

5 Can't Miss EKG's

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How old is the woman you see?





Case # 1 – “Mary”

“Anxiety follow up”

Status:

Still anxious

Room 1, Mary



Differentials

- Anxiety “lasting a minute”
 - Near Syncope
 - Palpitations
 - Dyspnea
-
- Recently started a new medicine?

Room 2, James



Case #2 – “James”



“Sports physical”

*“I really wanna play, can you
just sign this form?”*

Differentials

- “Lightheaded with running”
 - Syncopal Episode
 - Chest tightness with running
 - Occasional dyspnea, dizziness with exertion
-
- “ I feel *fine*. Really.”

His exam

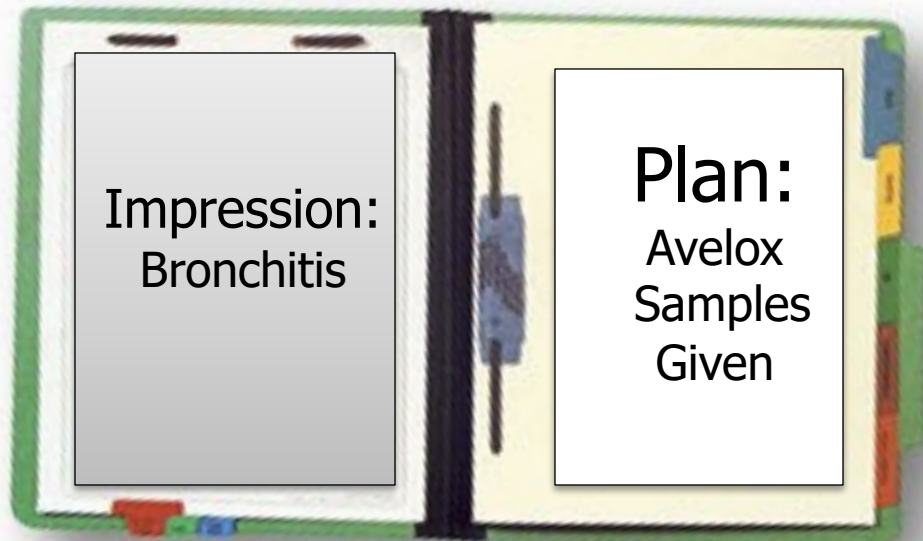
- **Long midsystolic murmur, rough.**
- Heard best close to the sternum, toward the apex, Left 4th intercostal space.
- Louder with standing or valsalva. Squatting widens the outflow tract and makes it softer.
- Systolic anterior mitral leaflet moving toward hypertrophied septum causes an **OUTFLOW** tract obstruction.

"You have a walk in..."

Hallway, Janet



In the hallway... "Janet"



- "Pt. asked for abx, 3 d of sx. 2 day recheck, agreed if not feeling better, would rx abx."



Mary's

Got Ativan = less anxious

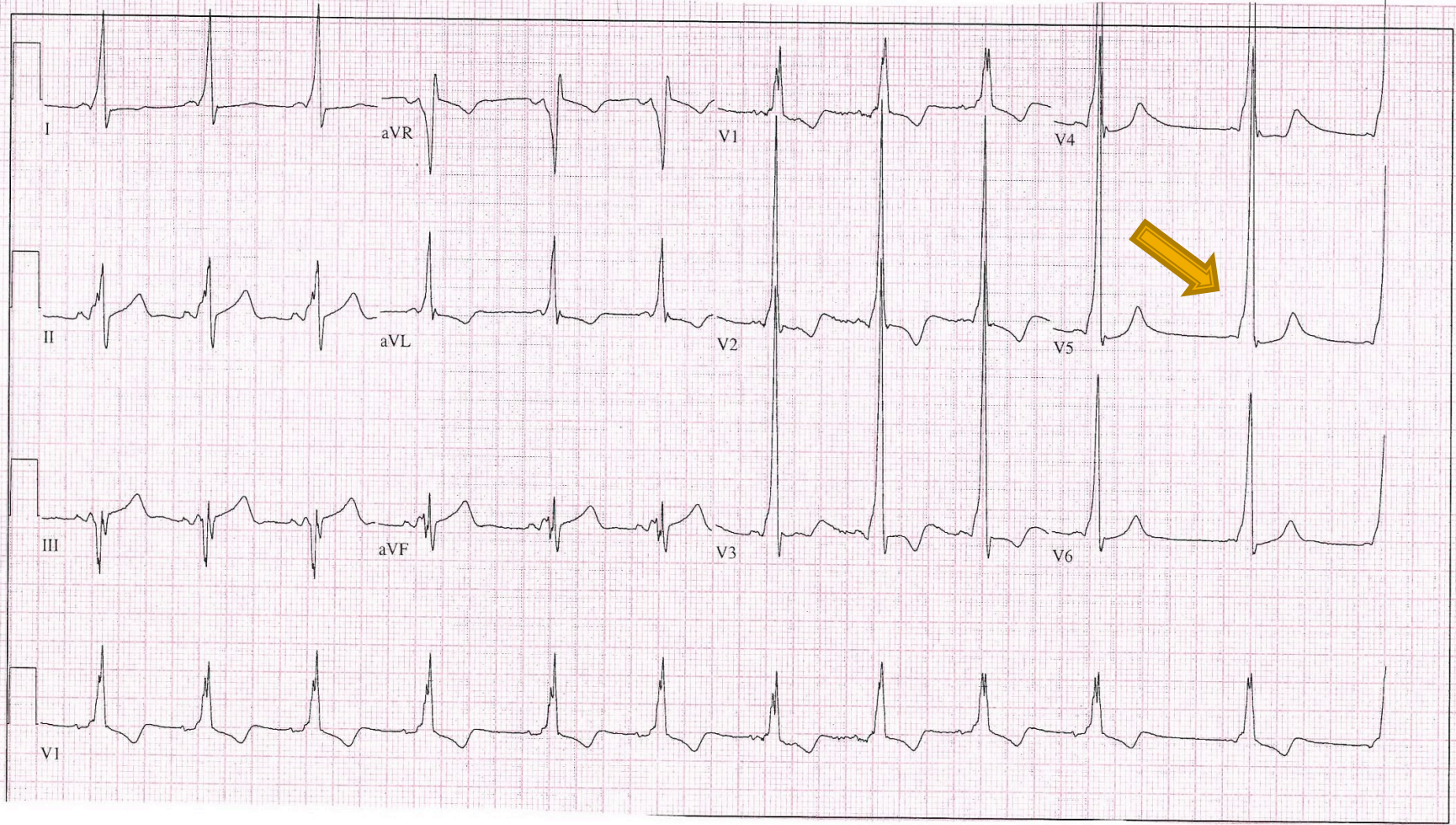
But...

