EKG Rhythm Lecture

1. Rate
2. Wide or Narrow Rhythm?

Reg

P-QRS relationship?
PR interval constant?
P waves upright II/III/F?

Irreg-Irreg

P- waves seen?
Are P waves same or different?

Patterned

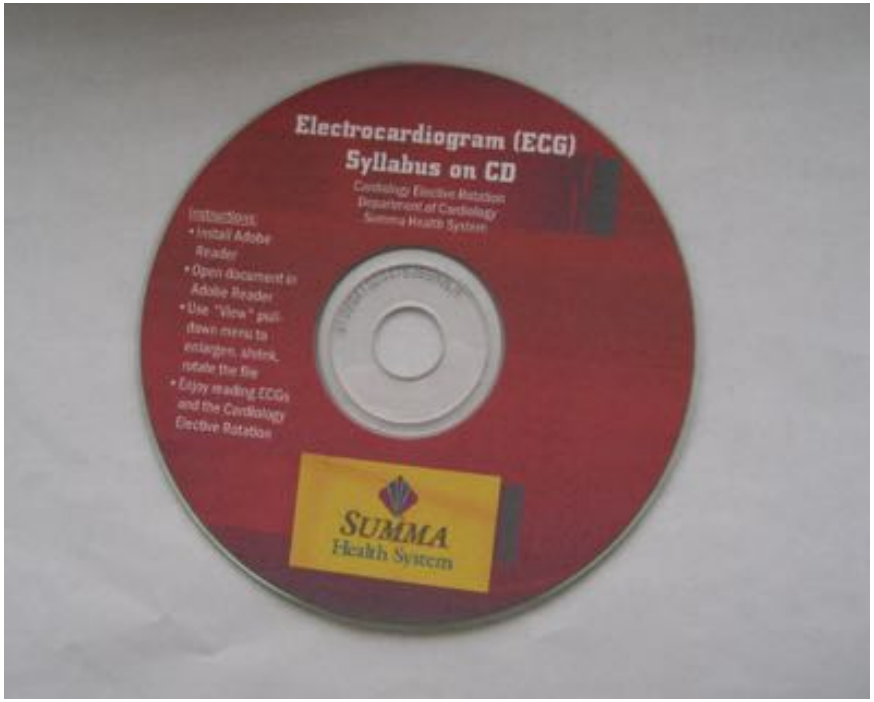
What is the pattern?
Eval P waves & QRS
What is the origin or the pattern?

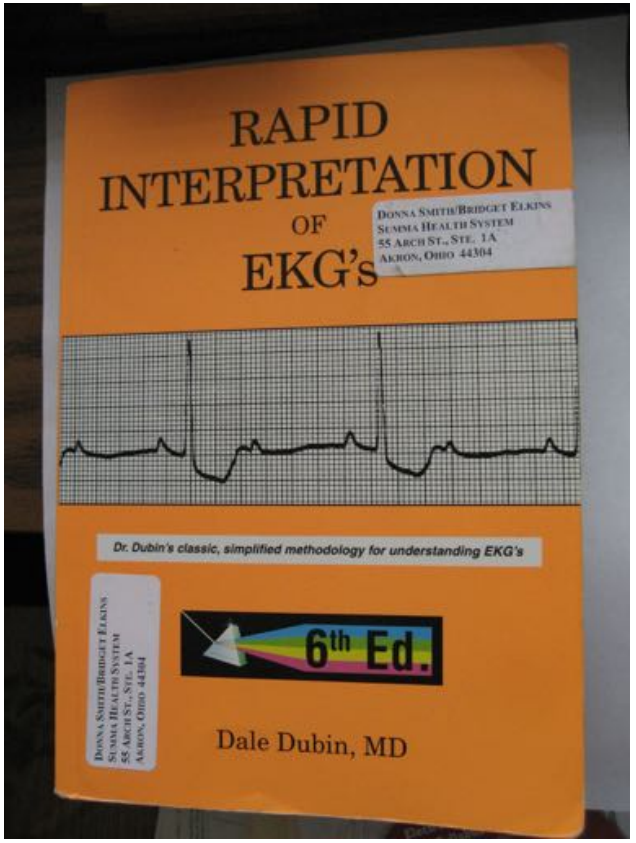
What is the underlying rhythm and what interupts?

3. Morphology

Axis
Pwave / PR
QRS (tall? / wide?)
ST- T – Q waves (Inf, Ant, Lat)

AVAILABLE RESOURCES



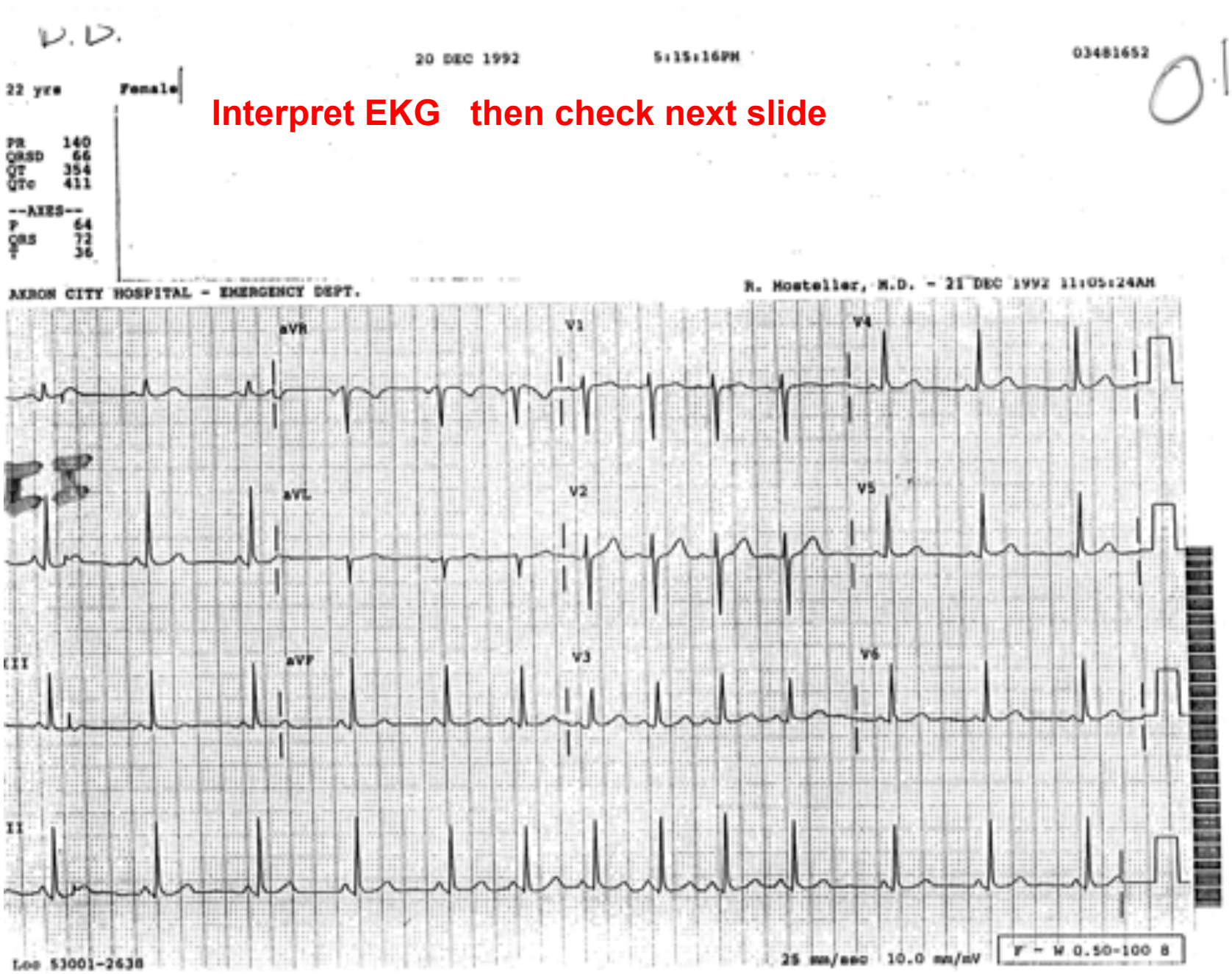


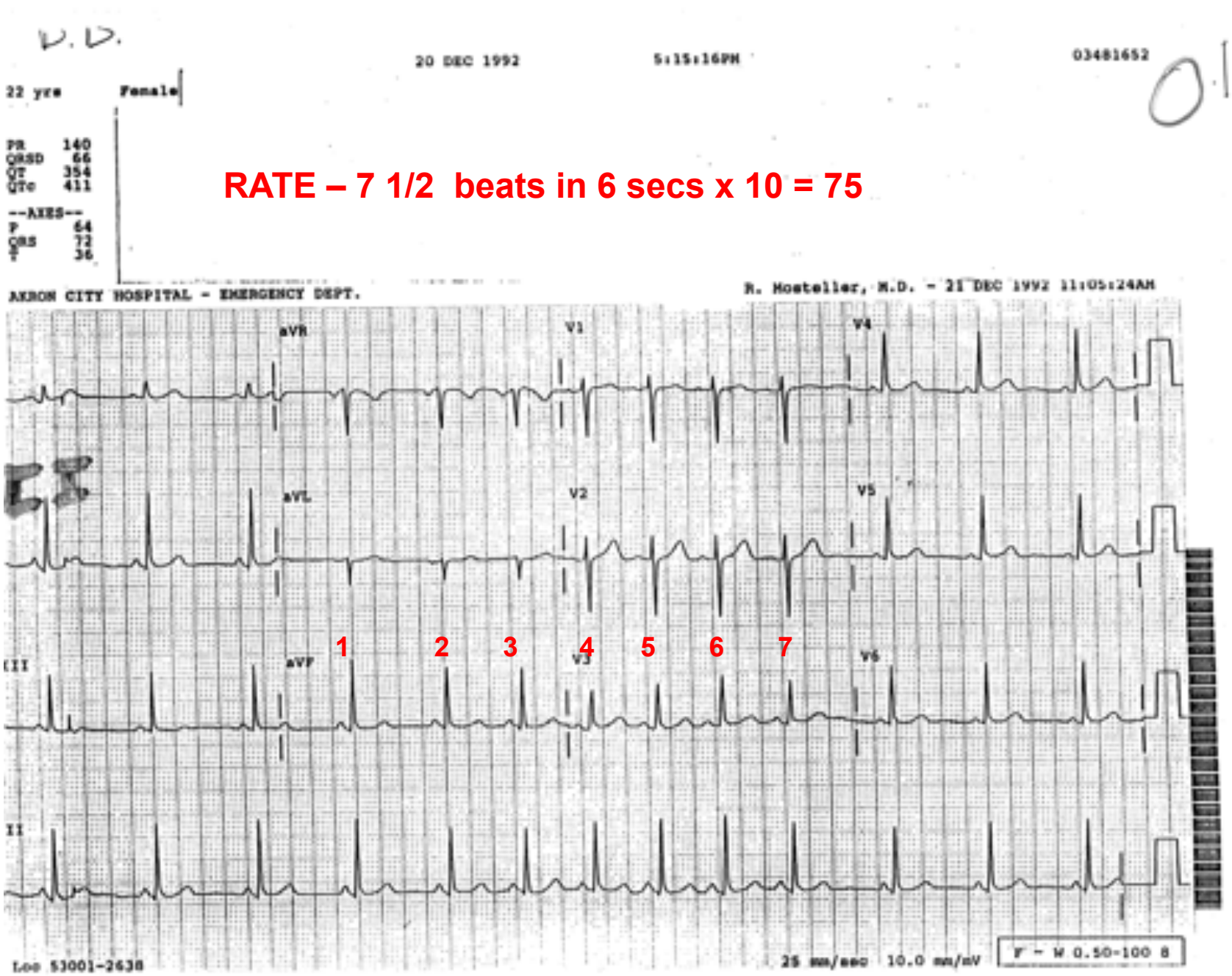
AVAILABLE RESOURCES

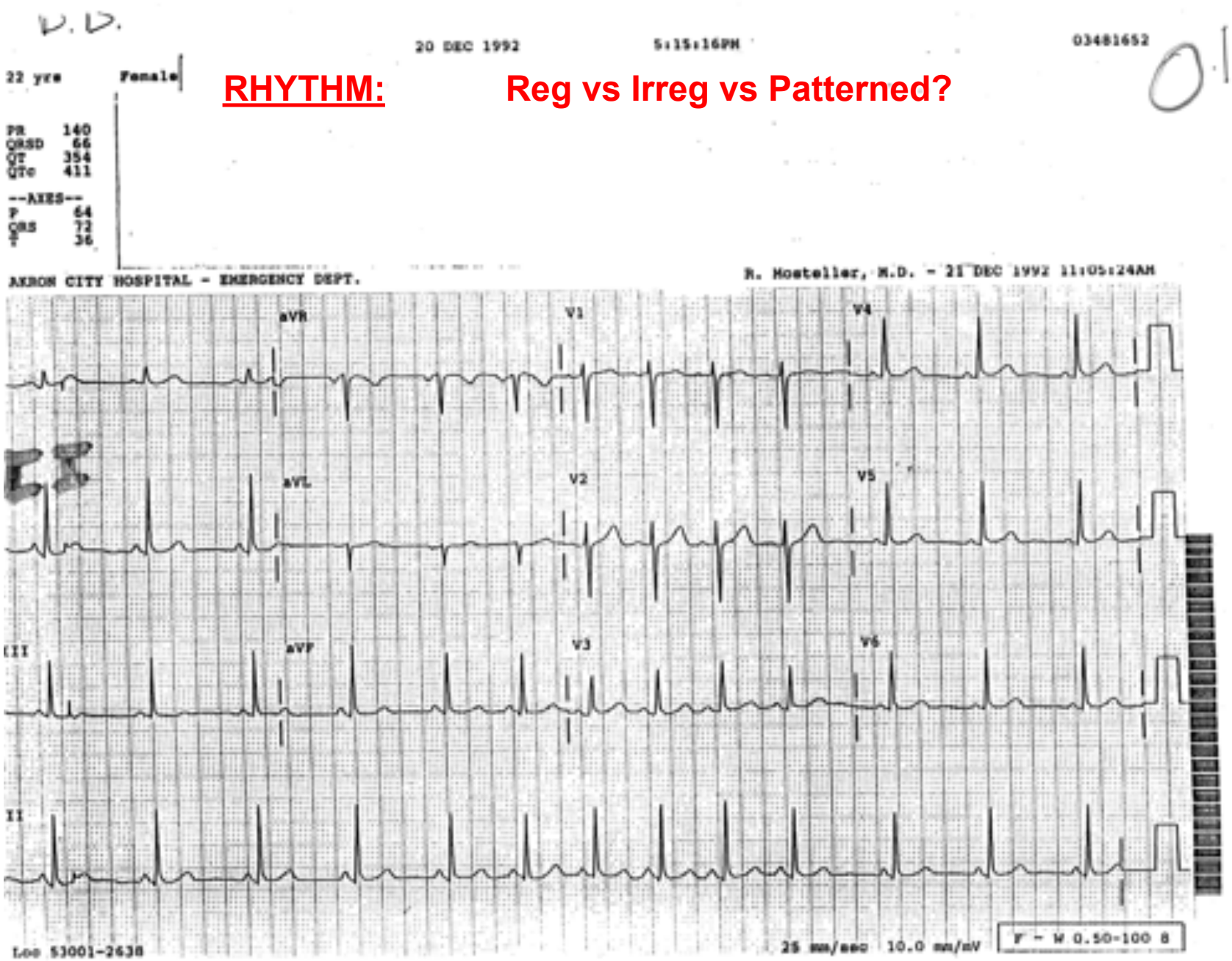
- **ECG Interpretation Template**
- **ECG#** _____
- Rate:
- **Rhythm:** **????**
-

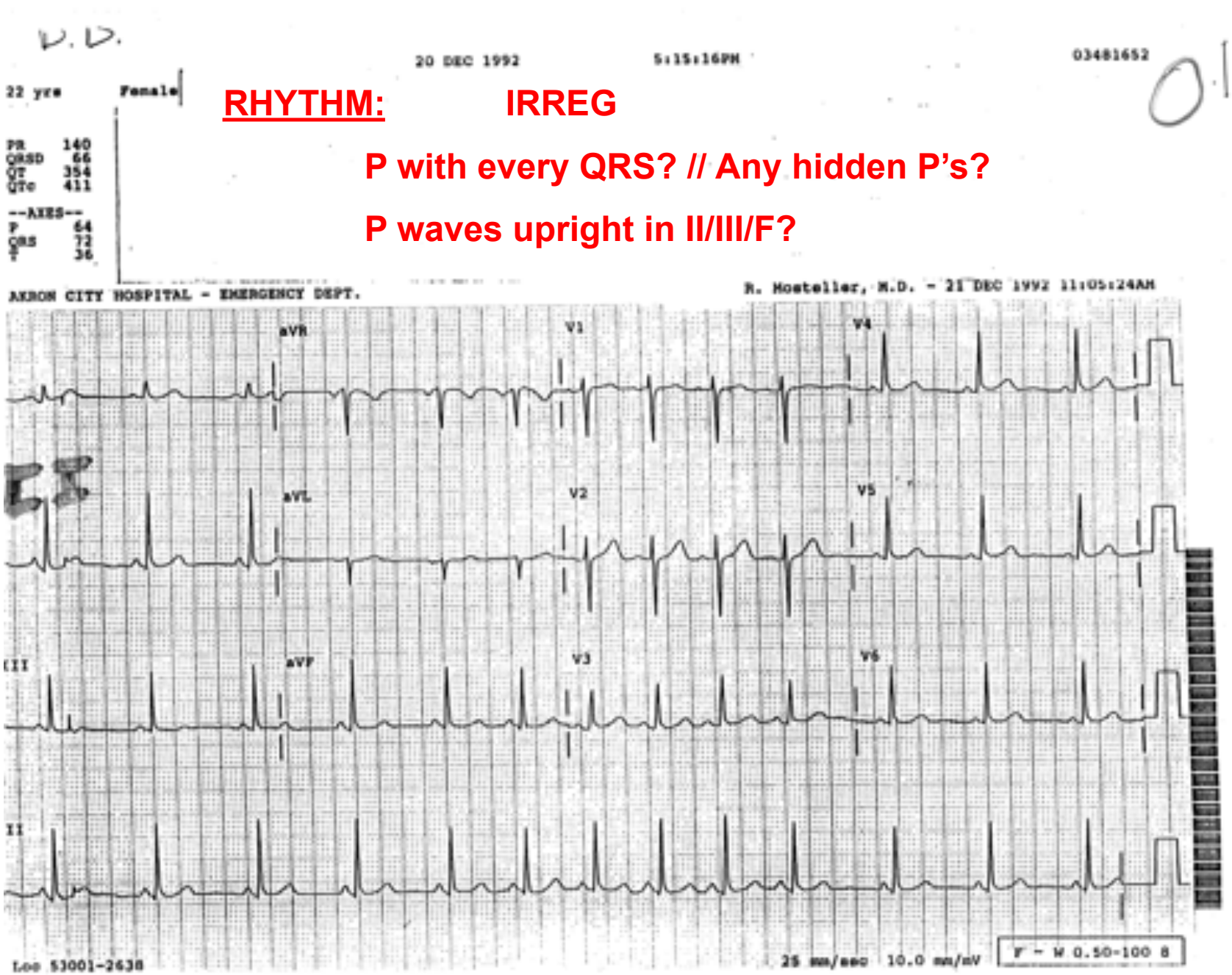
-REG	**vs**	**PATTERN**	**vs**	**IRR-IRR**
-P-QRS		**-what is pattern**		**P-QRS**
-⇑ P?		**-origin of pattern**		**origin of beat**
		-Origin of the interuption		

