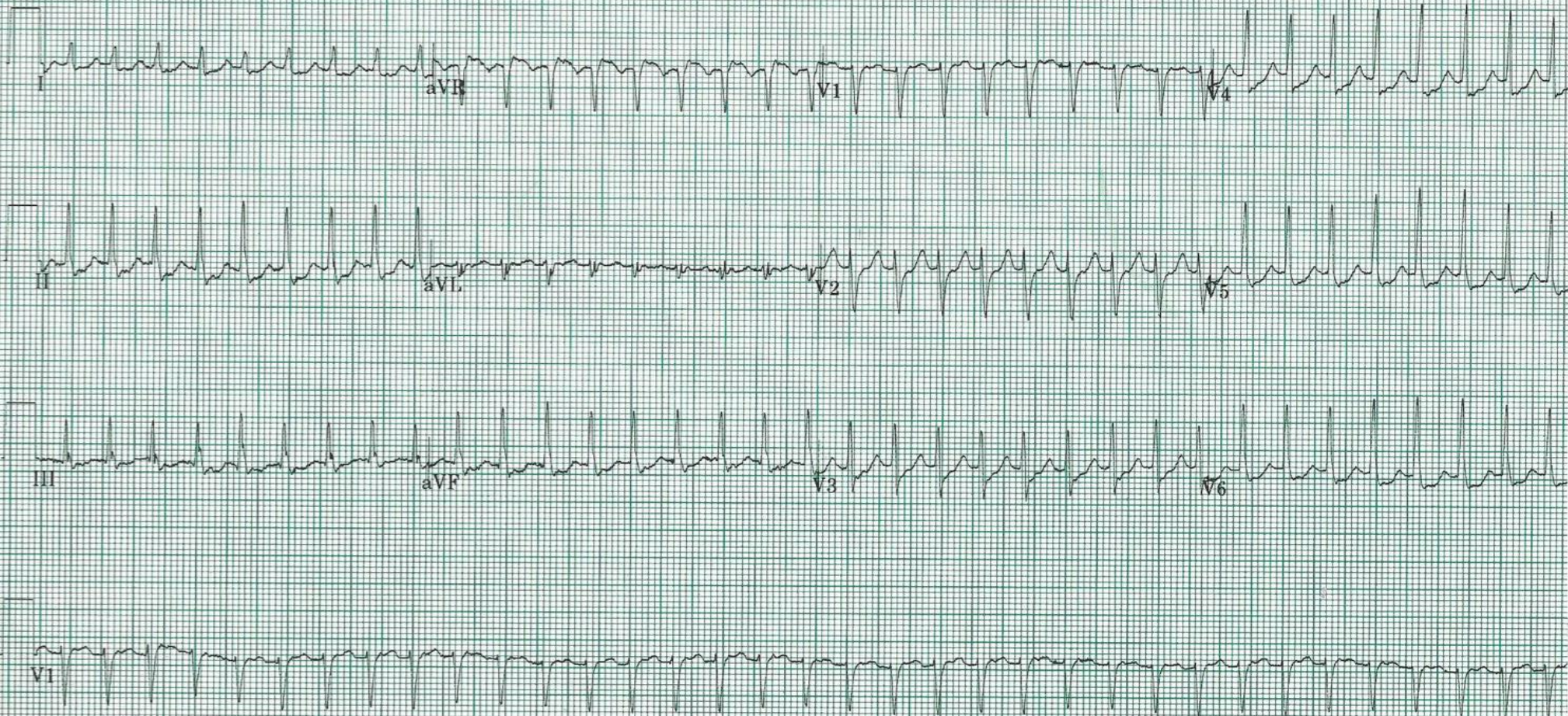
Practice Strips

GCS of 3

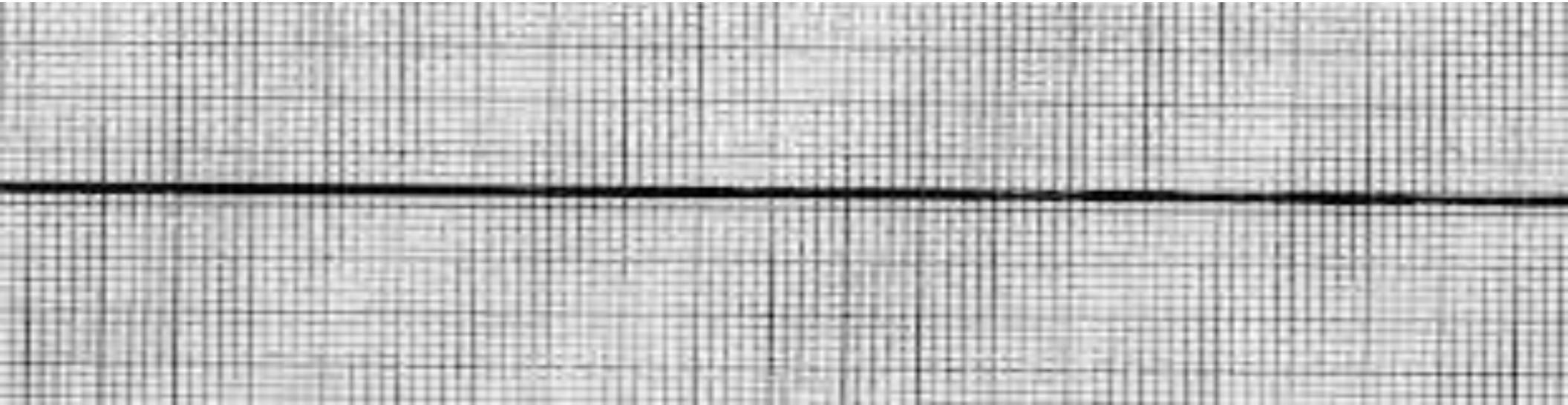


Vent. rate 215 bpm
PR interval * ms
QRS duration 90 ms
QT/QTc 210/397 ms
P-R-T axes * 73 -83