*"My heart skips and when it does I feel like I am going to **faint.**"*



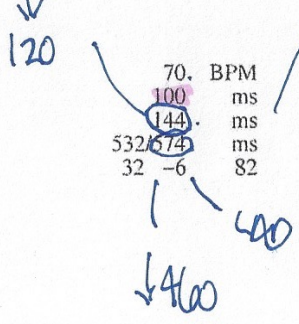
Heart rate 70 BPM
PR interval 100 ms
QRS duration 144 ms
QT/QTc 532/574 ms
P-R-T axes 32 -6 82

SINUS RHYTHM WITH MARKED SINUS ARRHYTHMIA
SHORT PR INTERVAL WITH DELTA WAVE SUGGESTS VENTRICULAR PRE-EXCITATION, WPW
PATTERN TYPE A
ABNORMAL ECG
WHEN COMPARED WITH ECG OF 15-YEAR-OLD
NO SIGNIFICANT CHANGE WAS FOUND



R)
Lc...

Vent. rate
PR interval
QRS duration
QT/QTc
P-R-T axes



SINUS RHYTHM WITH MARKED SINUS ARRHYTHMIA
 SHORT PR INTERVAL WITH DELTA WAVE SUGGESTS VENTRICULAR PRE-EXCITATION, WPW
 PATTERN TYPE A
 ABNORMAL ECG
 WHEN COMPARED WITH ECG OF 15-APR
 NO SIGNIFICANT CHANGE WAS FOUND

-LVH?

1. WAVE
2. PR interval
3. NIDE

delta wave

WAVE



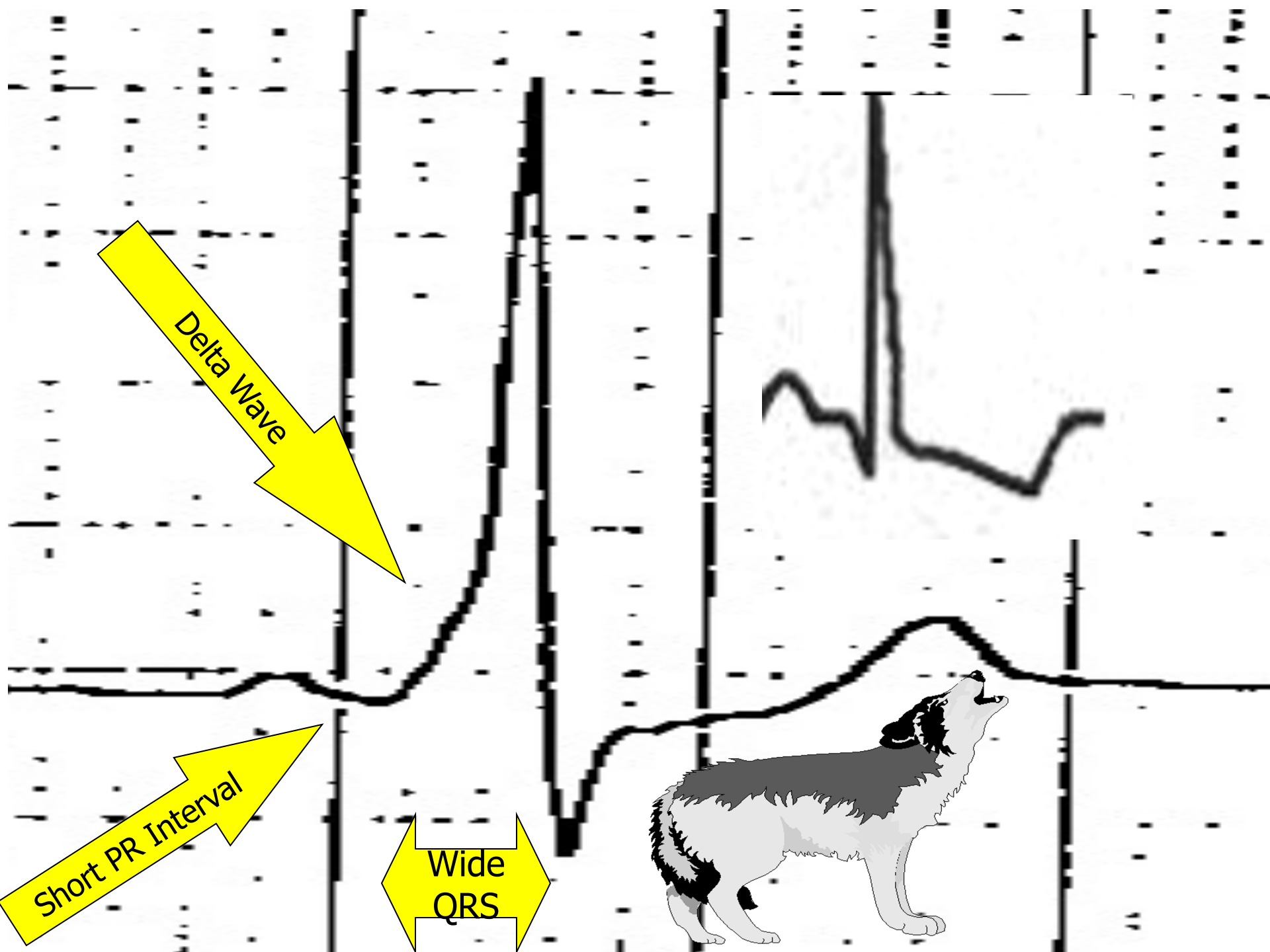
It's..... WPW!