- Pwave: Atrial Enlargement?
- PR Interval: >200msec
- QRS Complex
- -Axis:
- -Width:
- -Height: No Signs Consistent with LVH or RVH
- -QT interval (you may wish to add this)
- Q, ST/T Changes:
- -Inferior
- -Precordial
- -High Lateral
- SUMMARY STATEMENT-


D.D.
20 DEC 1992
5:15:16PM
03481652
01
22 yrs
Female
Interpret EKG then check next slide
PR 140
QRSD 66
QT 354
QTc 411
--AXES--
P 64
QRS 72
T 36
AKRON CITY HOSPITAL - EMERGENCY DEPT.
R. Hostetler, M.D. - 21 DEC 1992 11:05:24AM
aVR
V1
V4
aVL
V2
V5
III
aVF
V3
V6
II
Leo 53001-2638
25 mm/sec 10.0 mm/mV
F - W 0.50-100 8


D.D.
20 DEC 1992
5:15:16PM
03481652
01
22 yrs
Female
PR 140
QRSD 66
QT 354
QTc 411
--AXES--
P 64
QRS 72
T 36
RATE – 7 1/2 beats in 6 secs x 10 = 75
AKRON CITY HOSPITAL - EMERGENCY DEPT.
R. Hostetler, M.D. - 21 DEC 1992 11:05:24AM
aVR
V1
V4
aVL
V2
V5
aVF
V3
V6
III
II
1
2
3
4
5
6
7
Leo 53001-2638
25 mm/sec 10.0 mm/mV
F - W 0.50-100 8

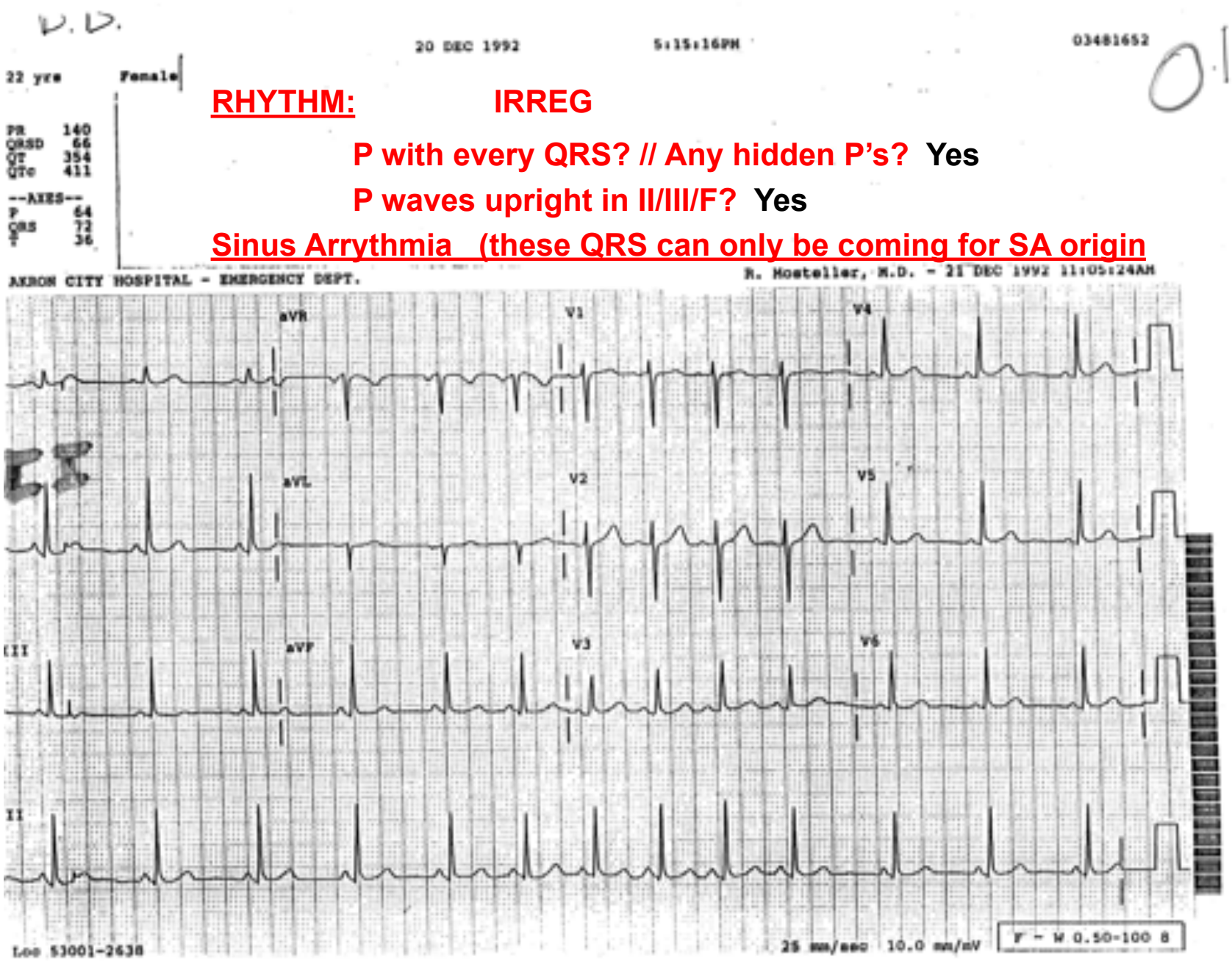

D.D.
20 DEC 1992
5:15:16PM
03481652
01
22 yrs
Female
RHYTHM:
Reg vs Irreg vs Patterned?
PR 140
QRSD 66
QT 354
QTc 411
--AXES--
P 64
QRS 72
T 36
AKRON CITY HOSPITAL - EMERGENCY DEPT.
R. Hostetler, M.D. - 21 DEC 1992 11:05:24AM
aVR
V1
V4
aVL
V2
V5
III
aVF
V3
V6
II
Leo 53001-2638
25 mm/sec 10.0 mm/mV
F - W 0.50-100 B



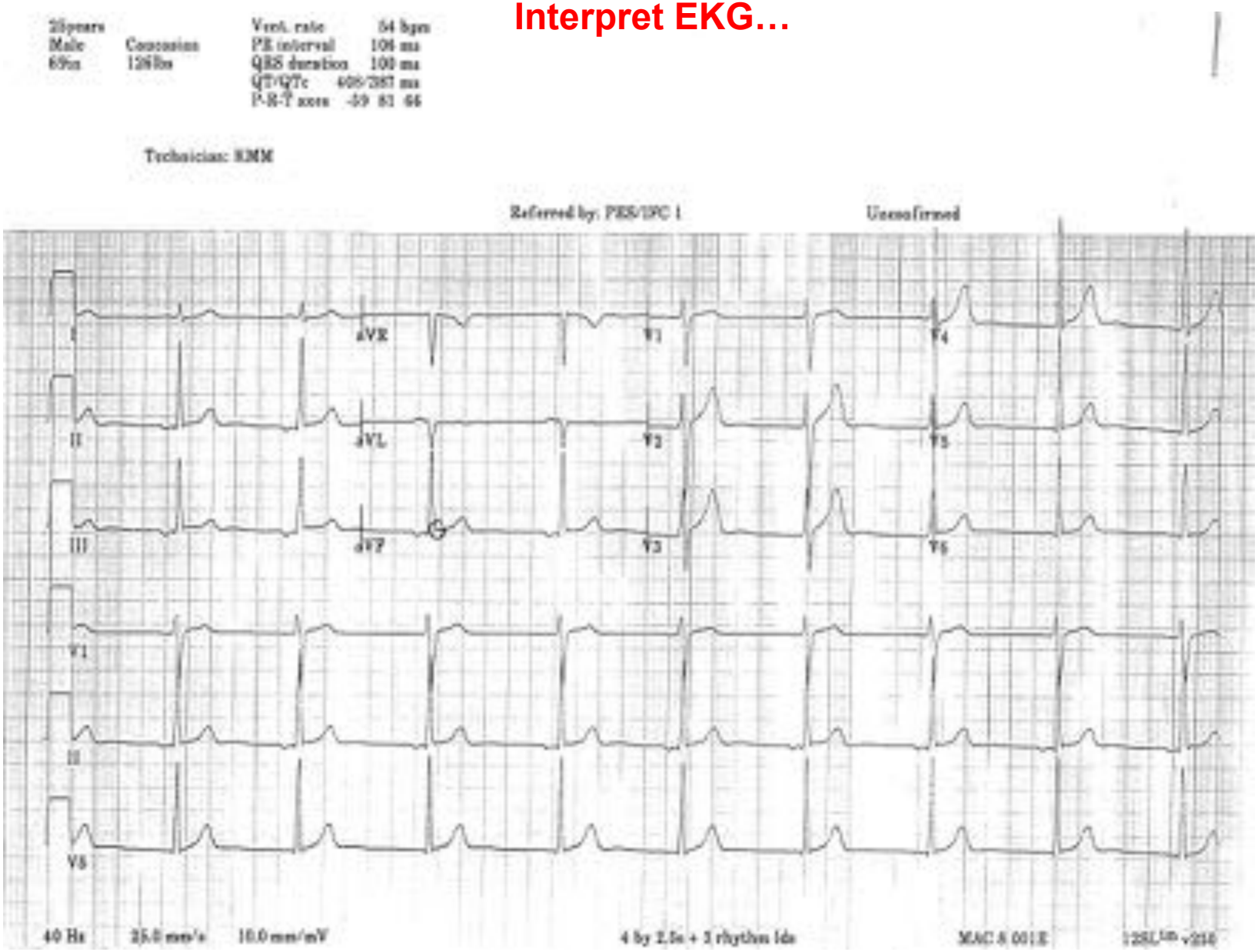
RHYTHM: IRREG

P with every QRS? // Any hidden P's?

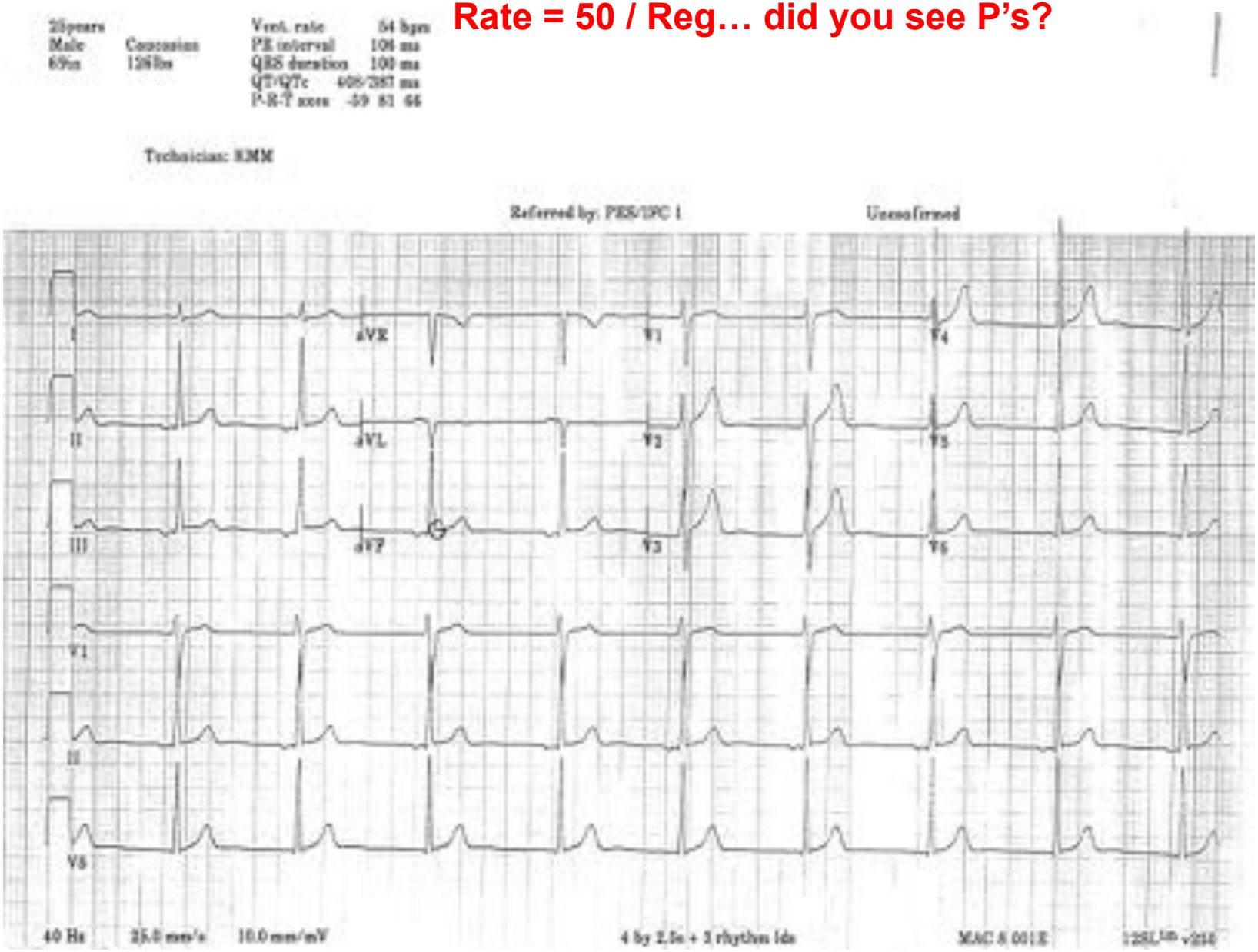
P waves upright in II/III/F?


D.D.
20 DEC 1992
5:15:16PM
03481652
01
22 yrs
Female
PR 140
QRSD 66
QT 354
QTc 411
--AXES--
P 64
QRS 72
T 36
RHYTHM: IRREG
P with every QRS? // Any hidden P's? Yes
P waves upright in II/III/F? Yes
Sinus Arrythmia (these QRS can only be coming for SA origin
AKRON CITY HOSPITAL - EMERGENCY DEPT.
R. Hostetler, M.D. - 21 DEC 1992 11:05:24AM
aVR
V1
V4
aVL
V2
V5
III
aVF
V3
V6
II
Leo 53001-2638
25 mm/sec 10.0 mm/mV
F - W 0.50-100 B

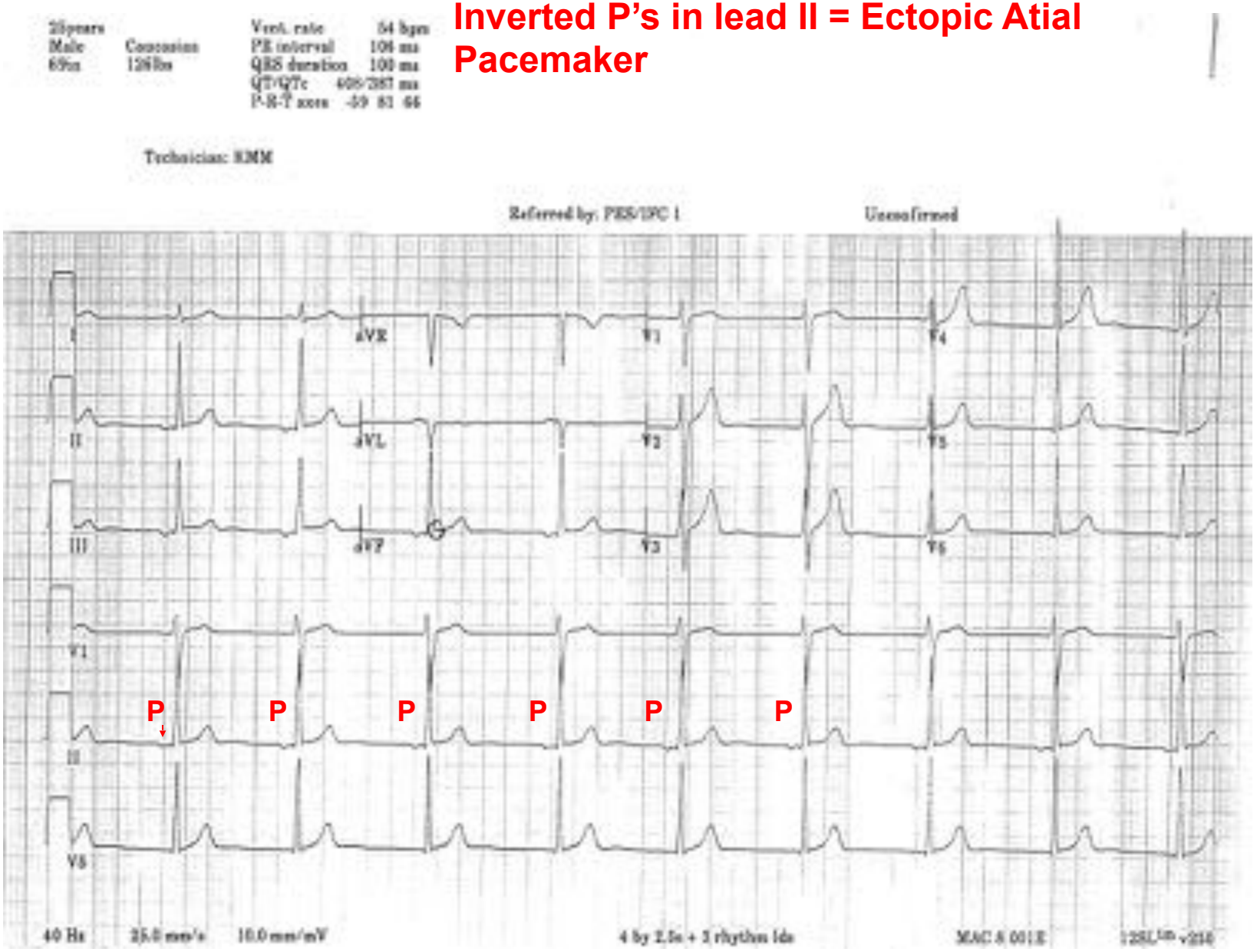
Interpret EKG…



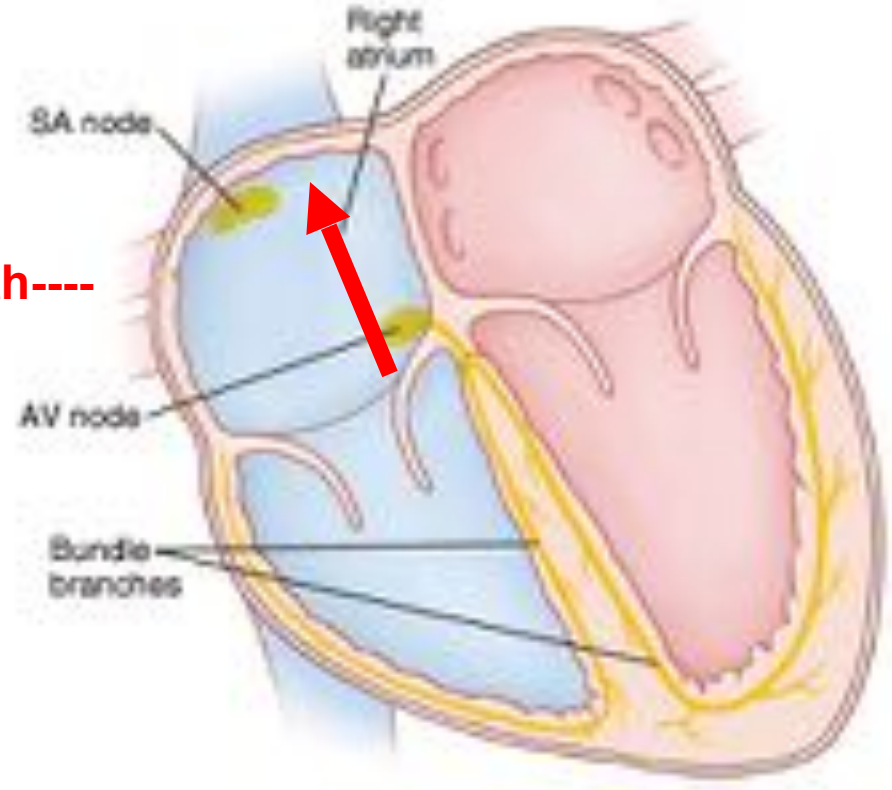
Rate = 50 / Reg… did you see P's?