SVT



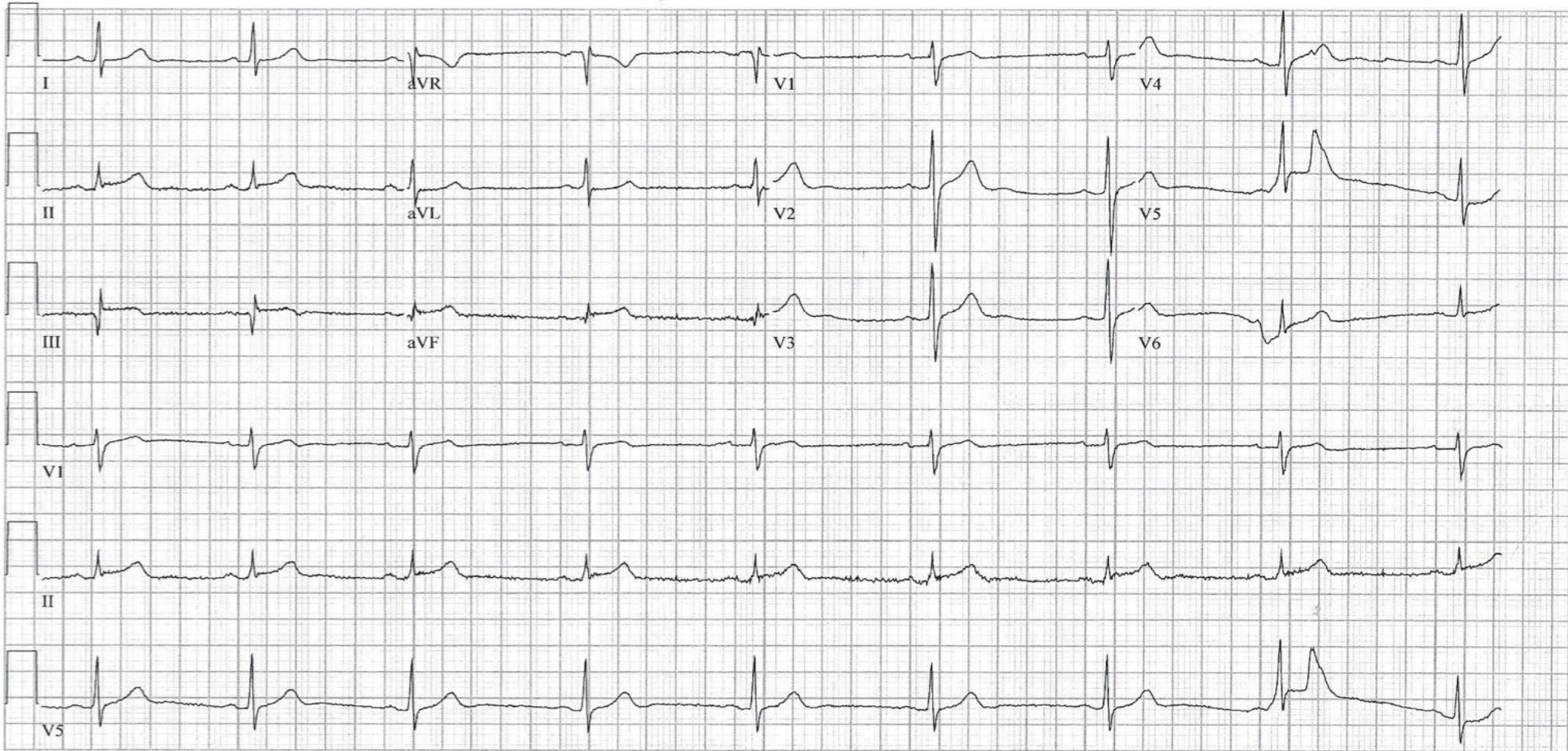
Also GCS of 3





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