- Bad wiring
- No police

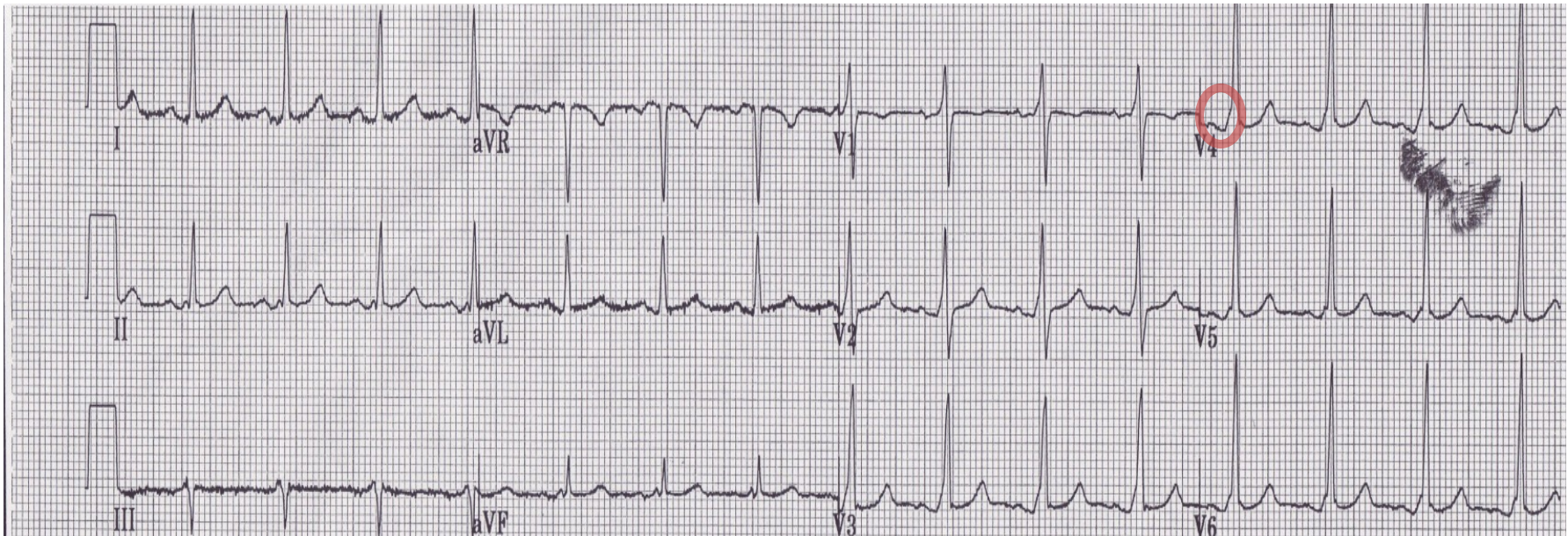
Wolf Parkinsons White (WPW)

- Extra conduction pathway – Autobahn
 - Wiring problem in development
 - 30-40% of tachycardias are caused by accessory pathway etiologies
-
- Males>females
 - 3:1000