Inverted P's in lead II = Ectopic Atial Pacemaker



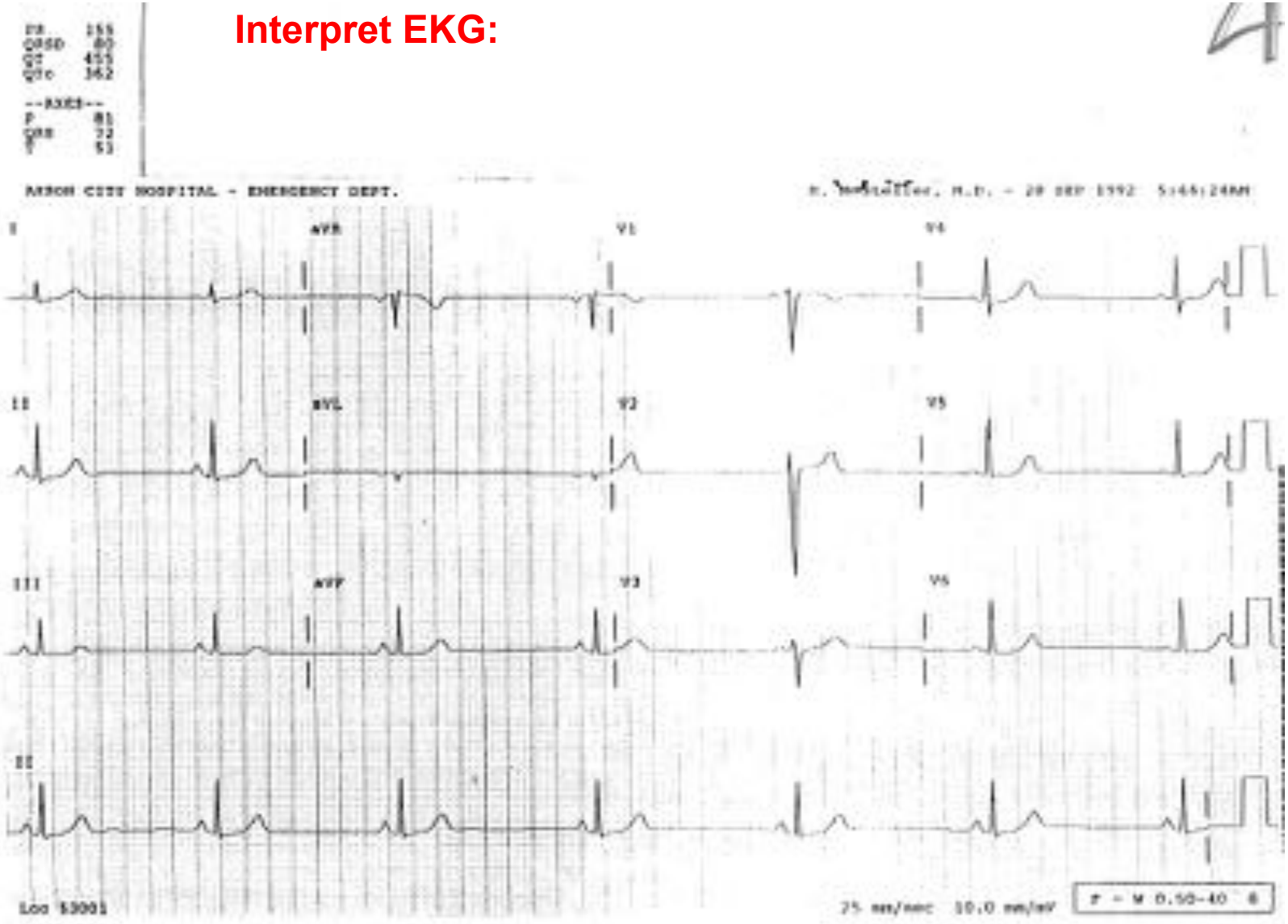
Depolarization path----



Leads II / III / F

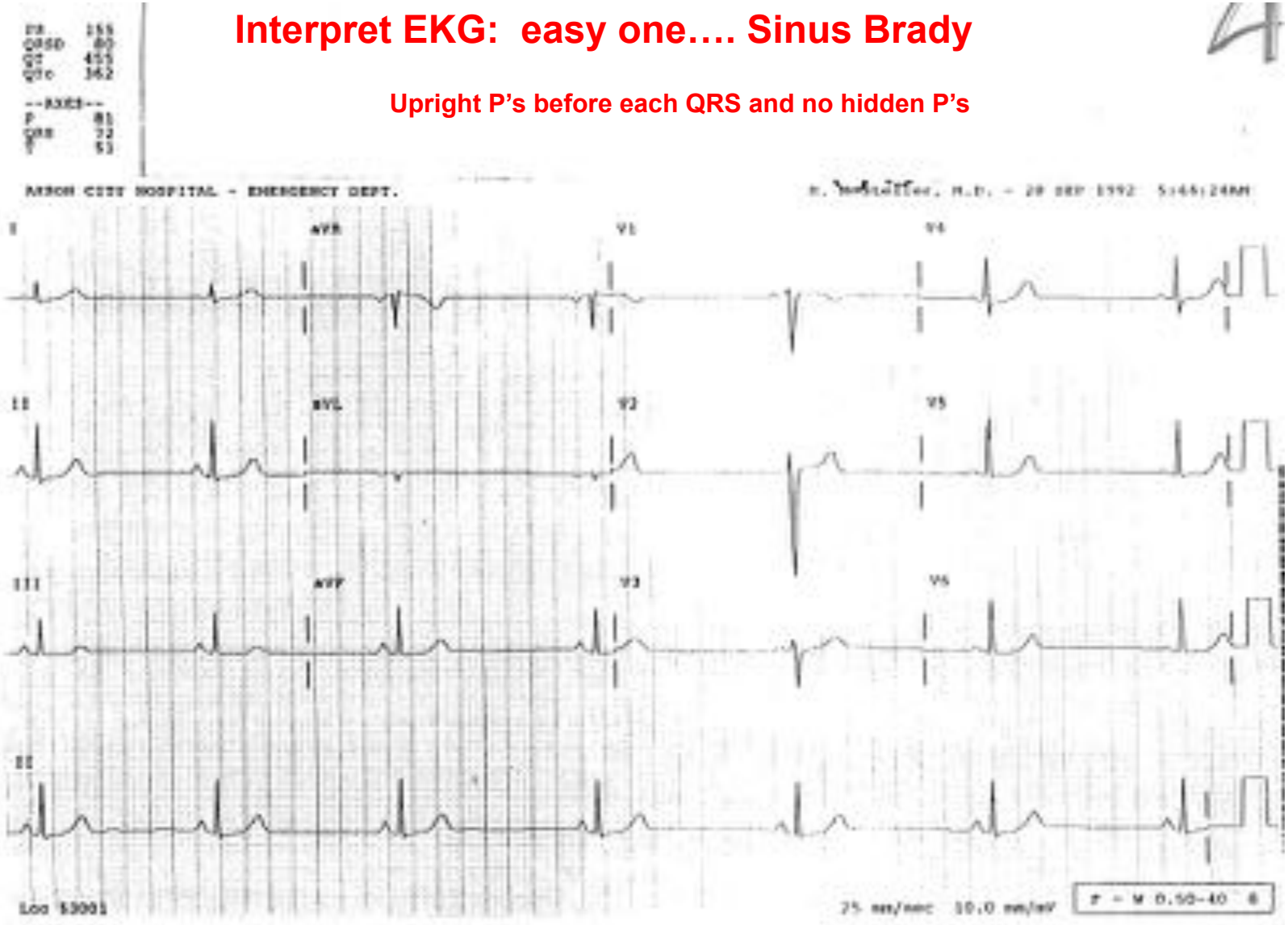
Remember that a depolarization traveling away from the inferior leads will have an inverted P wave… thus it cannot be coming from the Sinus node

Interpret EKG:

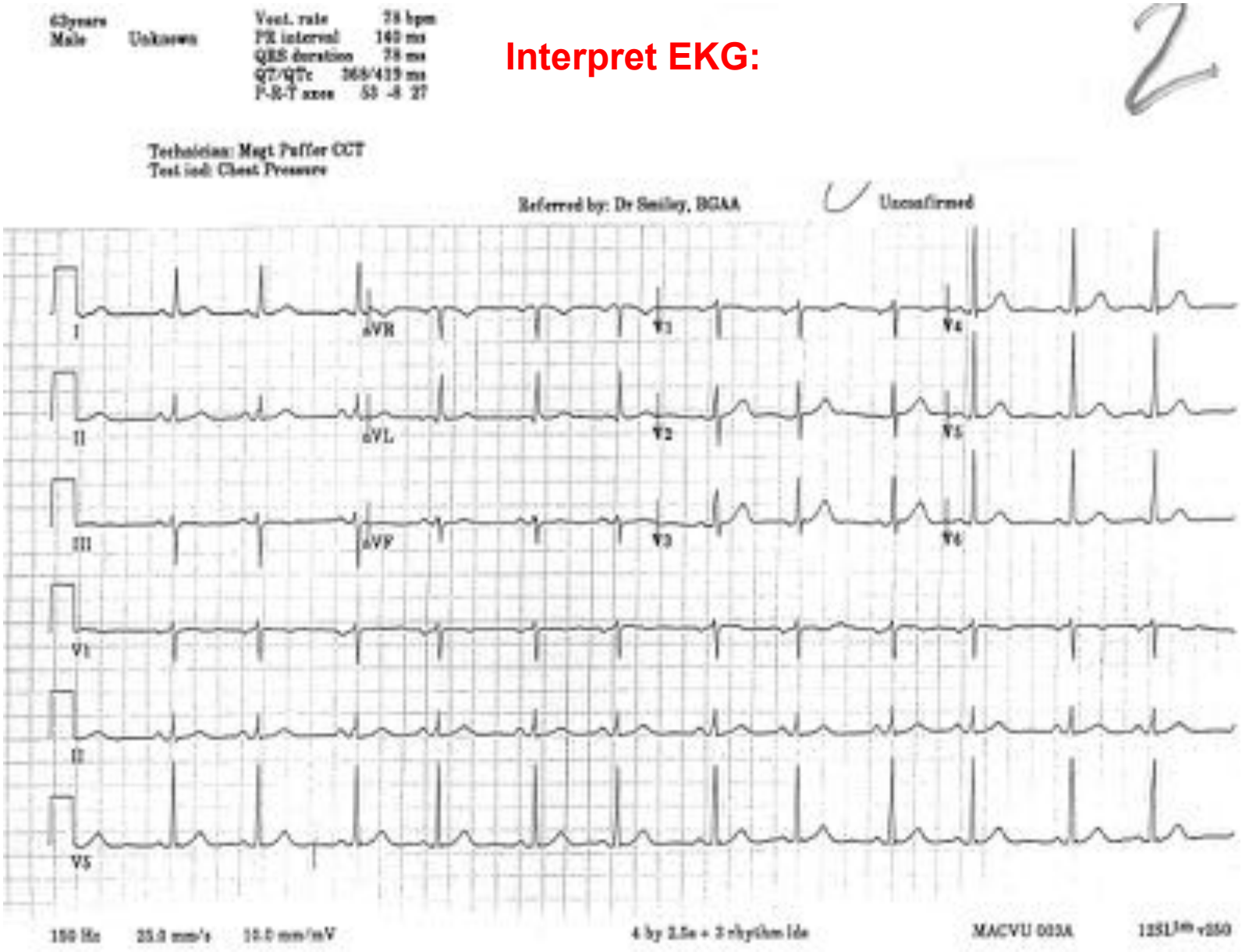


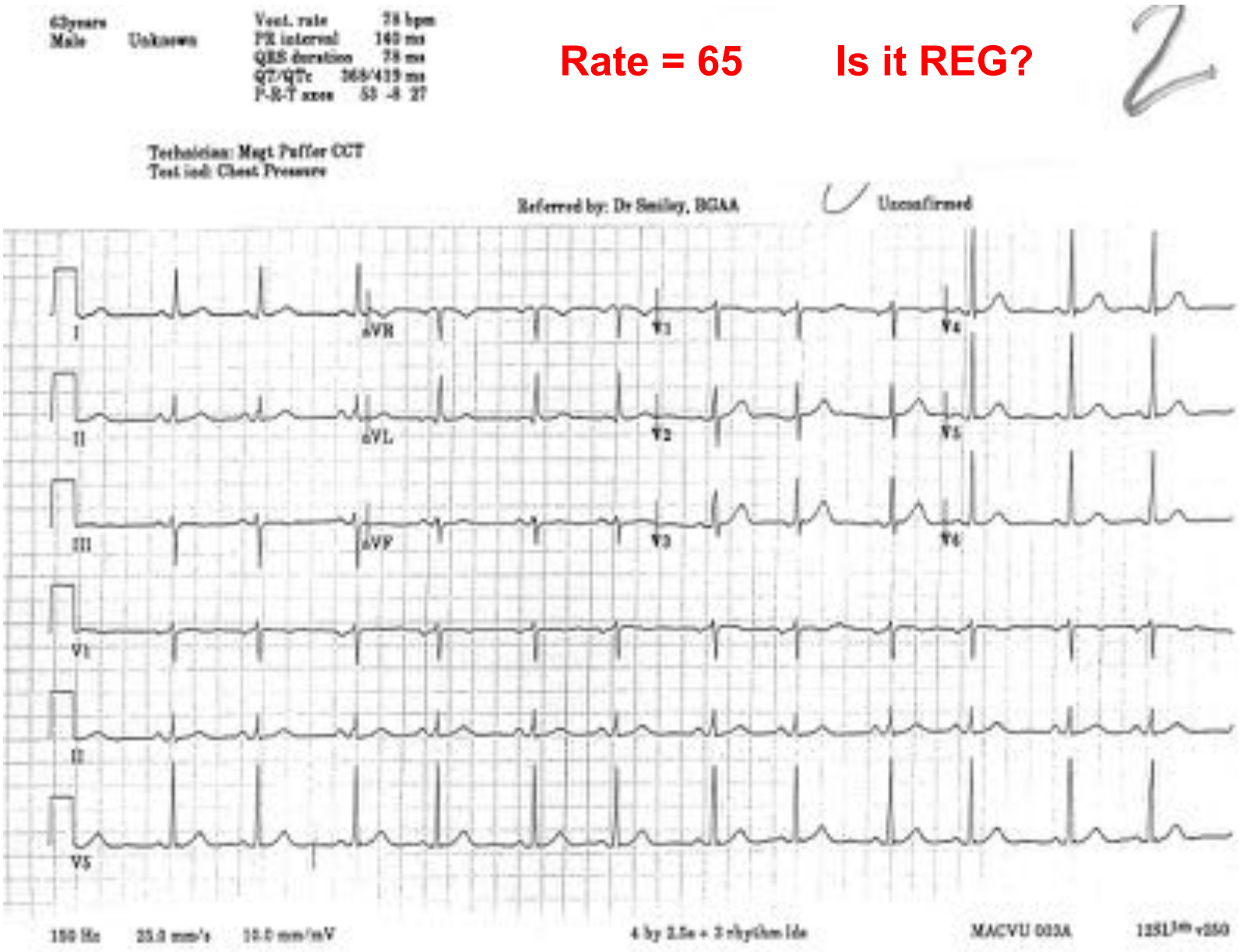
Interpret EKG: easy one…. Sinus Brady

Upright P's before each QRS and no hidden P's



Interpret EKG:

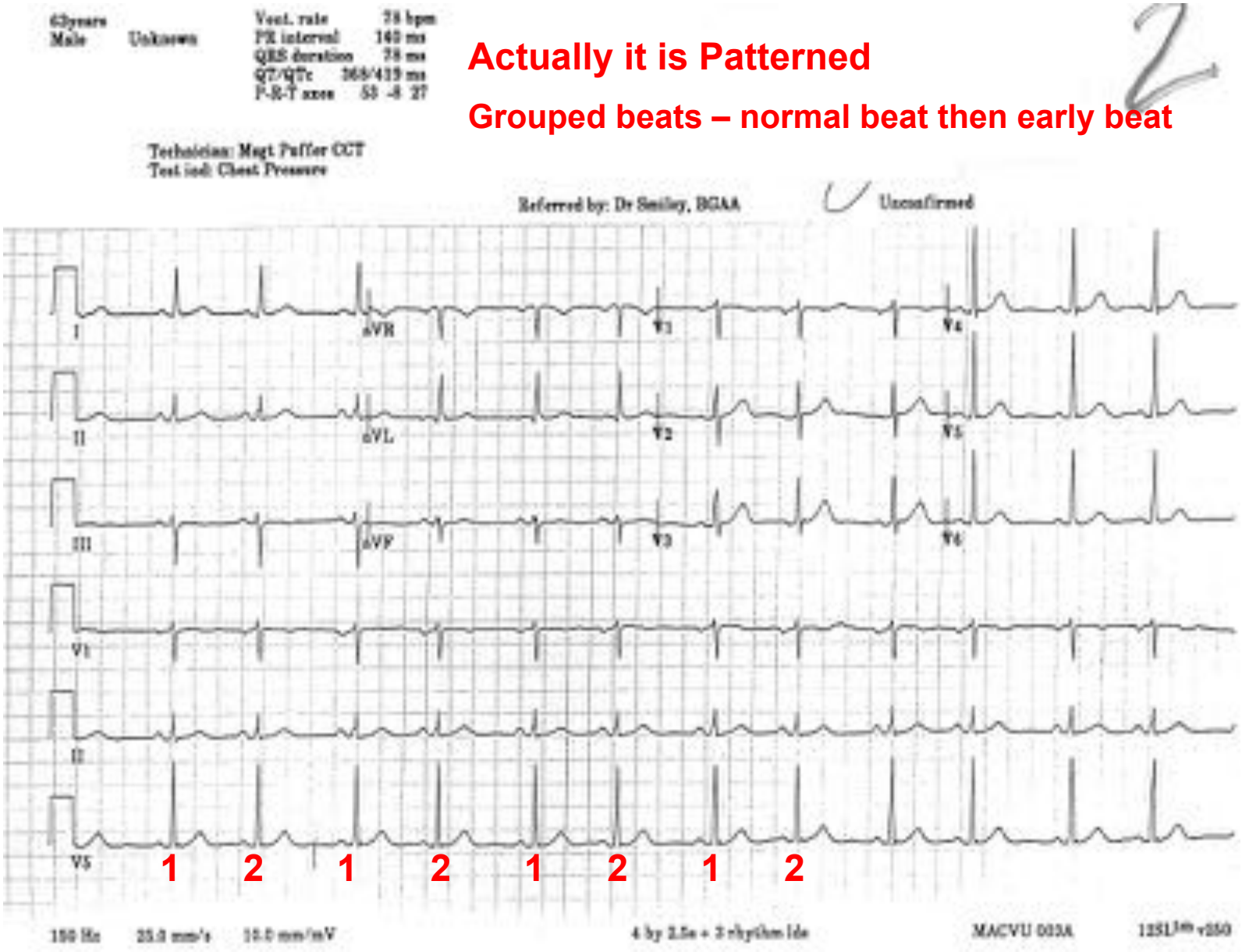


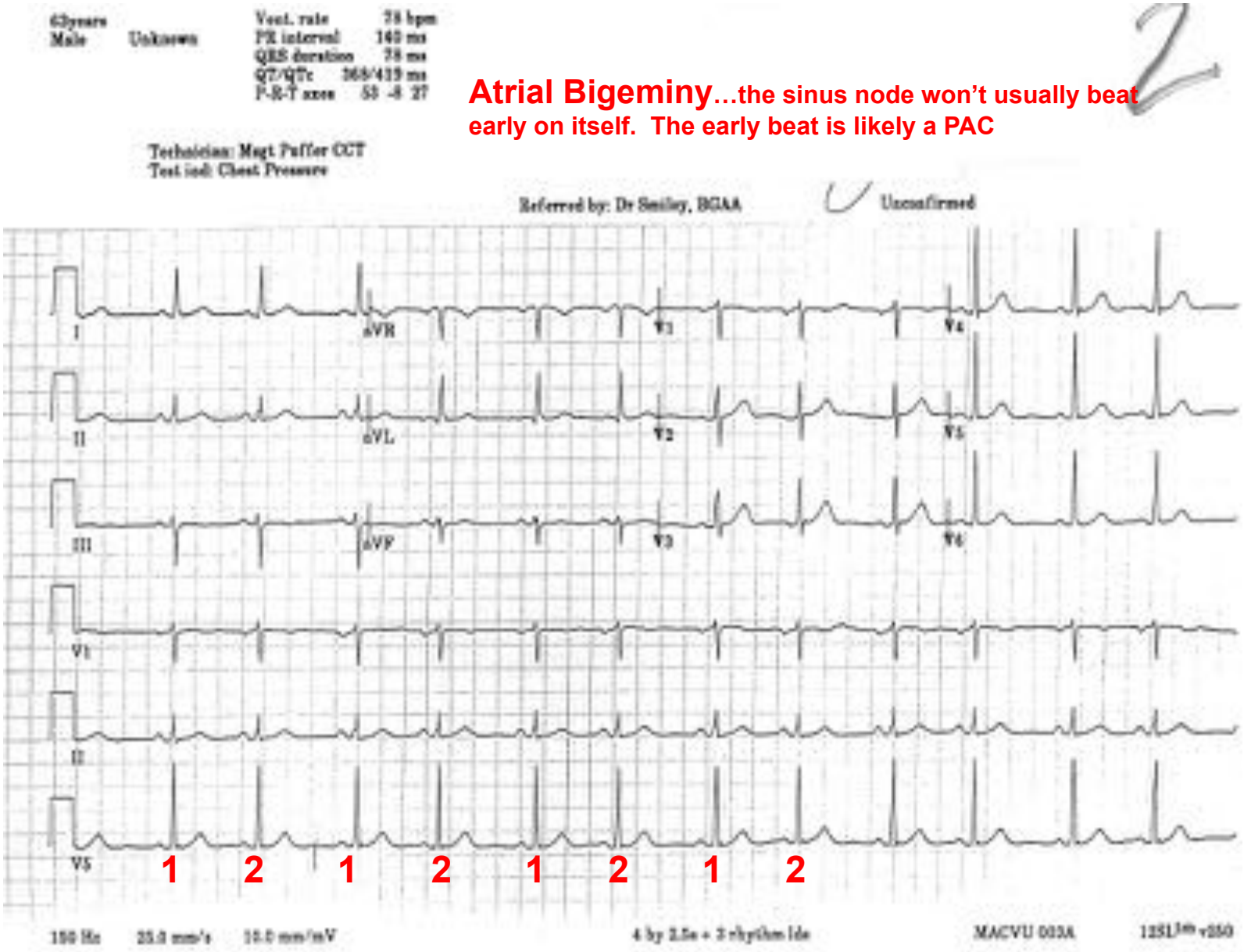


Rate = 65 **Is it REG?**

Actually it is Patterned

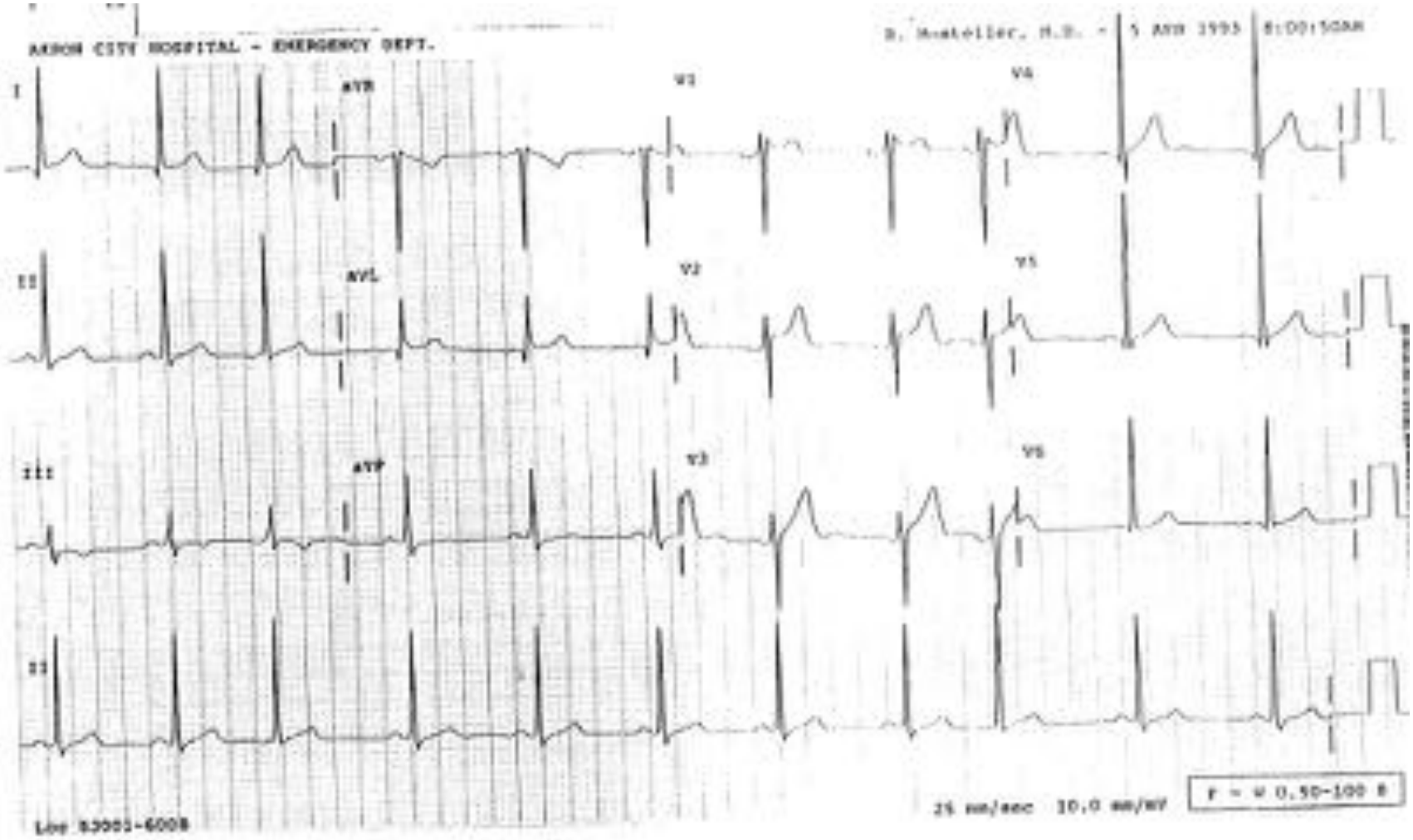
Grouped beats – normal beat then early beat





Atrial Bigeminy…the sinus node won't usually beat early on itself. The early beat is likely a PAC

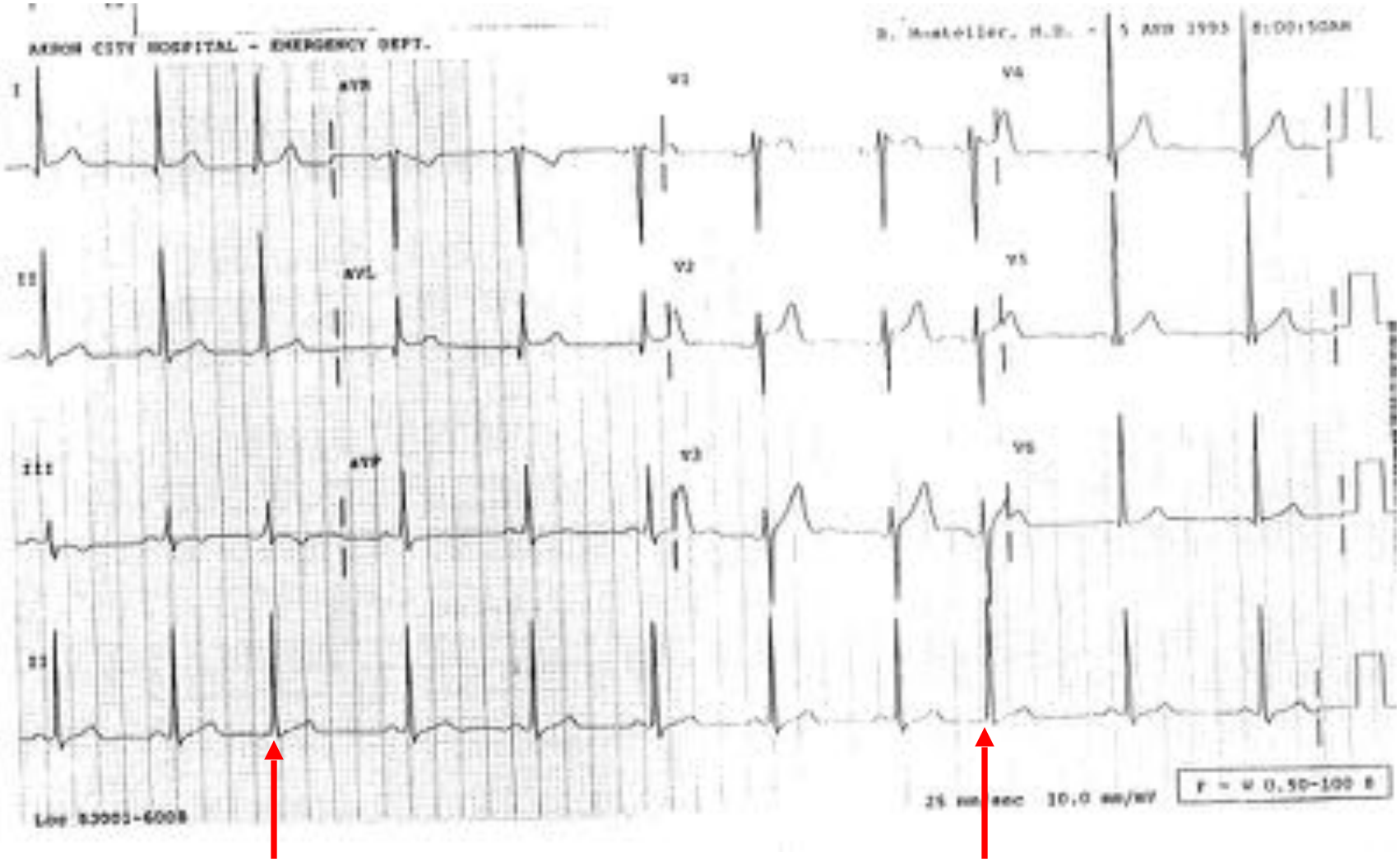
Interpret EKG:



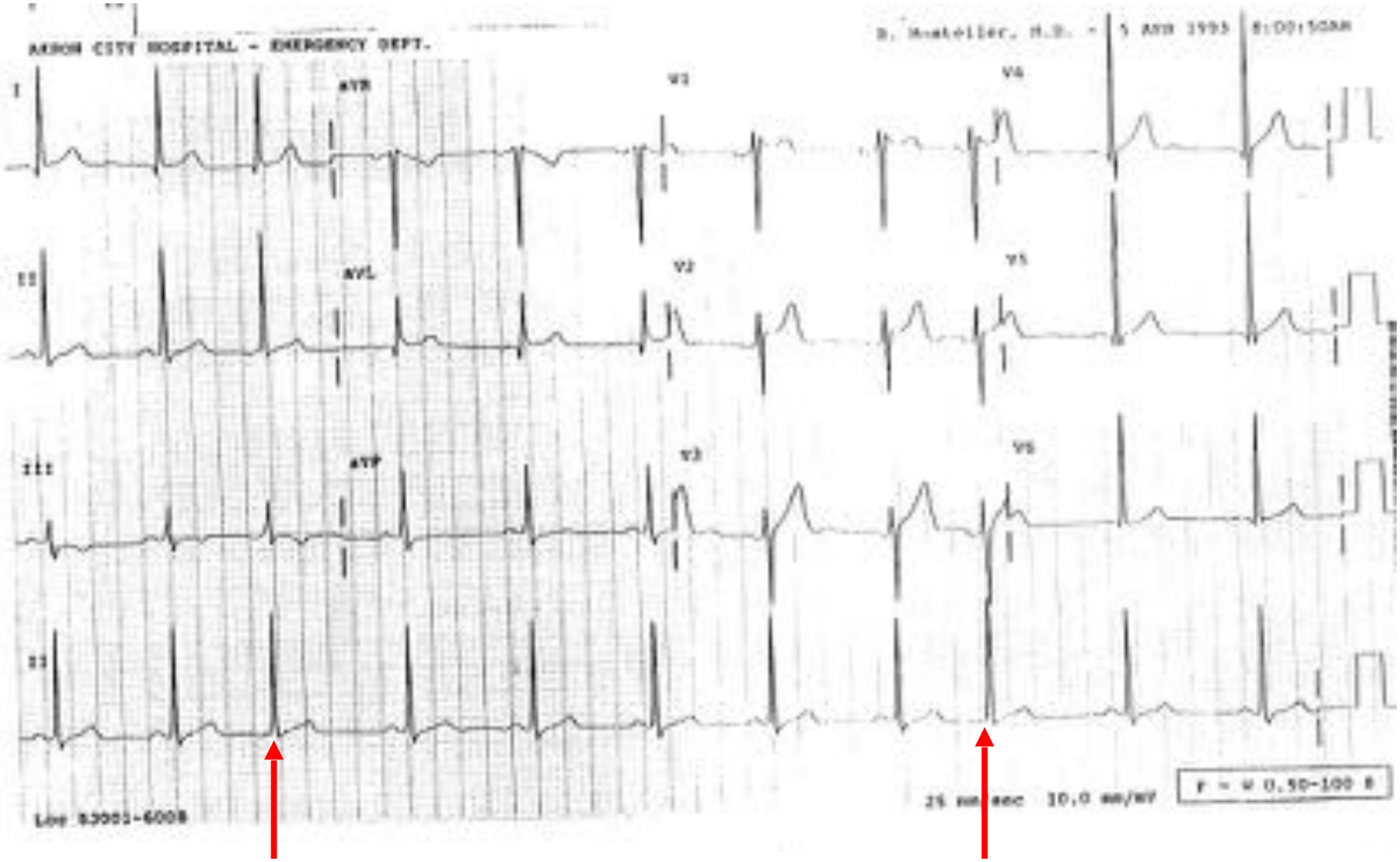
Rate = 60 This is actually reg (mostly)…There is a P with every QRS, the P are upright.

NSR with two early beats

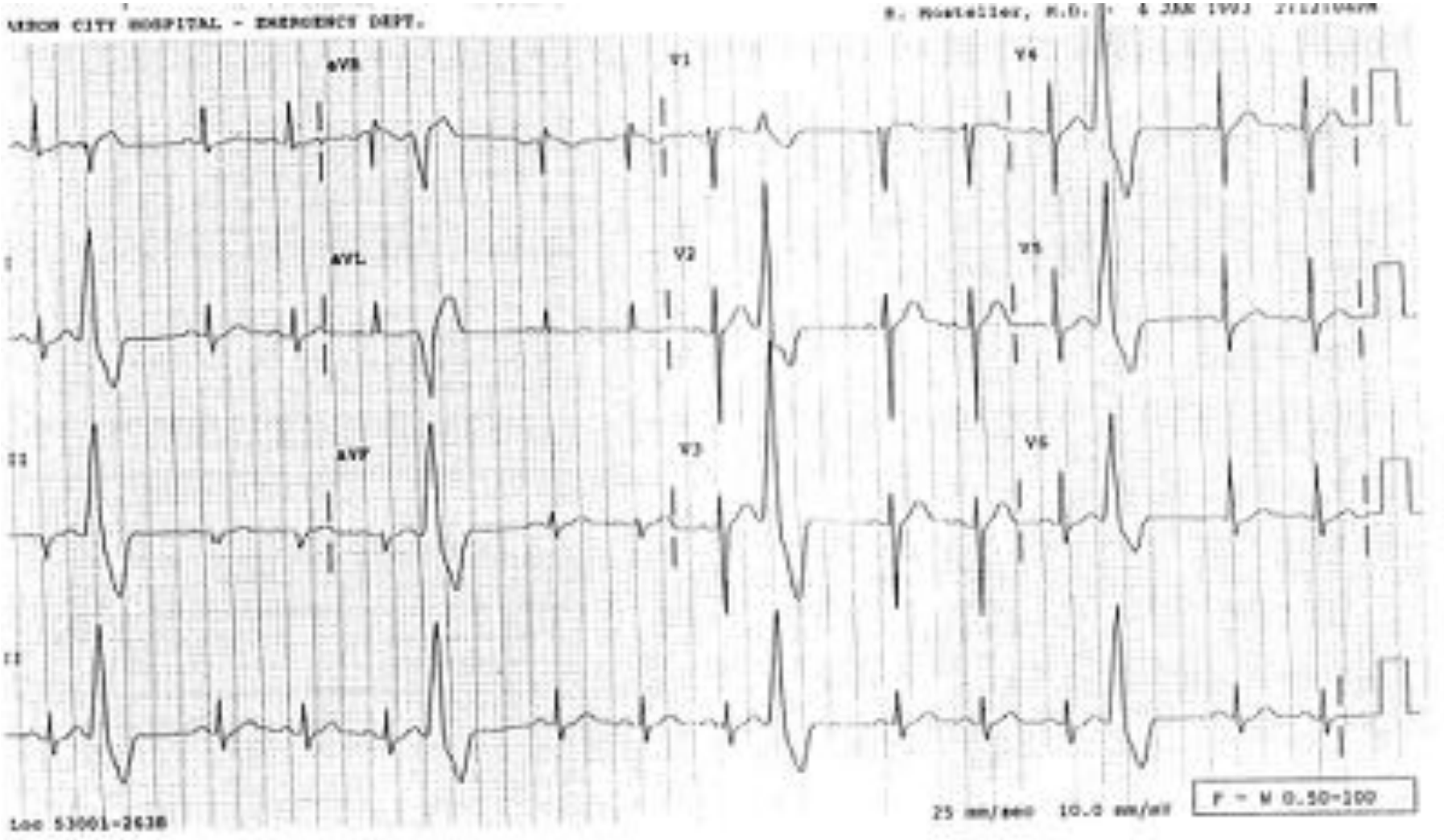
What are the early beats?