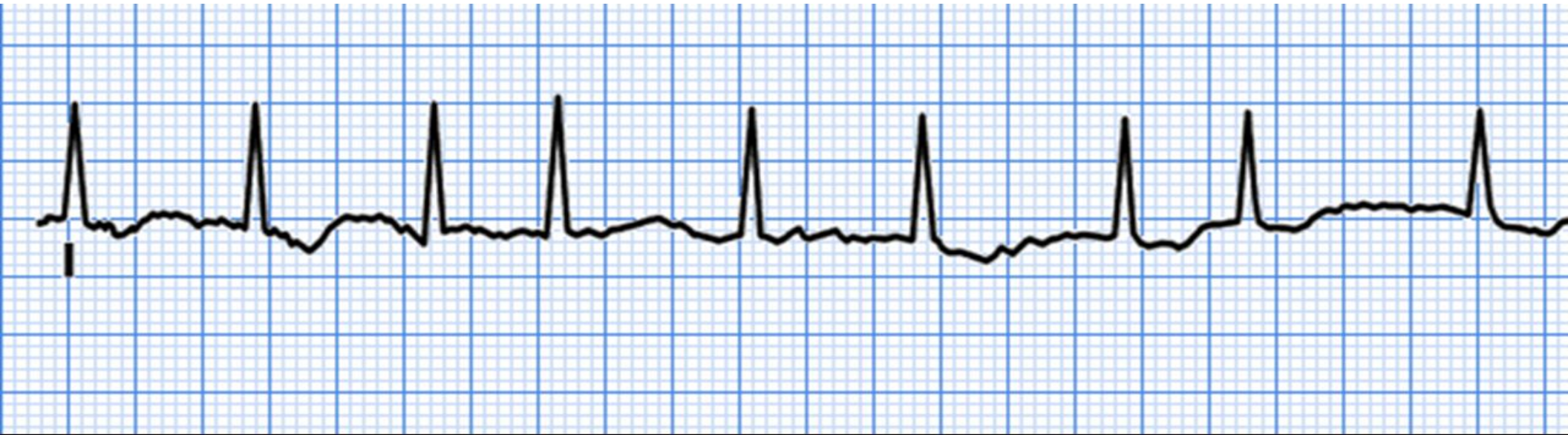
Sinus Brady



Better check those leads...