WPW – EKG features

- **W**AVE
- **P**R interval (<120 ms)
- **W**ide QRS



Never too young for an EKG

- Palpitations
- Dyspnea
- Dizziness
- Syncope
- Chest pain
- Diaphoresis



**This patient needs to stay away
from...**

EXERCISE



DRUGS



Janet – Room #3



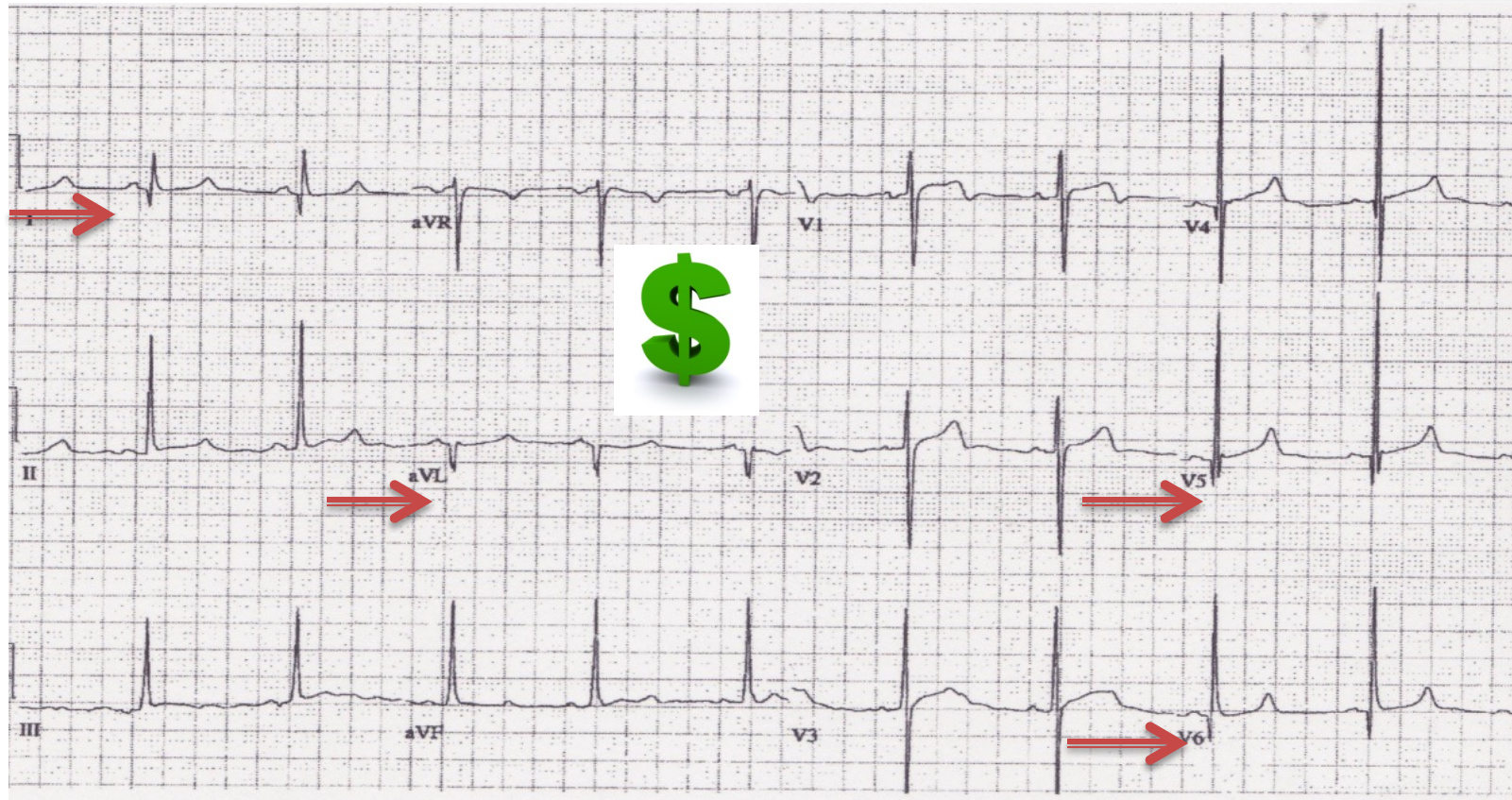
Feels worse today.

Cough better, but feels

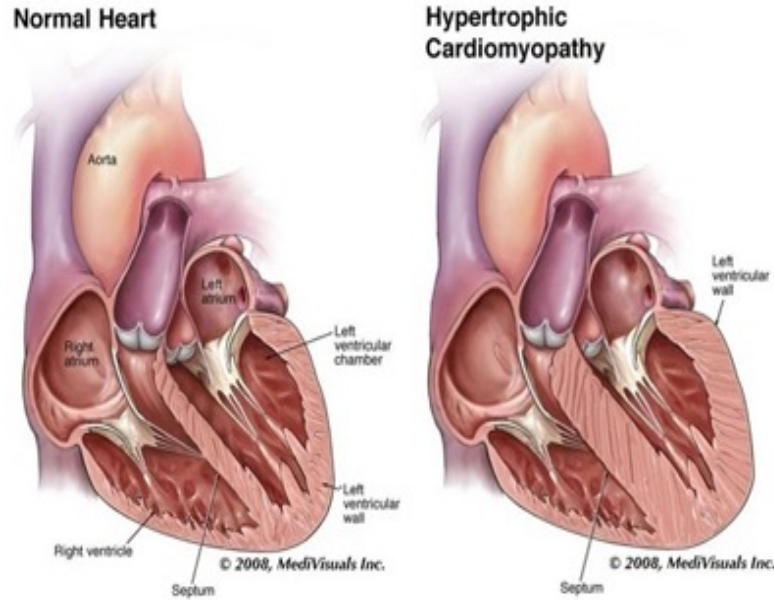
“weak and lightheaded”.