What are the early beats? NSR with PAC's

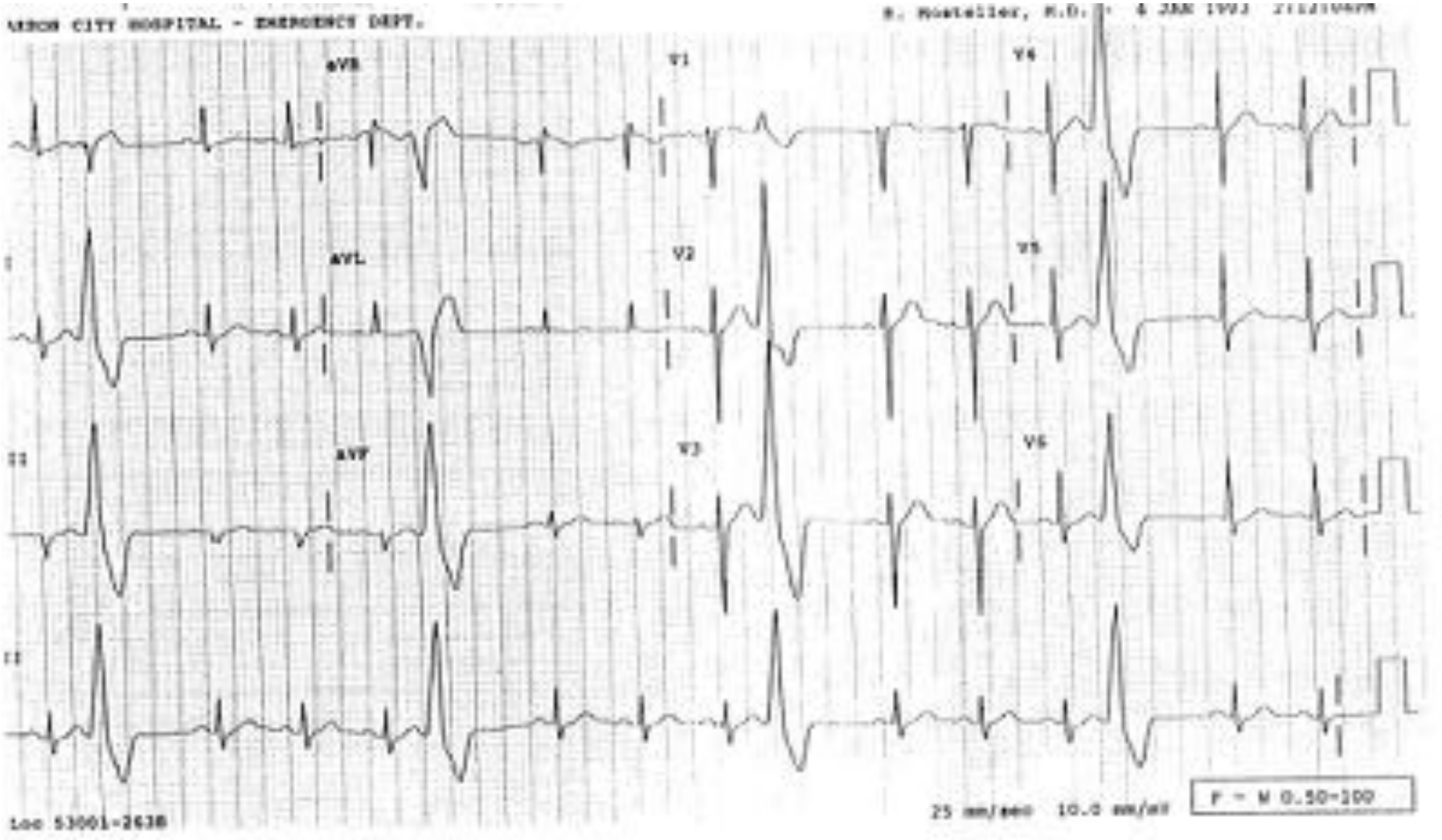


Interpret EKG #6:



Interpret EKG #6: **Rate = 80**

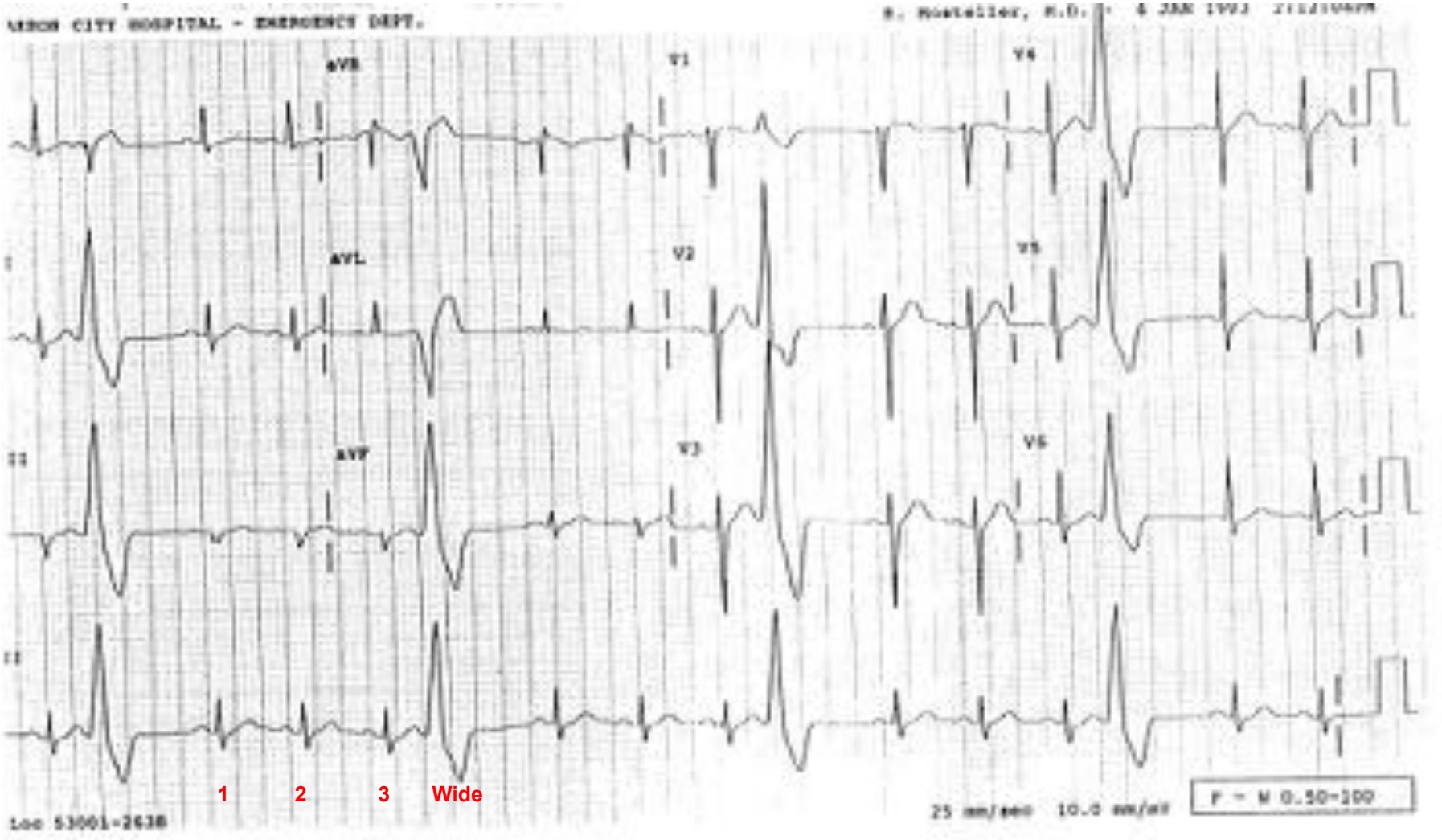
Reg vs IRREG vs Pattern?



Pattern:

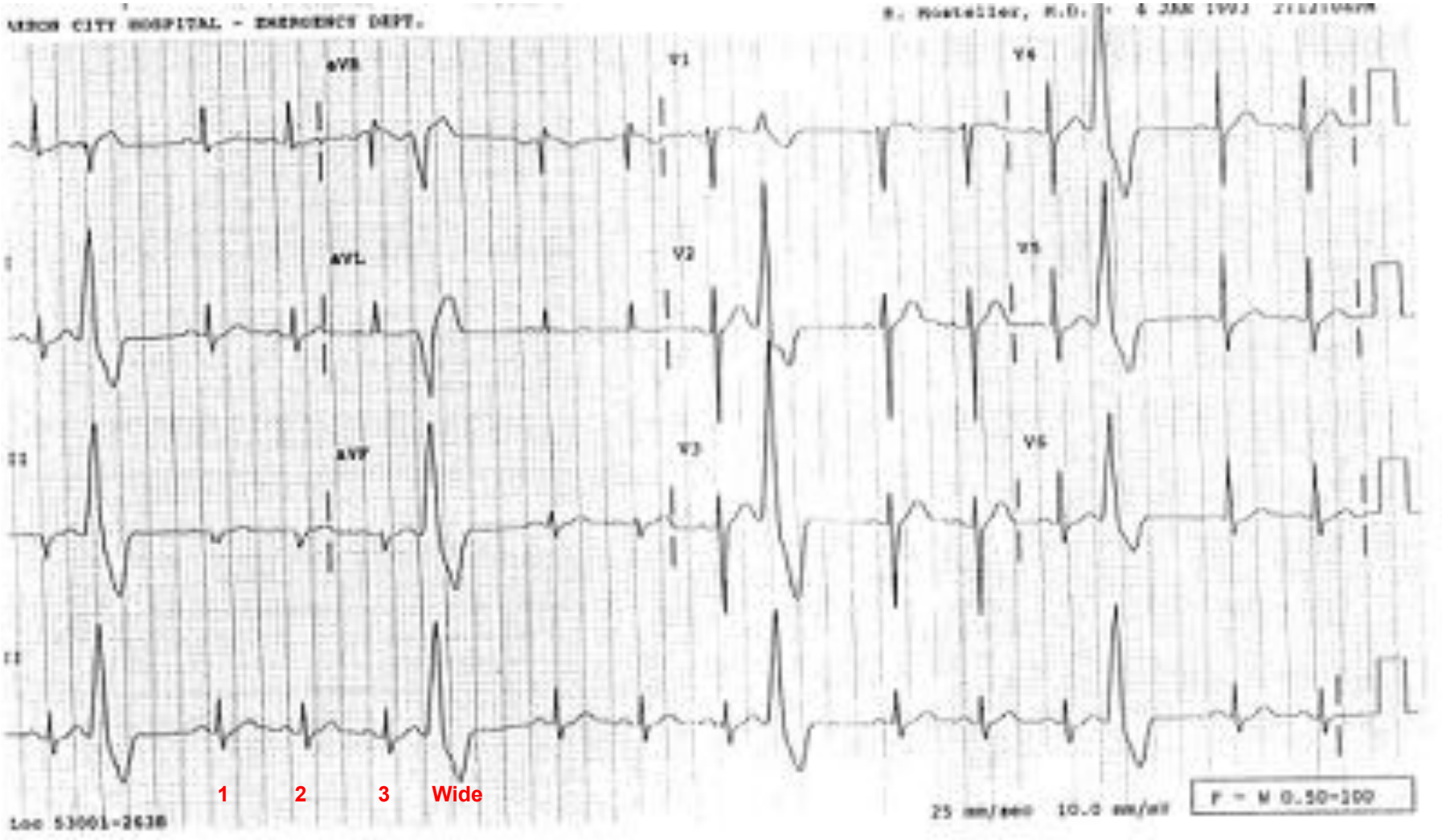
What is the pattern?

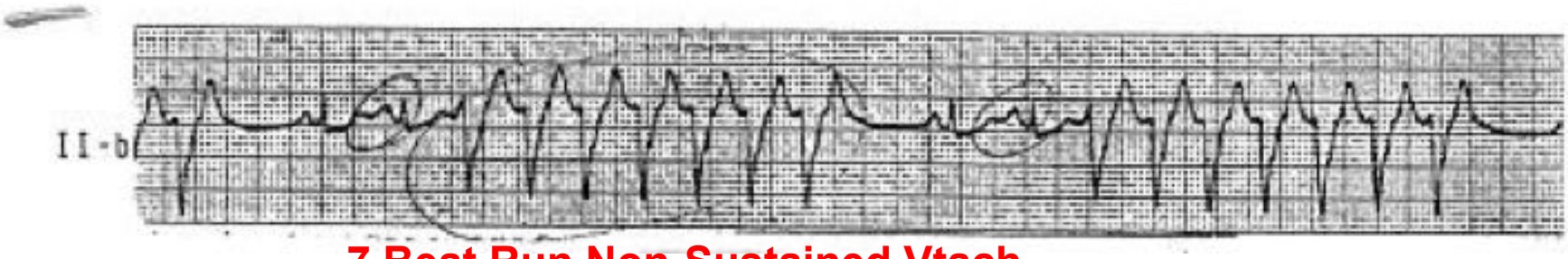
3 normal beats with a wide complex beat 4th. What is the origin of each beat?



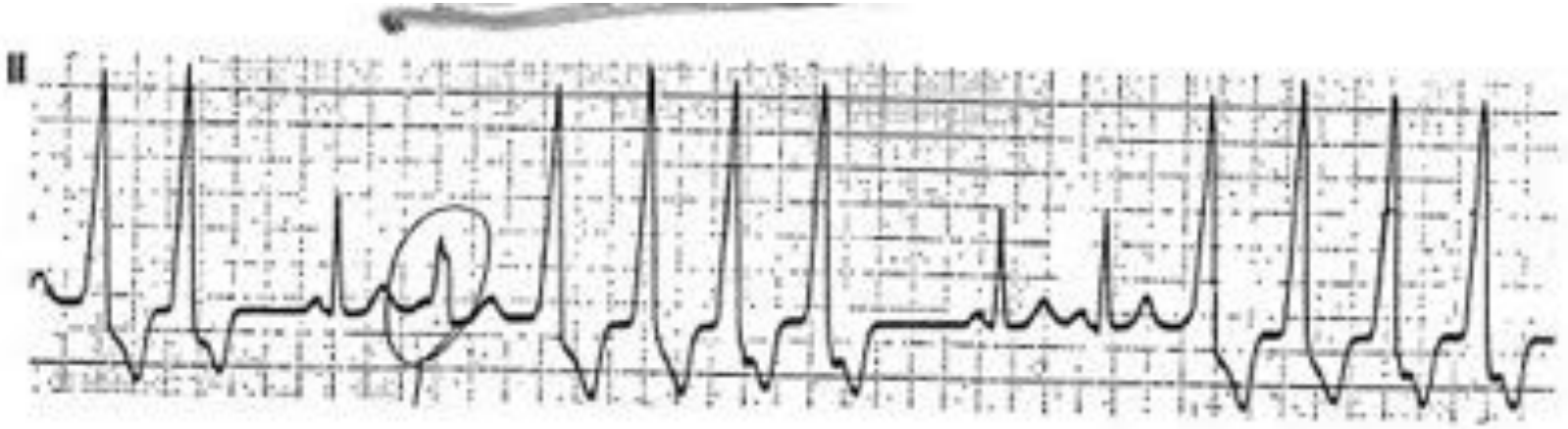
Final Answer:

NSR with freq PVC's (Remember Trigeminy is every 3rd beat is a PVC)