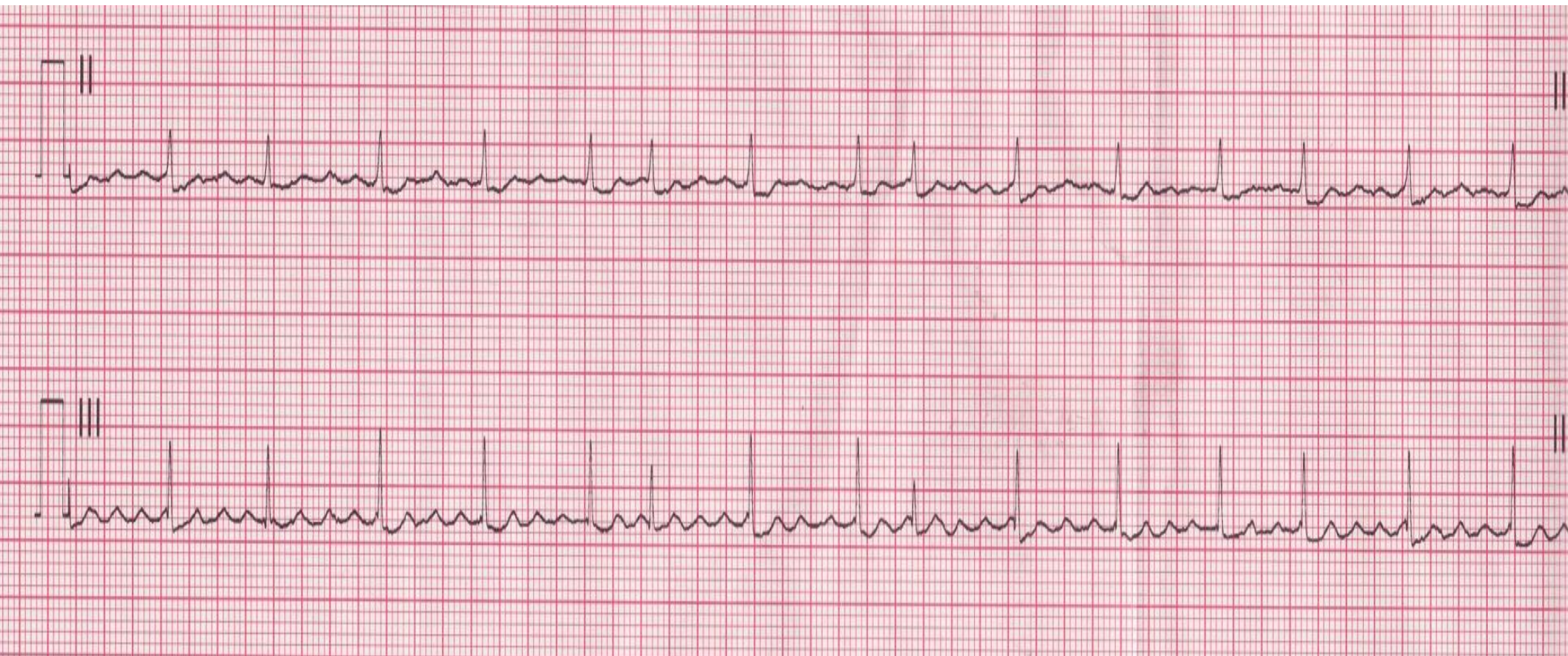
Irregularly irregular...



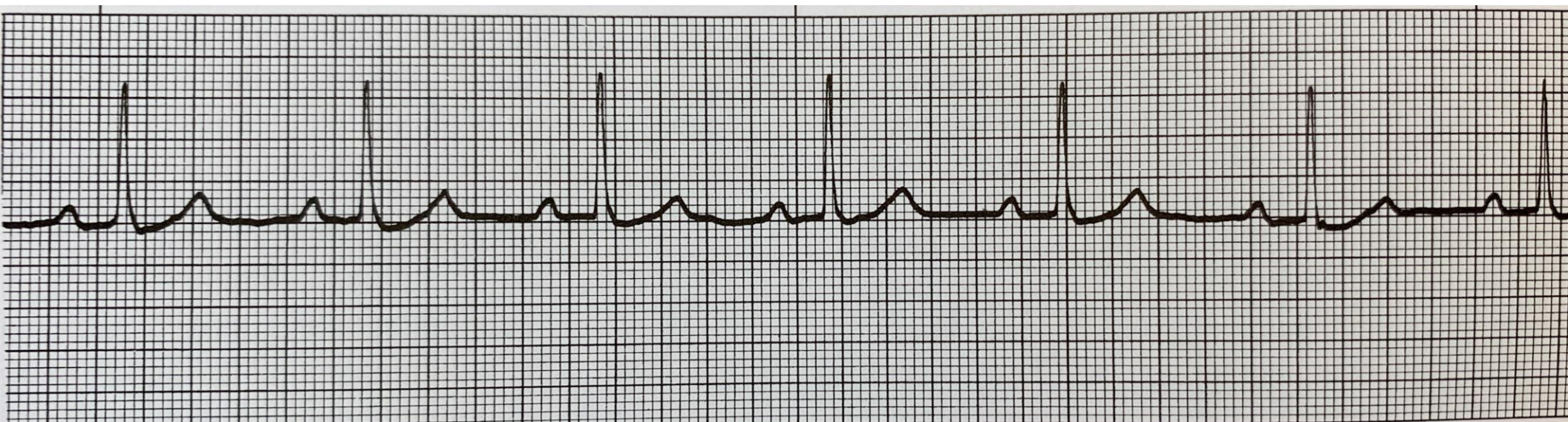
3rd degree block



“I don't feel well...”