- VS: 130/80, 90, 98% RA. RR: 16

James – THE EKG



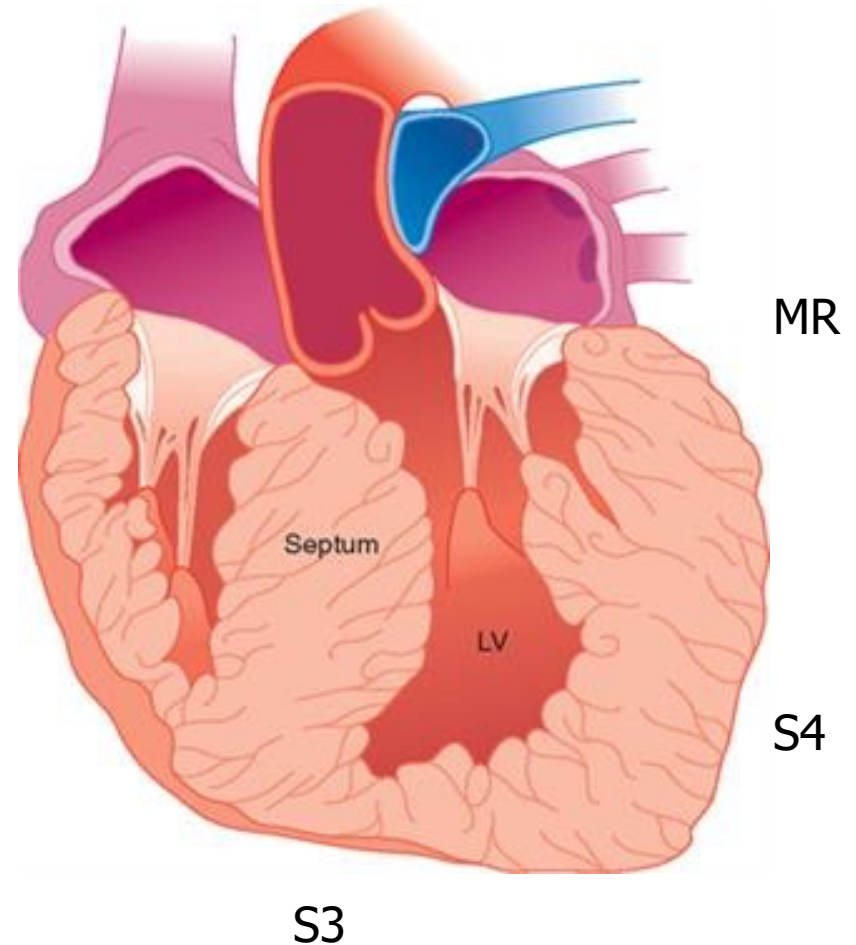
When is it usually diagnosed?



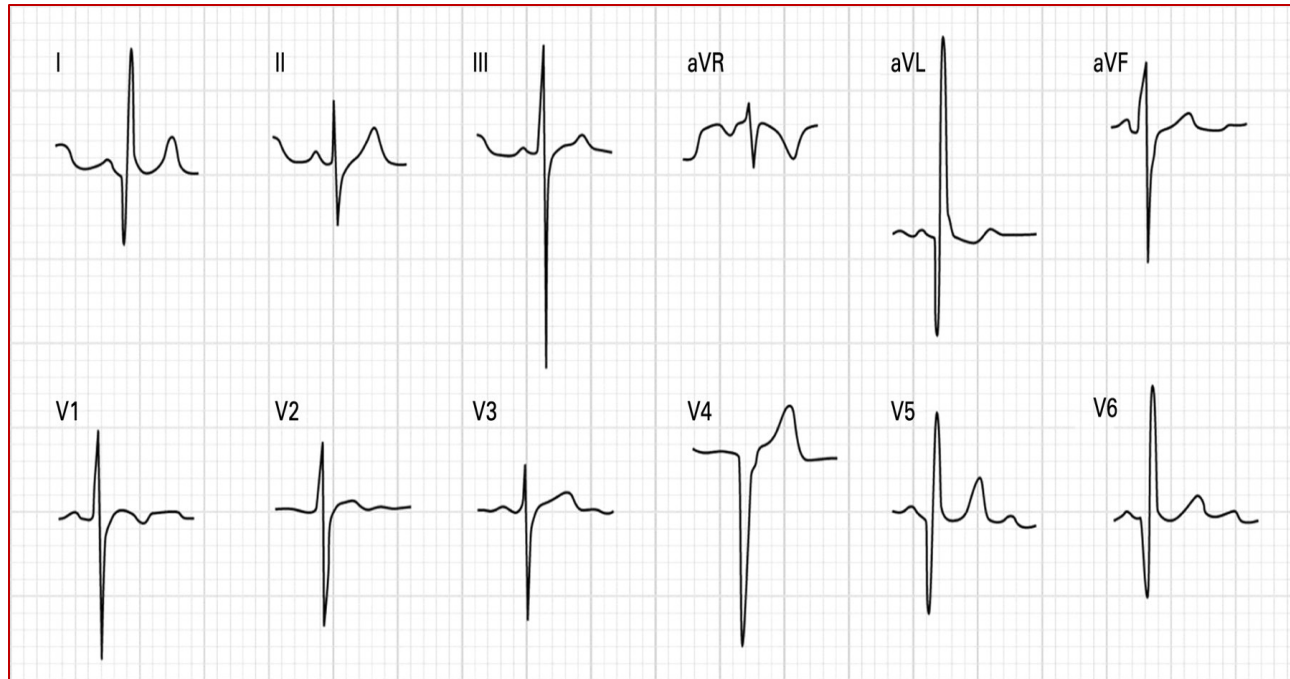
Autopsy!!!

Something is in the way.