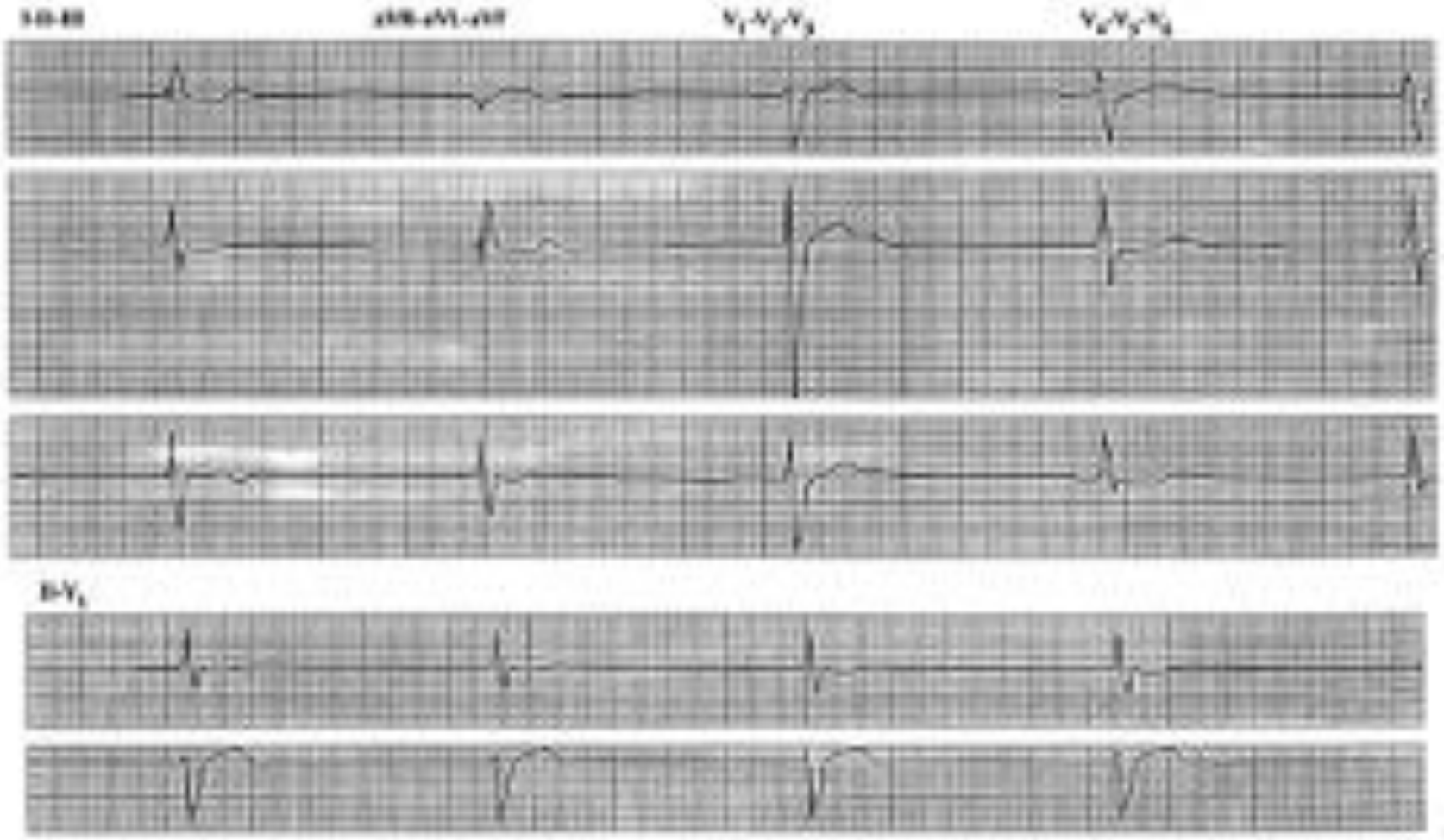
7 Beat Run Non-Sustained Vtach



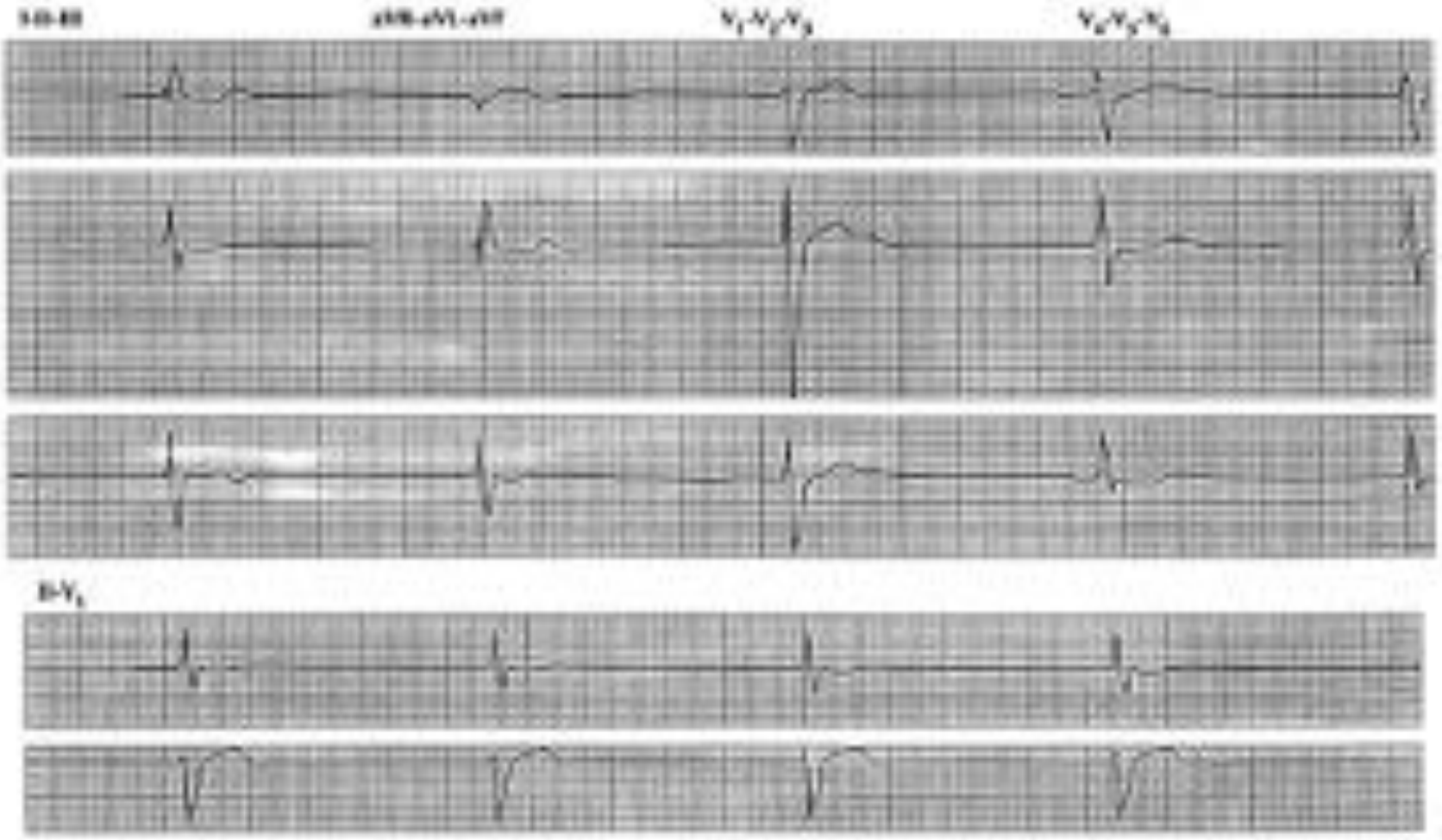
Couplet

4 Beat Run NonSust Vtach

Interpret EKG #7:

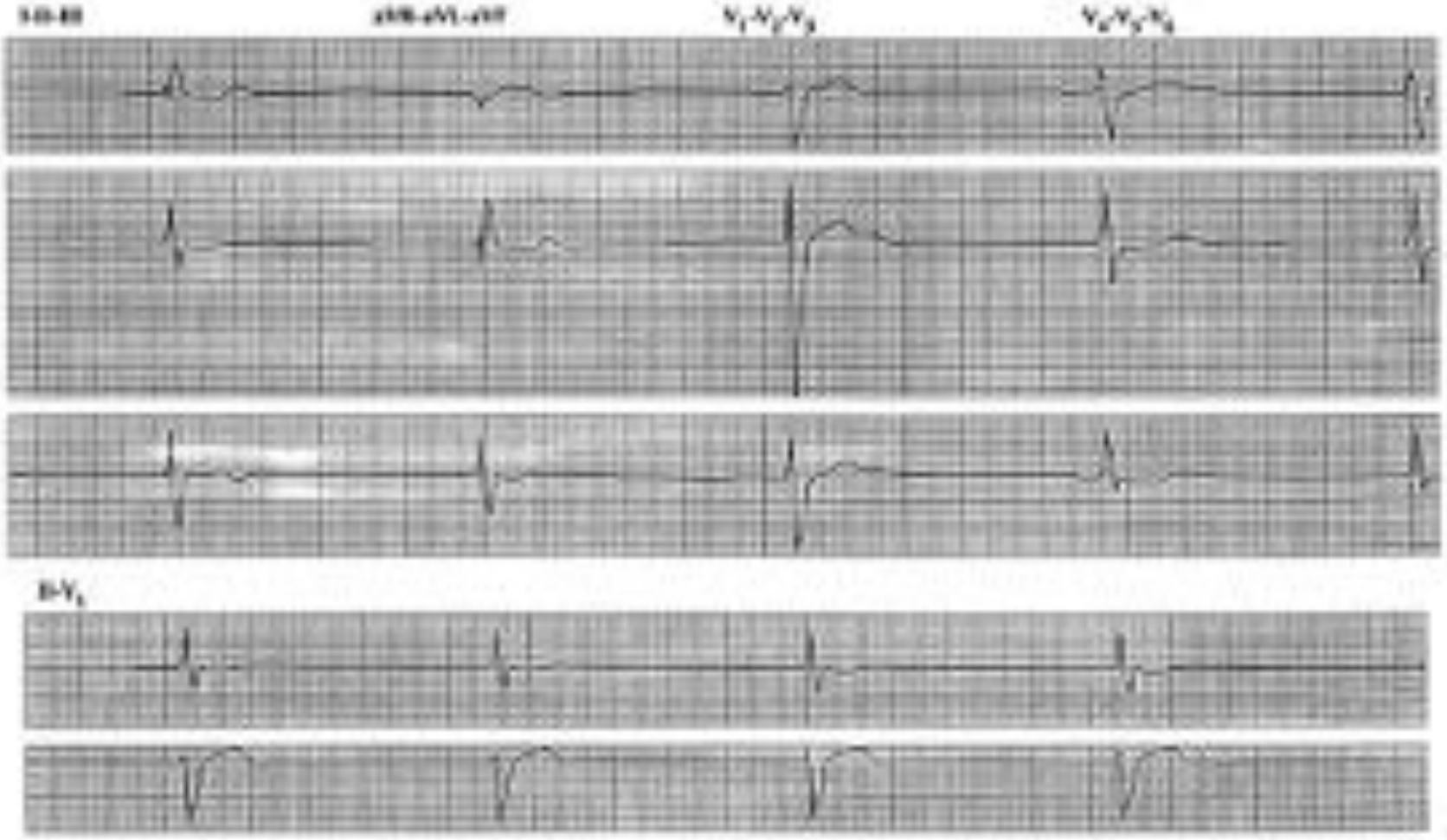


Interpret EKG:

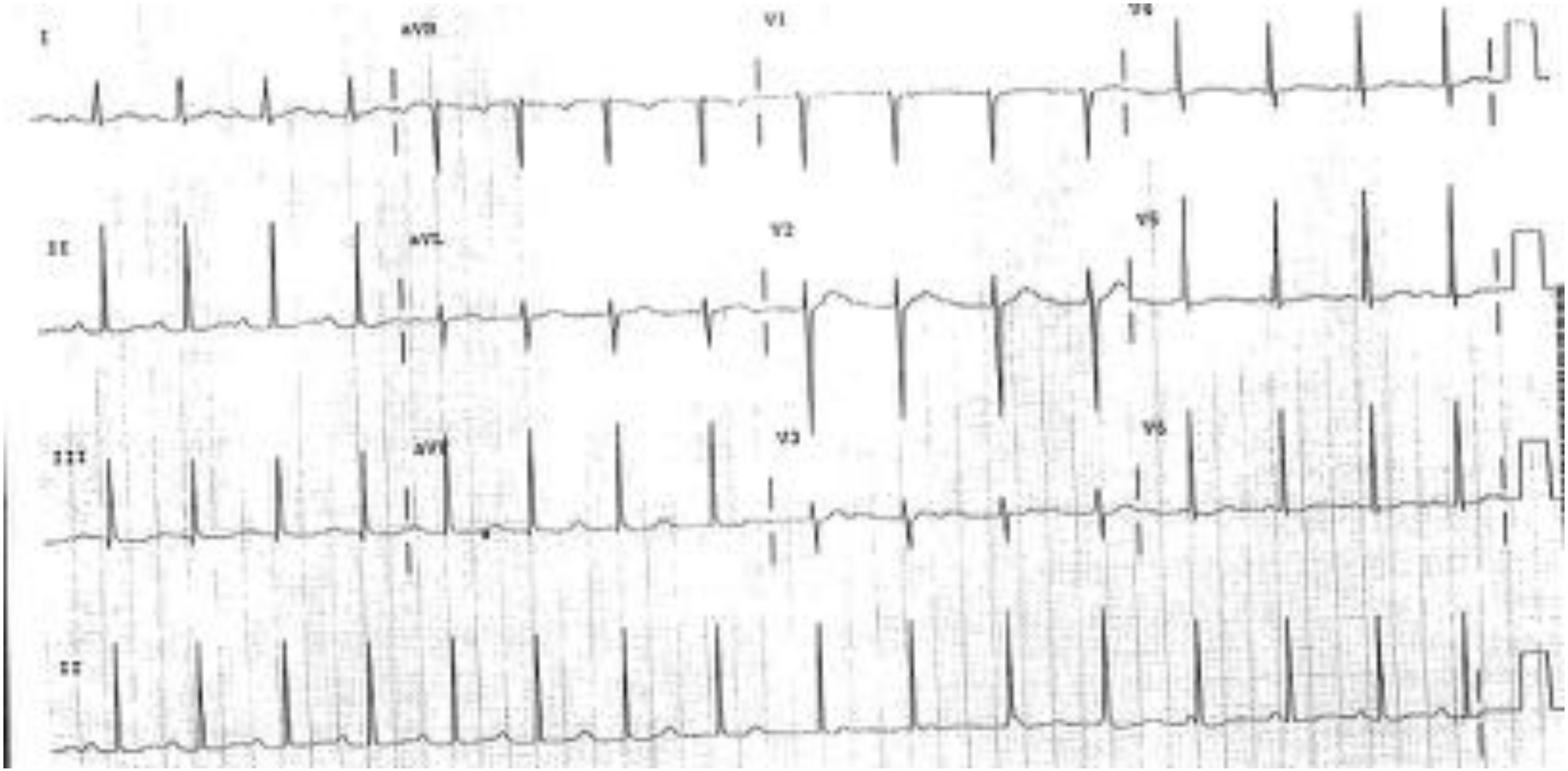


Interpret EKG: Slow Rate….No P waves…QRS is wide…Origin of beat is from the Ventricle

Idioventricular Escape Rhythm with Sinus Arrest



Interpret EKG #8:



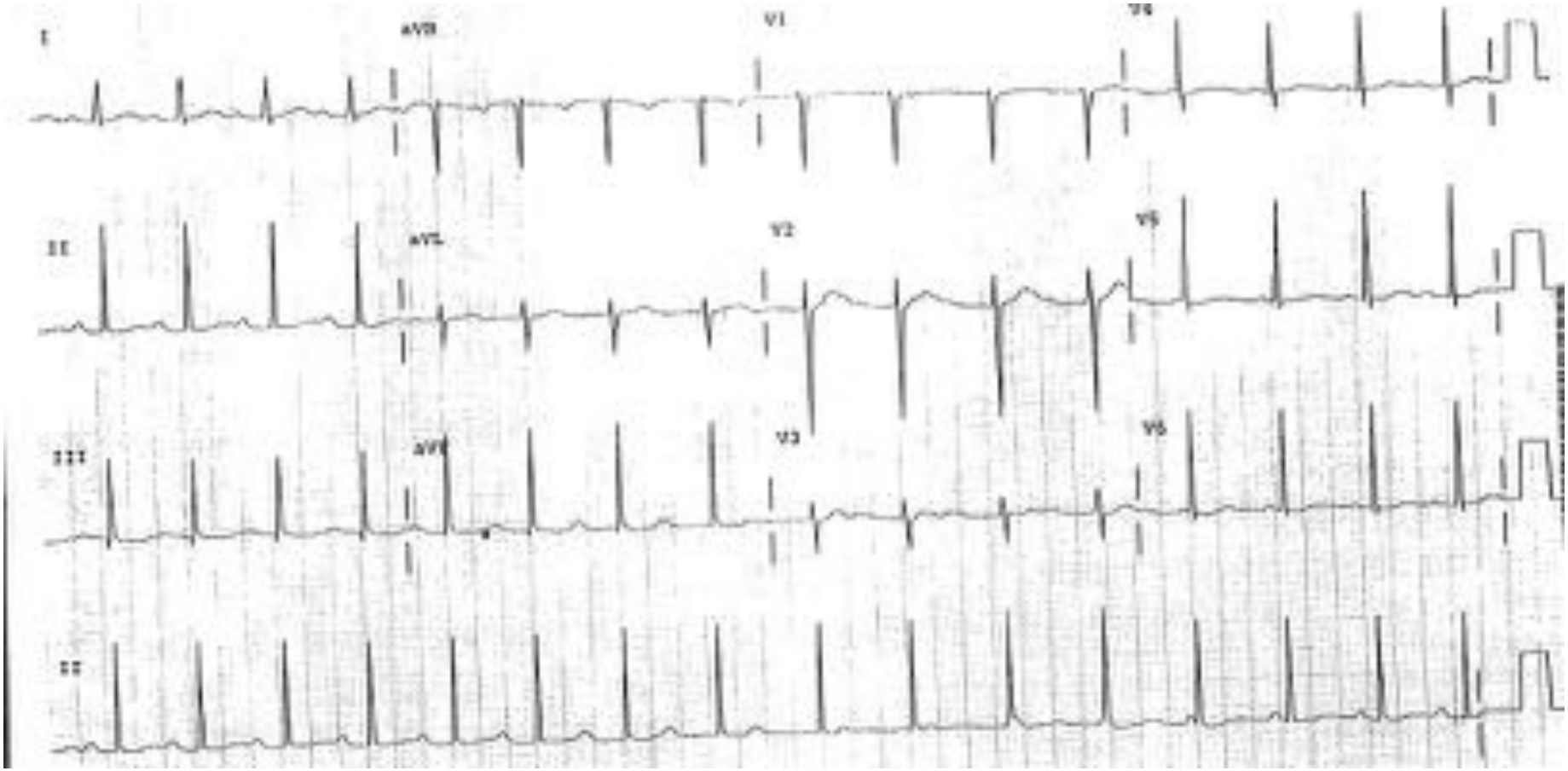
Interpret the EKG:

-Rate = 80

-Reg

-Is there a P – QRS relationship?

-Are the Pwaves upright in the Inferior leads?

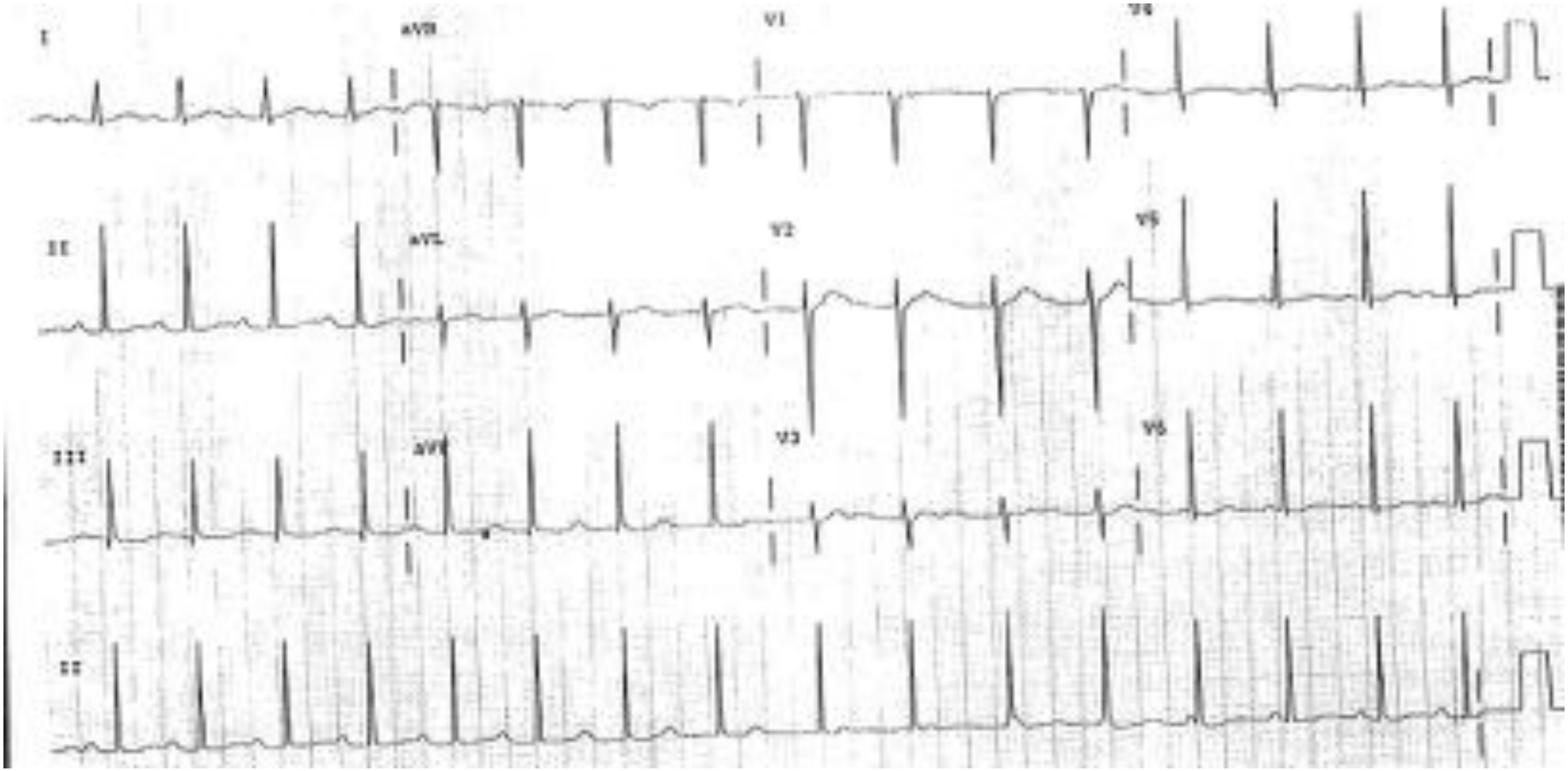


Interpret the EKG:

-Is there a P – QRS relationship? March out the P's with the QRS to the end of the strip

-No association b/w P & QRS

3rd Degree Heart Block…. Now what is driving the ventricle to beat?