1st degree block

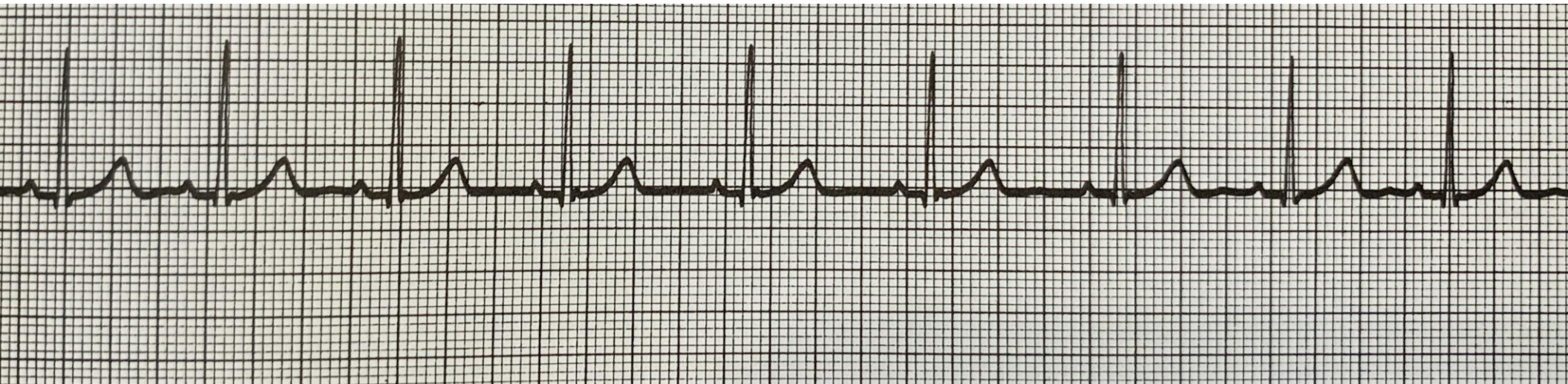


Palpitations....

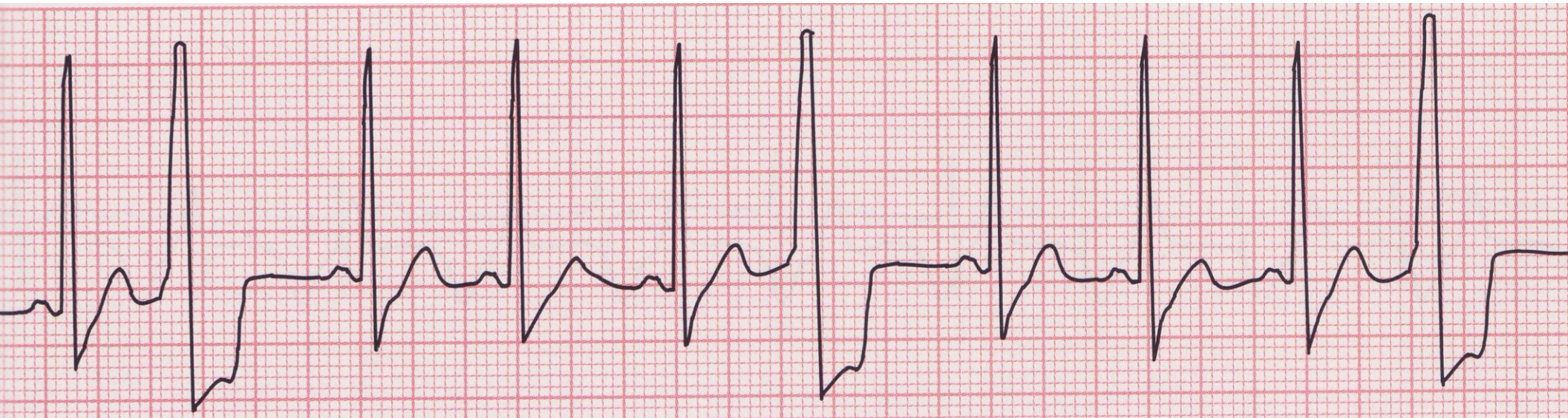


Sinus Arrhythmia

This happens with breathing...



Quadrageminy



Sinus Tachycardia