- Syncope
- Chest pain
- DOE
- Dyspnea at rest
- Palpitations

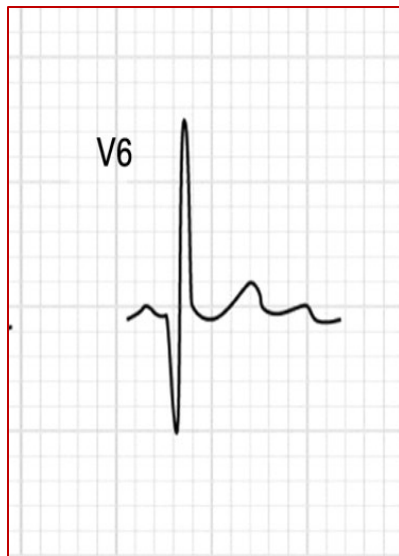


HOCM Clues

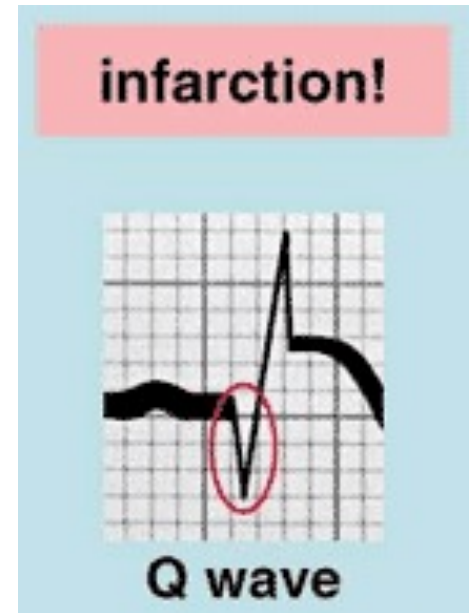


- DOE in a young patient
- Athlete syncopal during exercise
- Palpitations, orthopnea

ECG Findings

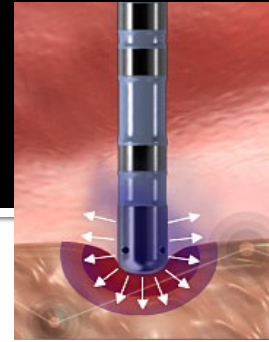


Which would you rather have as your "wine glass"?



Treatment

- Beta blockers first line
- Percutaneous septal ablation with alcohol to selectively destroy tissue
- ICD





Room 4, Kevin

Case #4 – “Kevin”



- Urgent Care Visit: “palpitations”
- Mom just wants to “be safe”



More about Kevin



"Will this
take long?"

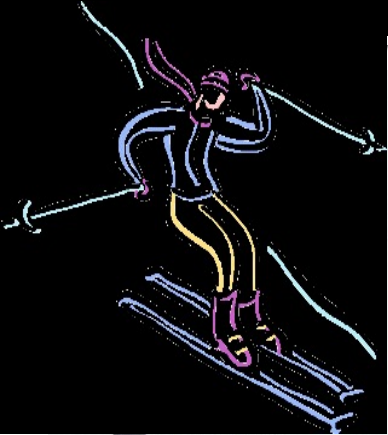
- VS: 110/90, 75. RR 20. T 98.8.
- No history.



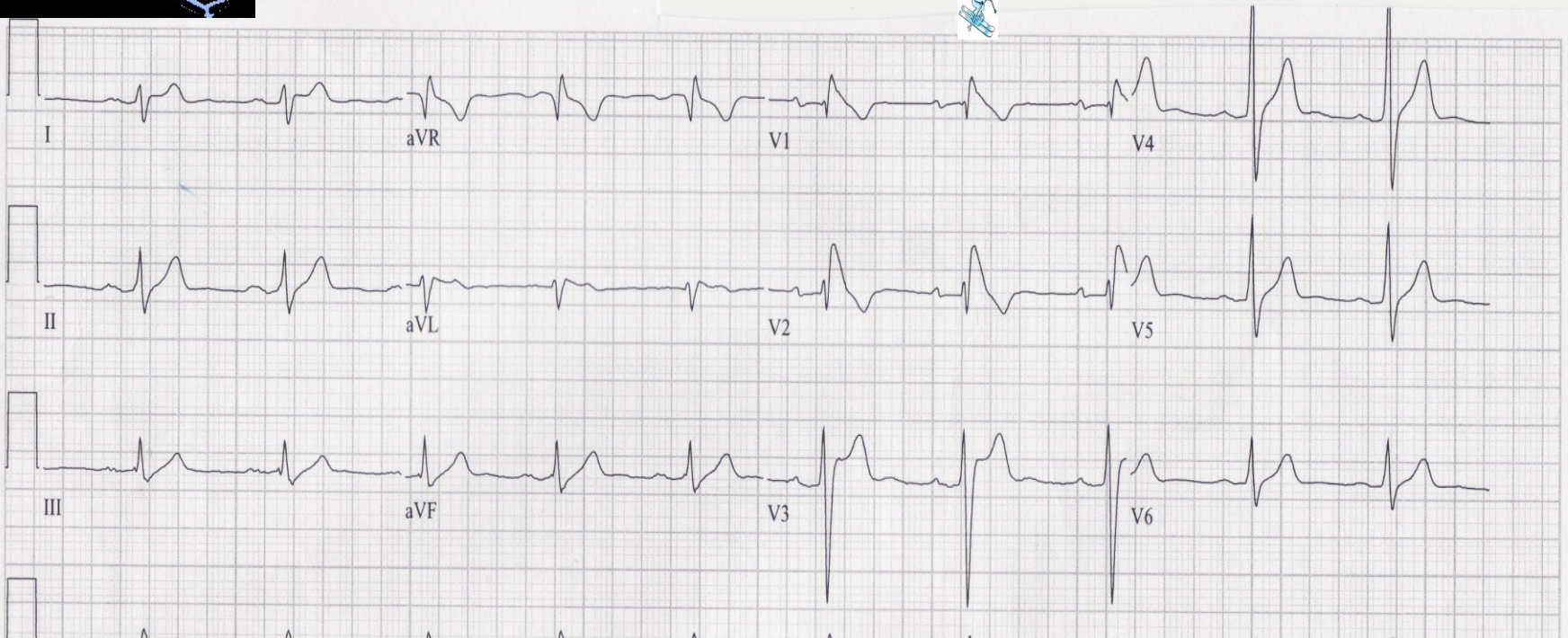
Any red flags?

- “Racing heart” X 30 seconds at 1100 today
- Felt like he was going to die. Called his mom.
- Feels better now. Had 3 episodes yesterday.
- His uncle died of “something wrong with his heart” last year at age 36.
- Mom just wants to “be safe”.