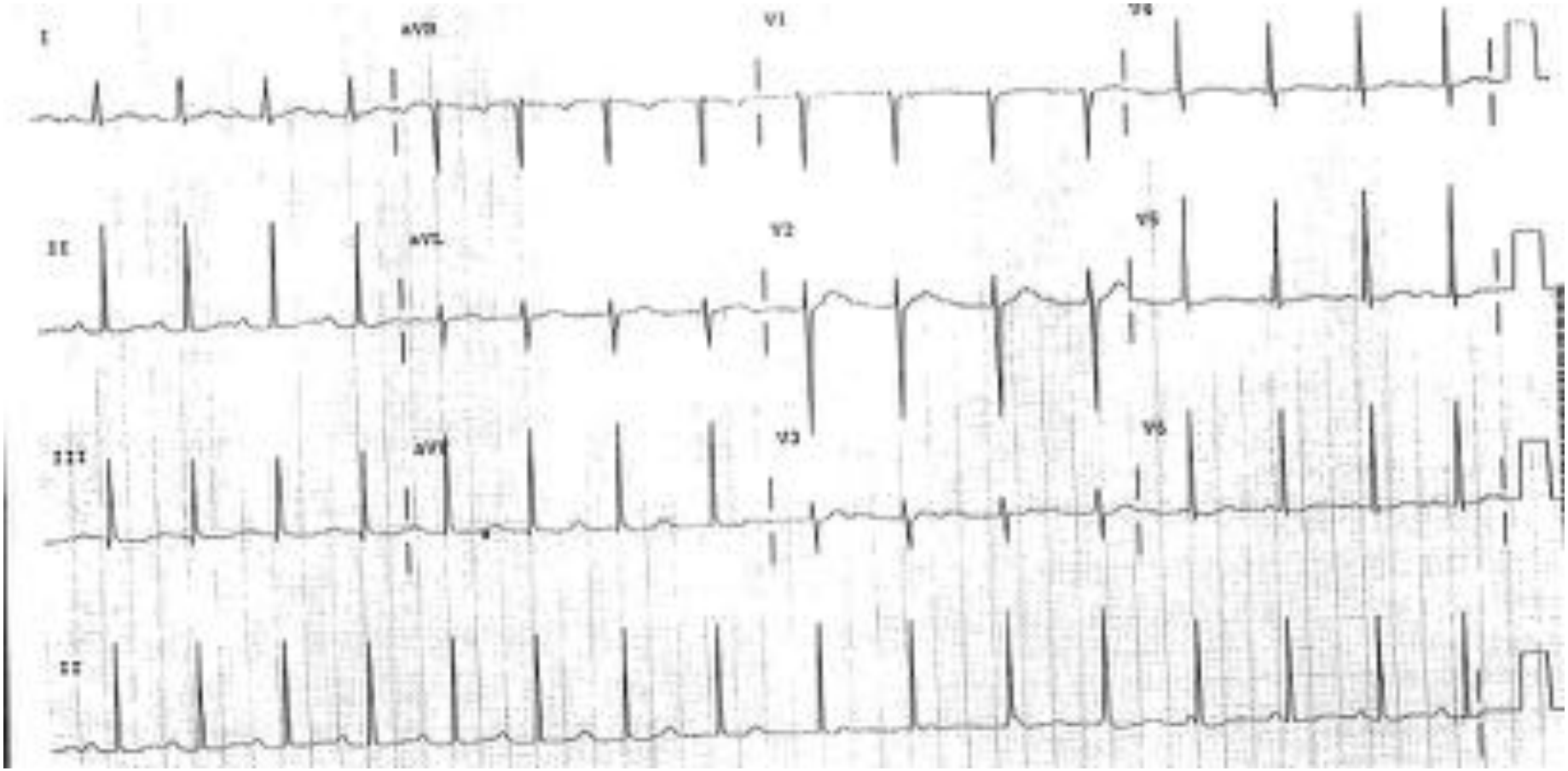
Interpret the EKG:

-3rd Degree Heart Block….

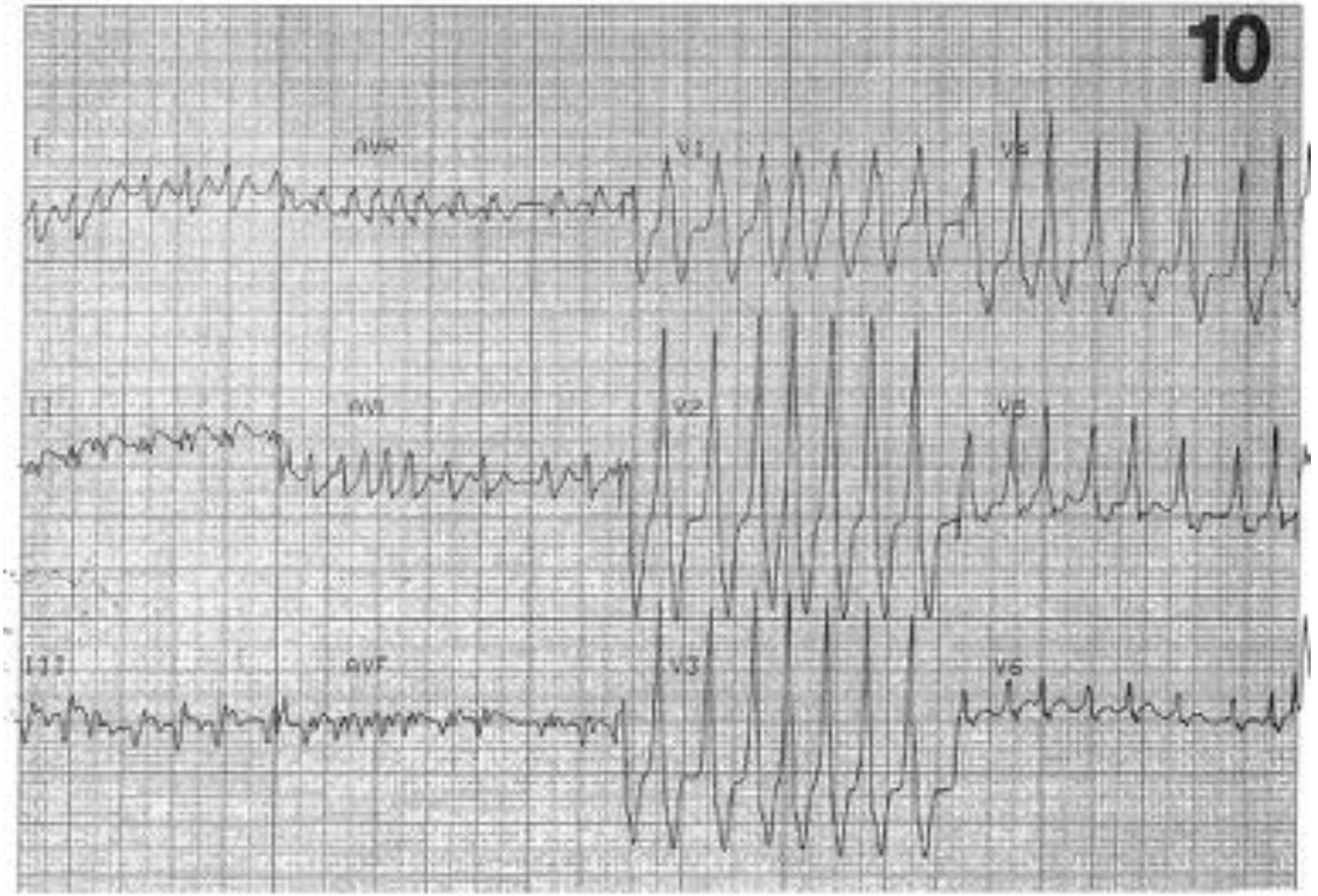
Now what is driving the ventricle to beat?

What is the "escape rhythm?

Narrow complex… the p waves are not associated… this is junctional rhythm



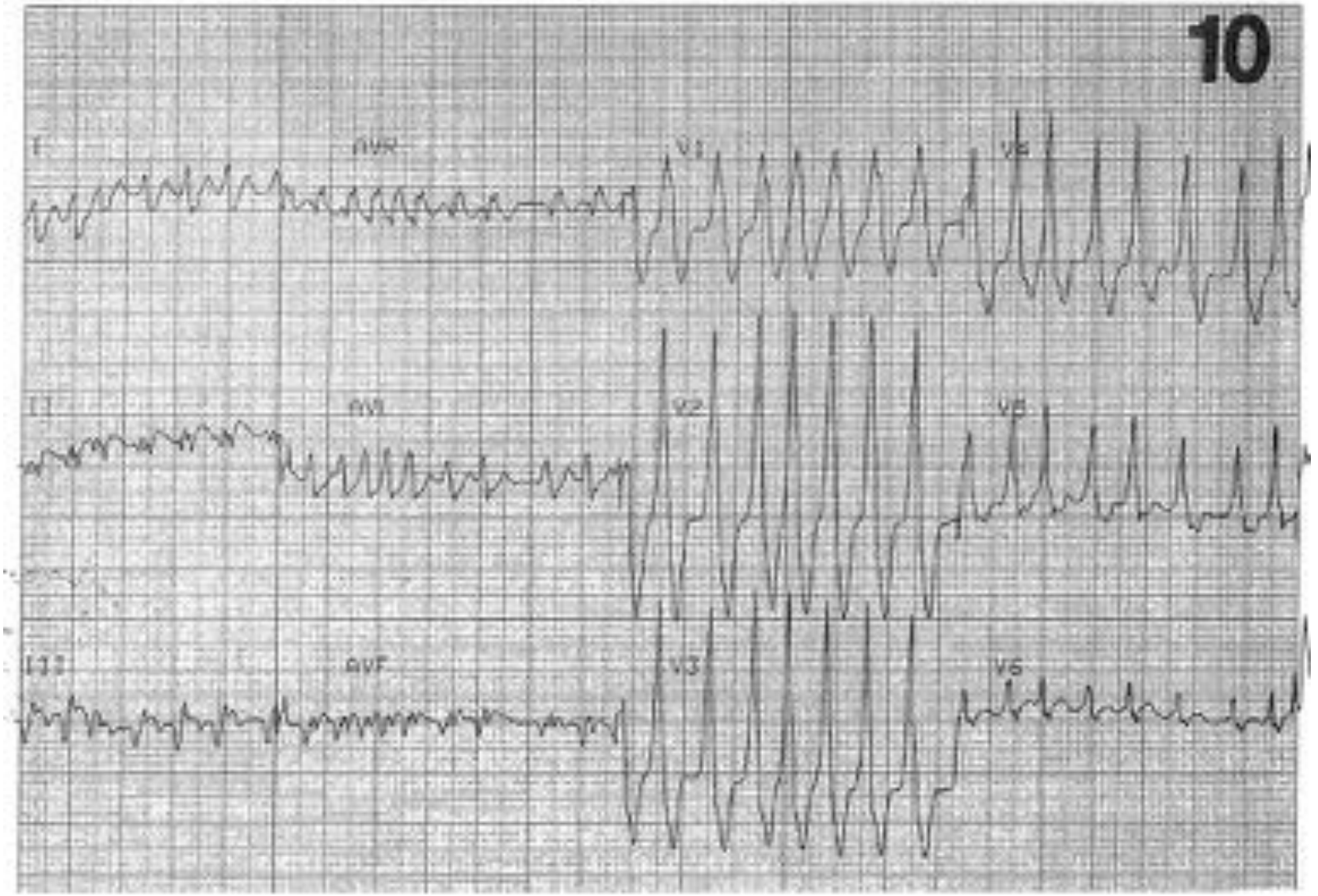
Interpret EKG #9:



Interpret EKG #10:

Now the rate is remarkable…. 300bpm at some points… Hmm

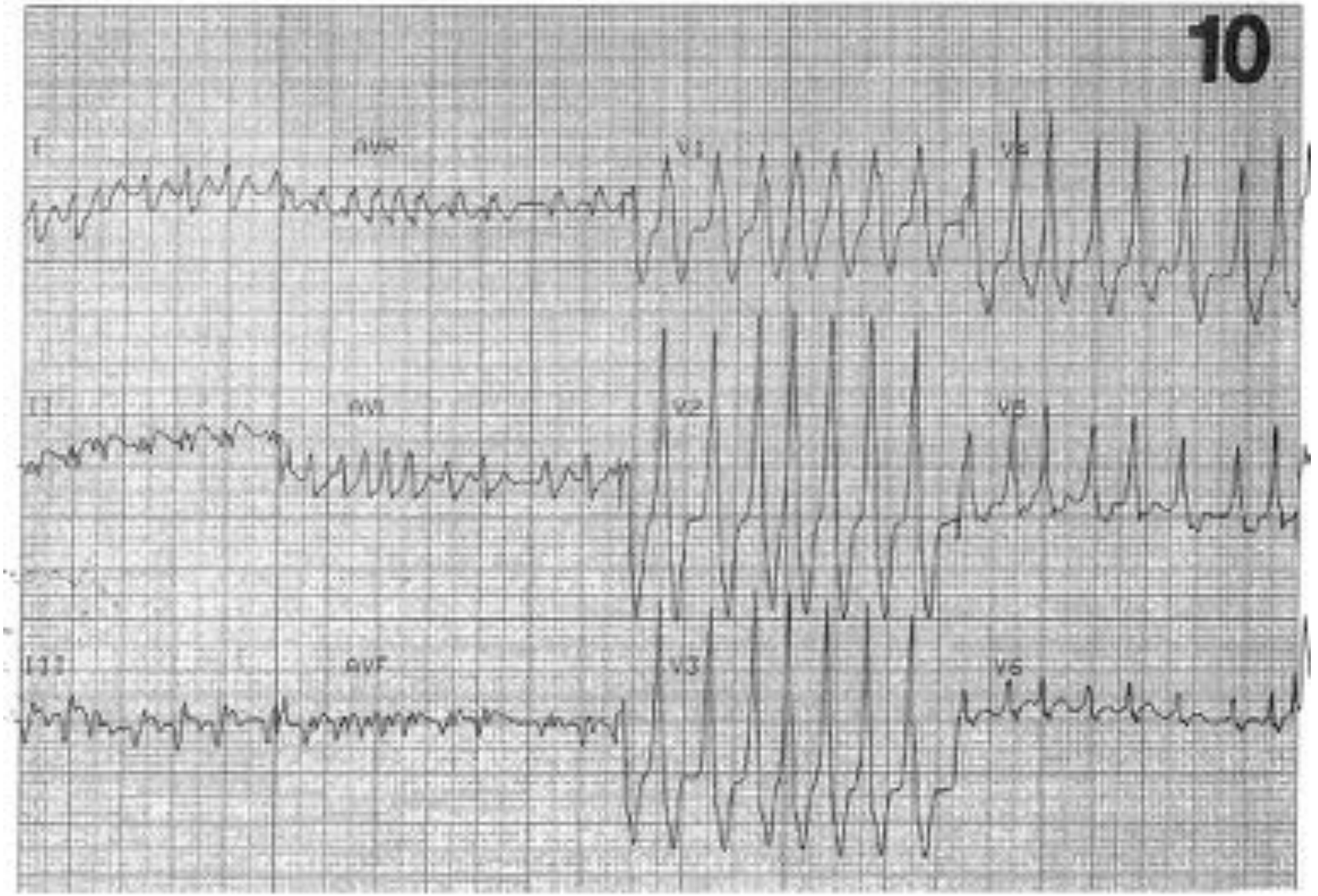
Reg vs IRREG vs Patterned → IRREG



It is wide! Is it Vtach? No…it is IRREG

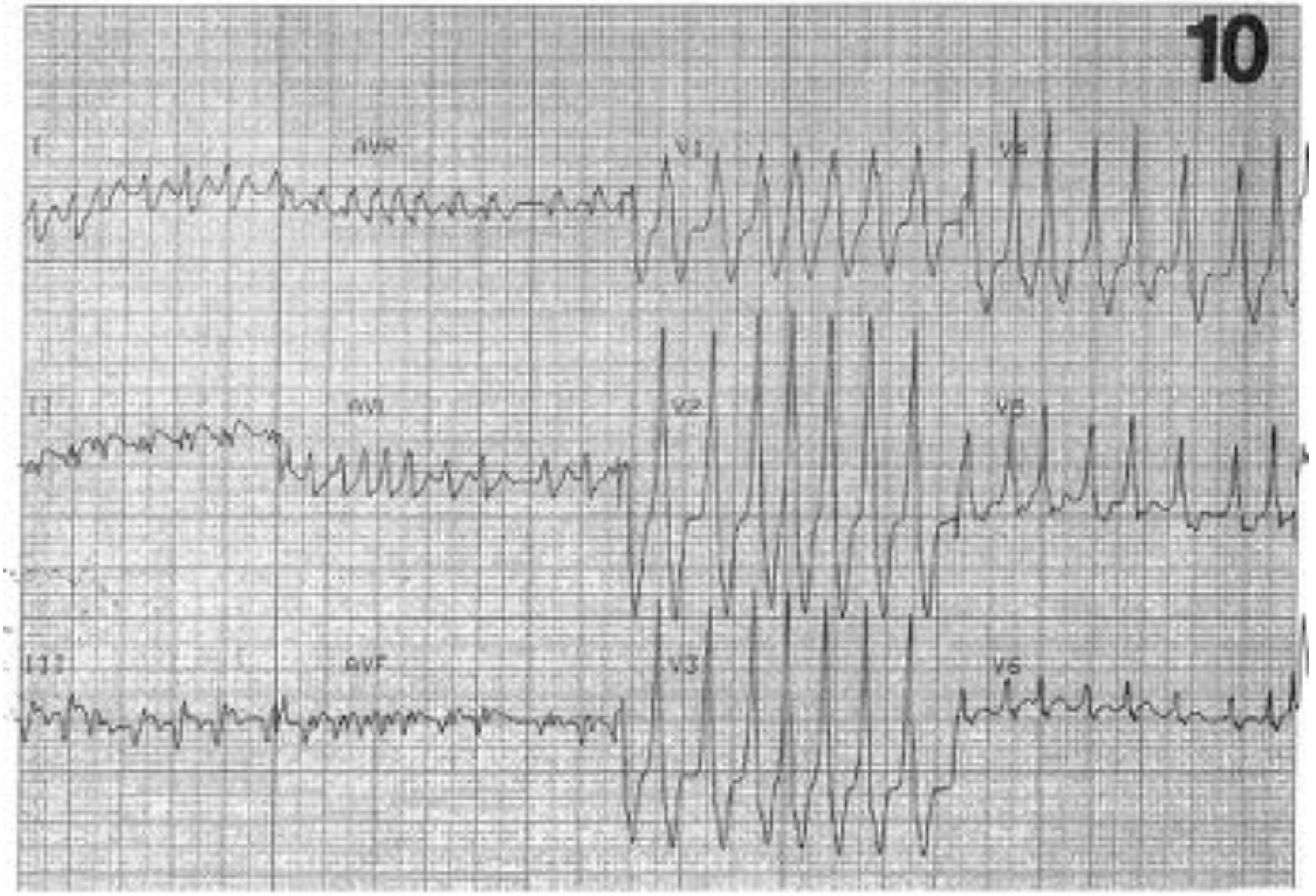
What else can make the QRS wide?

What origin of these contractions can go at 300bpm and be irreg?