"That's odd..."



Vent. rate	62	BPM	NORMAL SINUS RHYTHM
PR interval	208	ms	INCOMPLETE RIGHT BUNDLE BRANCH BLOCK
QRS duration	112	ms	POSSIBLE RIGHT VENTRICULAR HYPERTROPHY
QT/QTc	386/391	ms	ABNORMAL ECG
P-R-T axes	51 102 56		NO PREVIOUS ECGS AVAILABLE



Never miss this again

RBBB + St elevation



```
graph TD; A[RBBB + St elevation] --> B[Look hard at V1 - V3]; B --> C[Family hx SD];
```

Look hard at V₁ – V₃

Family hx SD

Brugadas until proven otherwise!

Case outcome: Kevin



- Dx: Brugada Syndrome
- ICD placed
- Will need battery changes
- Close cardio f/u



Prognosis: Fair

Brugadas

- 1 out of every 25 medical arrests
- Most common in males under 50
- Syncope caused by runs of fast polymorphic Vtach or Vfib
- No prodromal sx or warning
- Mortality 10% per year if not treated with ICD

Never miss this again

RBBB + St elevation



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graph TD; A[RBBB + St elevation] --> B[Look hard at V1 - V3]; B --> C[Family hx SD];
```

Look hard at V₁ – V₃

Family hx SD

Brugadas until proven otherwise!



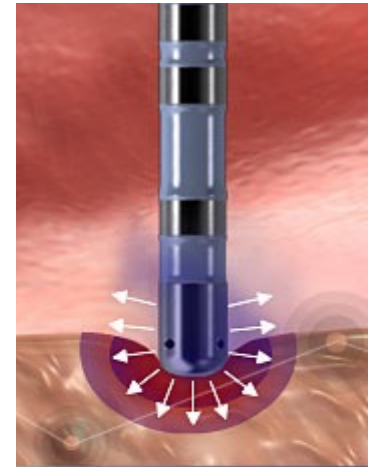
Case outcome: Janet

- DC Avelox
- Checked K
- ECG, holter and echo
- No QT prolonging drugs

Prognosis: Good



Case Outcome: Mary



- Echo: *structurally normal*
- Recurrence unlikely secondary to tract being ablated

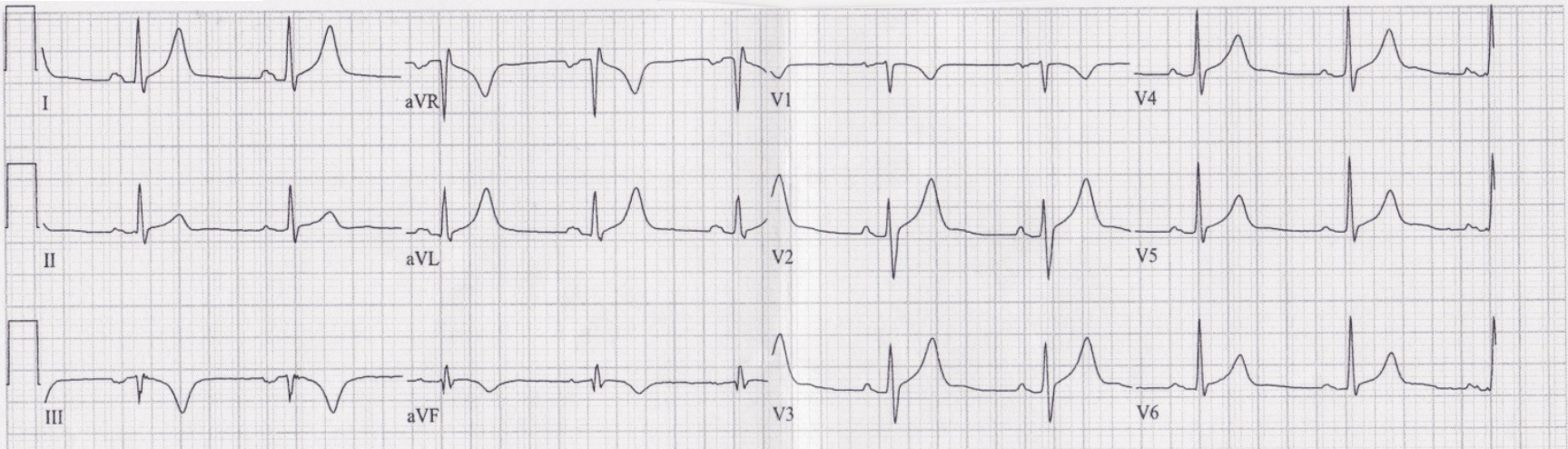
Prognosis: Good



Mary's Post Ablation EKG

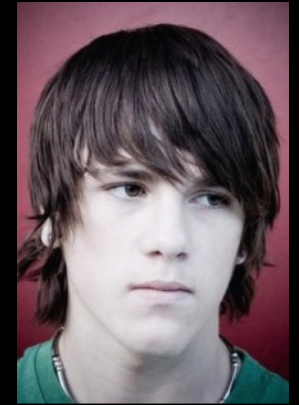
Vent. rate	57	BPM
PR interval	168	ms
QRS duration	94	ms
QT/QTc	430/418	ms
P-R-T axes	-2 4	-14

SINUS BRADYCARDIA
POSSIBLE INFERIOR INFARCT , AGE UNDETERMINED
ABNORMAL ECG
WHEN COMPARED WITH ECG OF 06-APR-2011 06:56,
WOLFF-PARKINSON-WHITE IS NO LONGER PRESENT



Case outcome: James

- DX: HOCM
- Sports physical not signed.
- Benched.




Prognosis: Guarded

“You have a walk in....”



“He says he knows you...”

A man with dark hair, wearing a white shirt, is smiling and looking towards the camera. He is positioned behind a glass door that is slightly ajar, with his head and shoulders visible. The hallway is brightly lit with recessed ceiling lights and has a wooden floor. To the right of the man, there is a wooden door with a glass window. In the background, a blue wall and a doorway leading to a room with blue chairs are visible.

Room 1, Wayne

Wayne



- 47 year old male c/p
- T100.0, VS: 100/70, HR: 120, RR: 24.
- Missed dialysis two days ago



911 is called....meanwhile.....

Wayne - Exam



- Restless, pale
- Continuous rub

Not a good sign

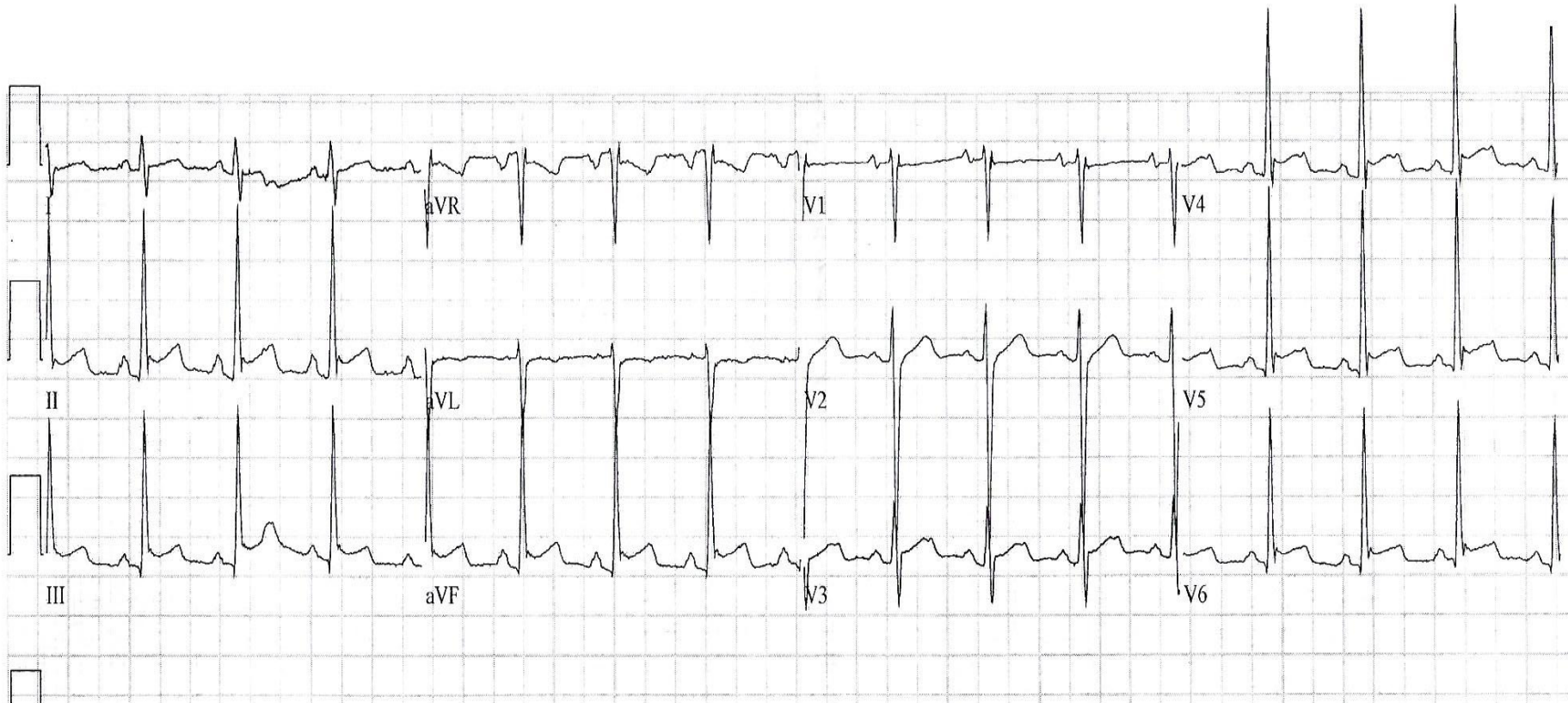
- JVD
- Lungs: diminished
- Extremities: chronic venous stasis changes

His EKG



Vent. rate	97	BPM
PR interval	134	ms
QRS duration	82	ms
QT/QTc	344/436	ms
P-R-T axes	62 85	66

*** Critical Test Result: STEMI
NORMAL SINUS RHYTHM
RIGHT ATRIAL ENLARGEMENT
ST ELEVATION CONSIDER INFEROLATERAL INJURY OR ACUTE INFARCT
*** ACUTE MI / STEMI ***



PERICARDITIS v. MI

PERICARDITIS

- Diffuse ST elevation
- No reciprocal depression
- No Q waves

MYOCARDIAL INFARCTION

- Localized ST segment
- Reciprocal changes
- Q waves possible

Summary

- Young people can have cardiac disease too.
- Anxiety is a diagnosis of exclusion.
- Some patients minimize things – especially males.



READ EVERY EKG FOR

The *less* obvious

- 1. Delta waves / short PR of WPW
- 2. QTc > 0.45
- 3. “Ski Slope” of Brugada
- 4. Signs of HOCCM
- 5. Low voltage