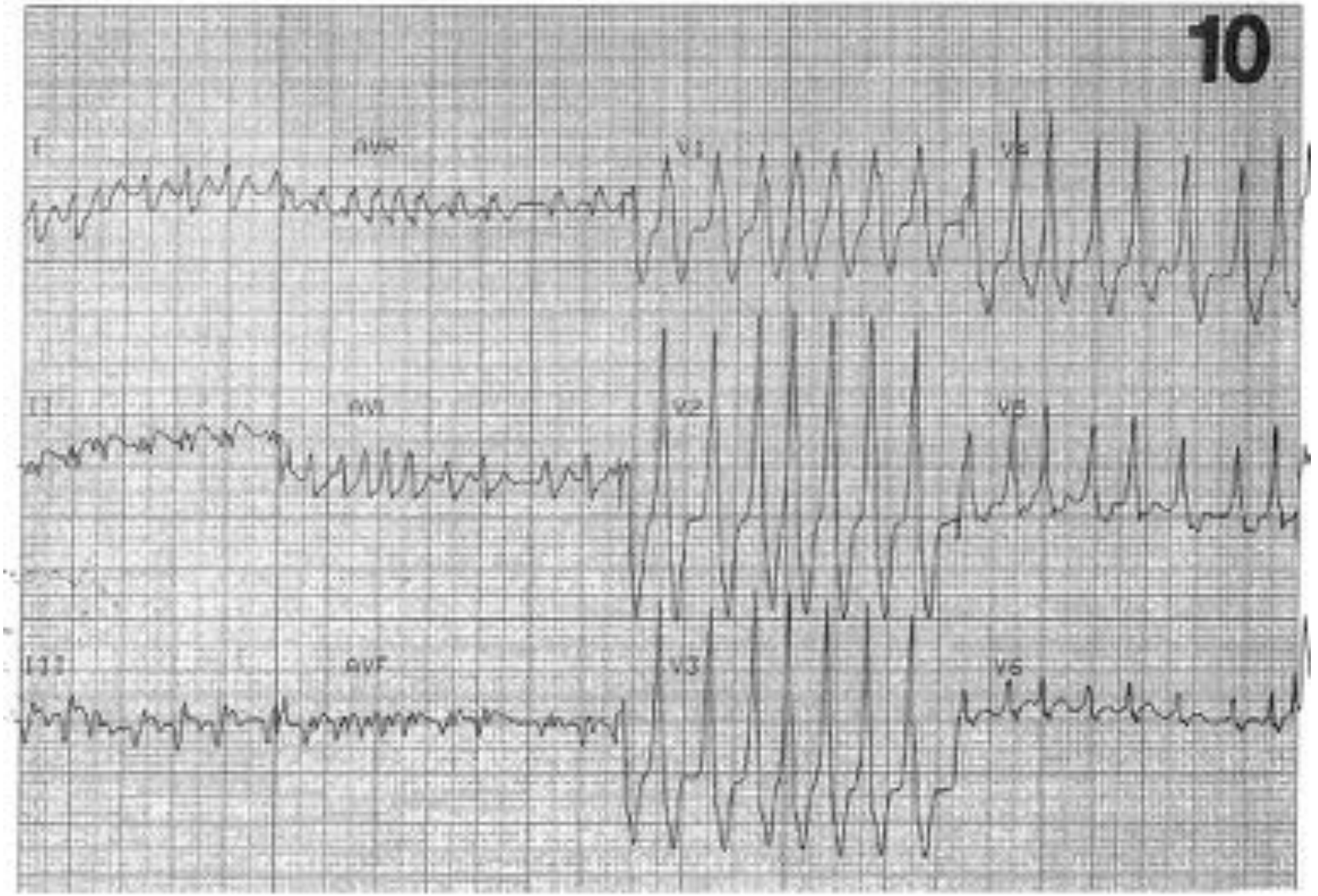
Answer……..AFIB with Right BBB

Now how can the AV node be conducting at 300 BPM?

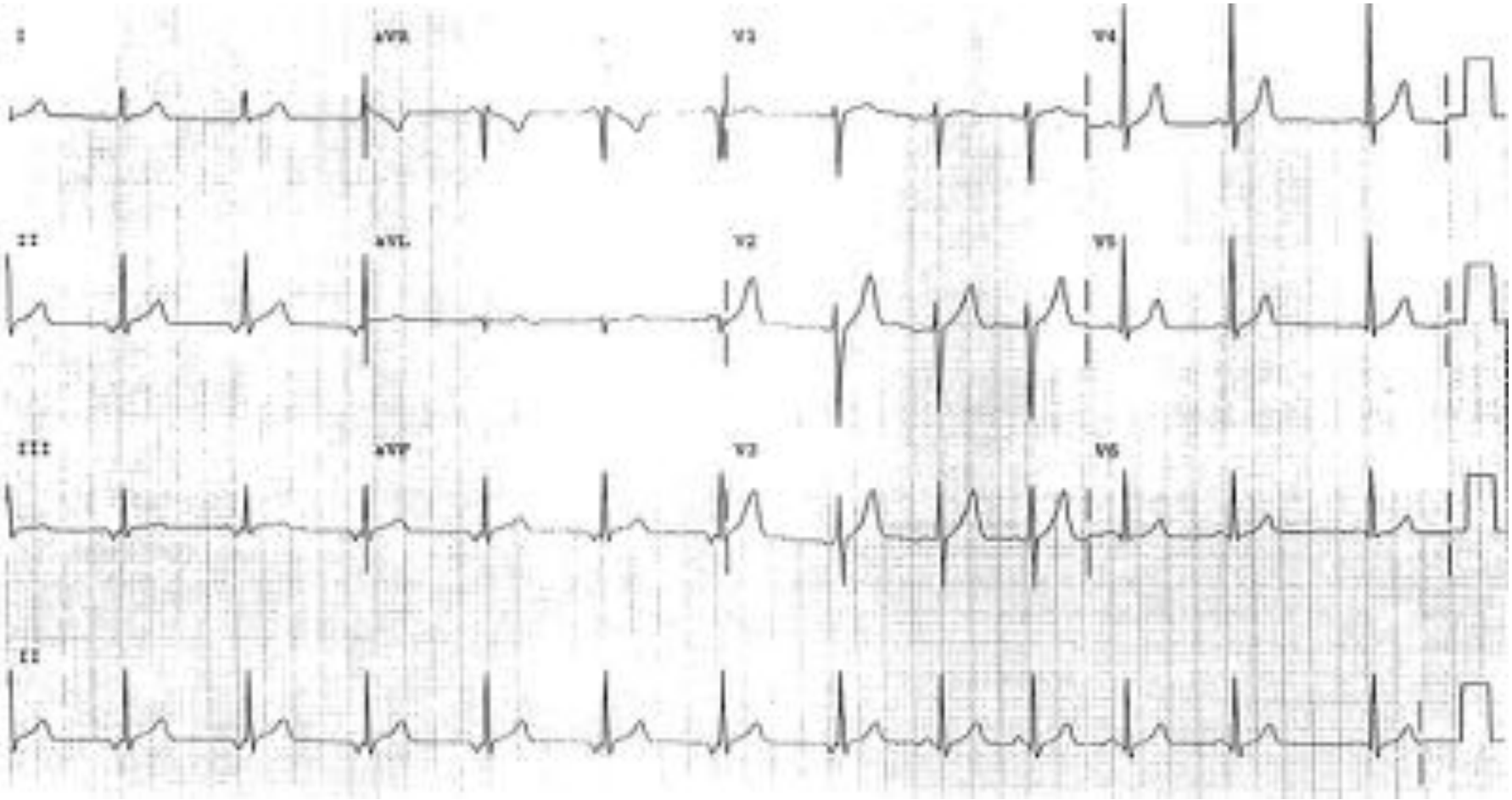


AFIB with Right BBB with conduction down an accessory pathway

AFIB in pt with Wolff-Parkinson-White!

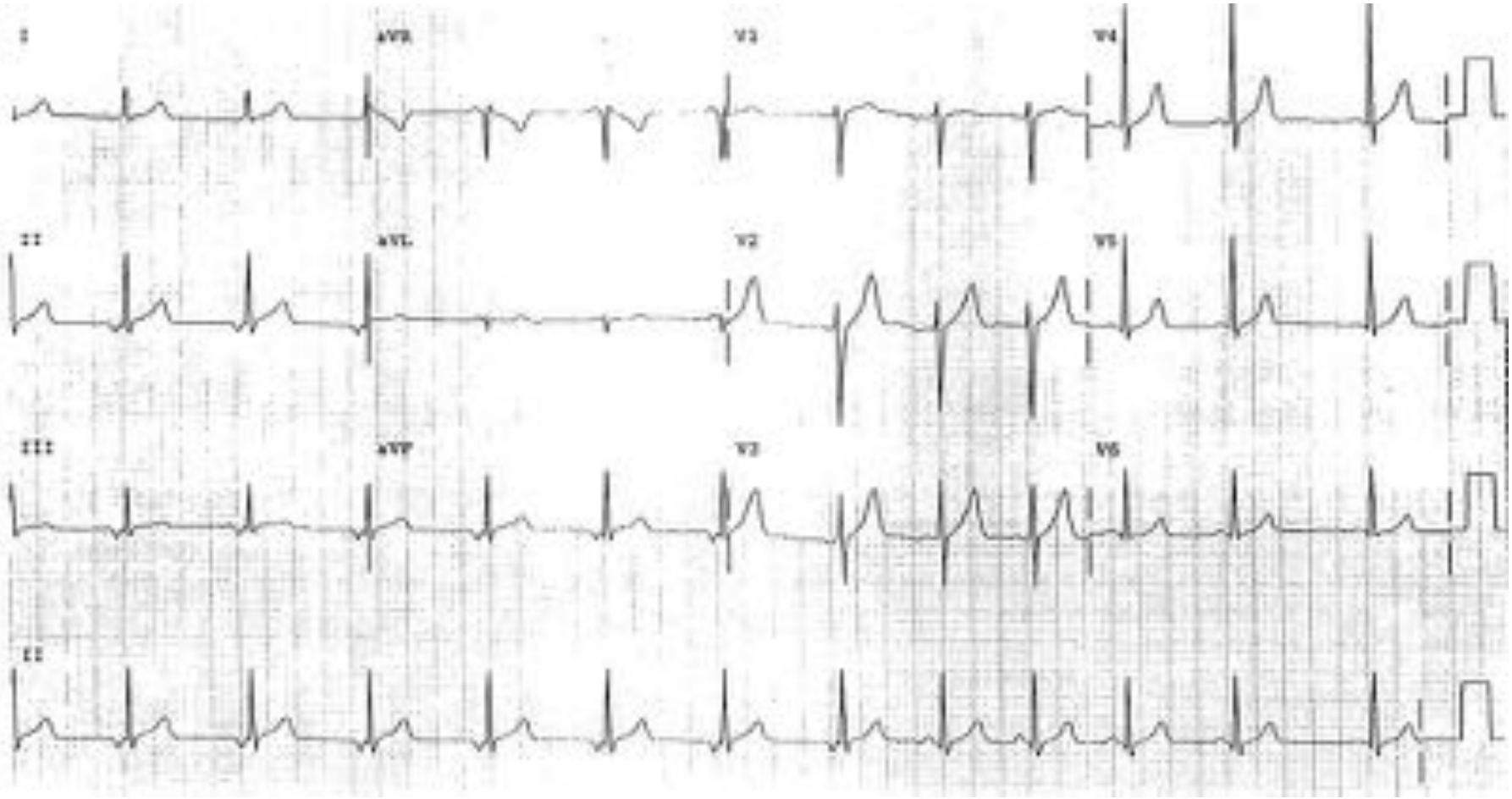


Interpret EKG #10:



Interpret EKG #10:

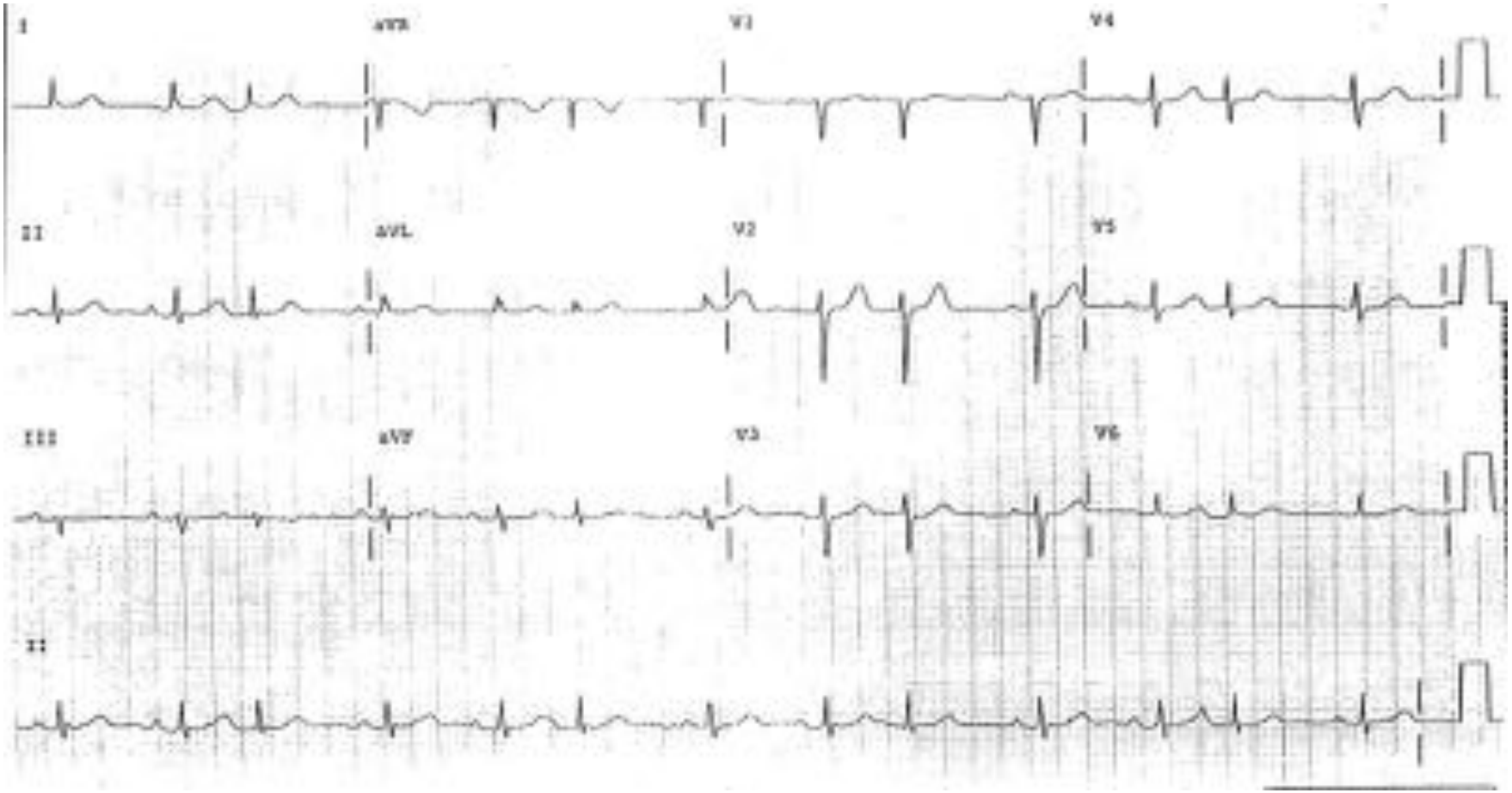
Ectopic Atrial rhythm that converts to sinus rhythm at end of strip



Interpret EKG #11:

Rate-

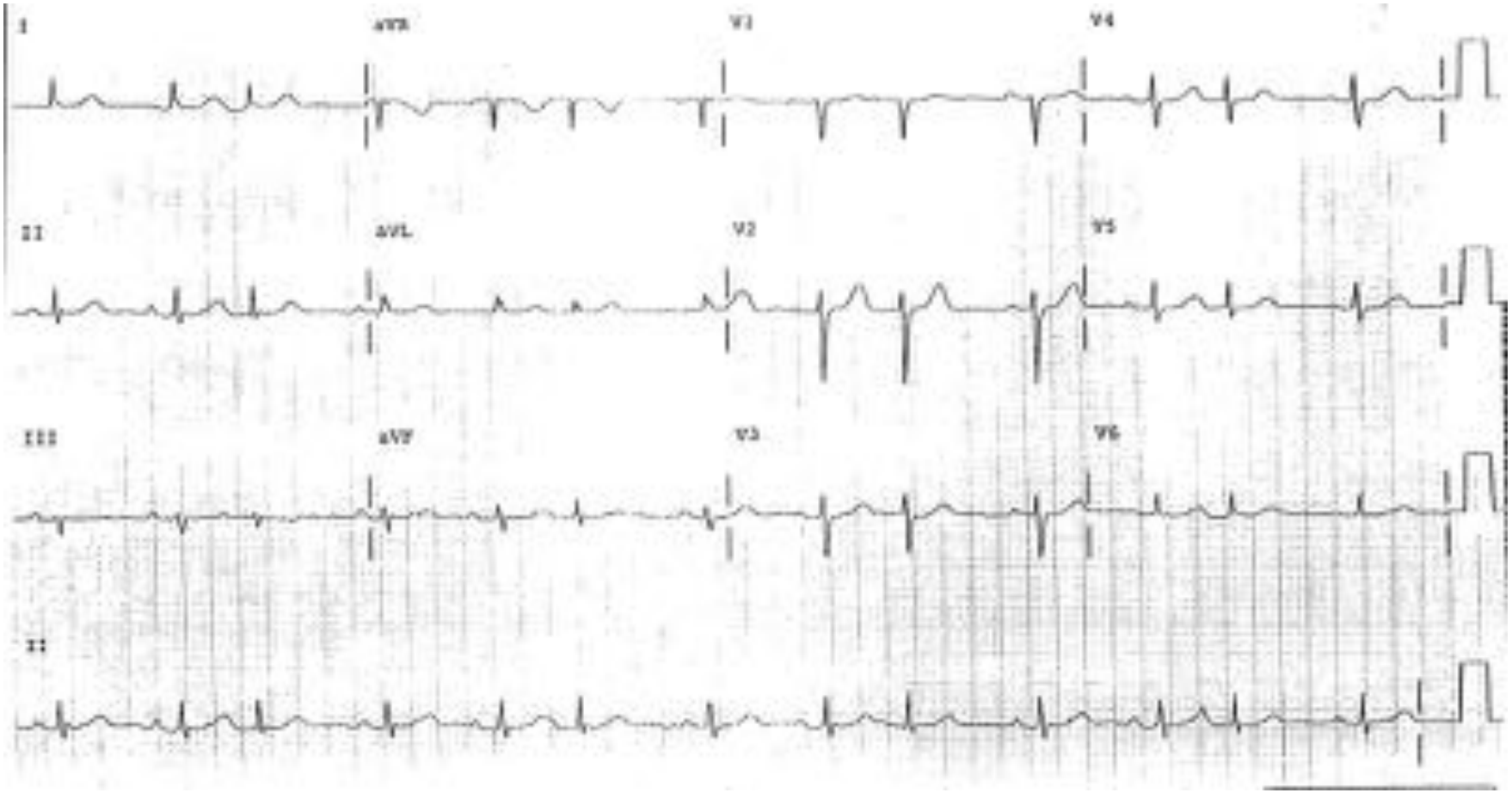
Reg vs Irreg vs Pattern



Interpret EKG #11:

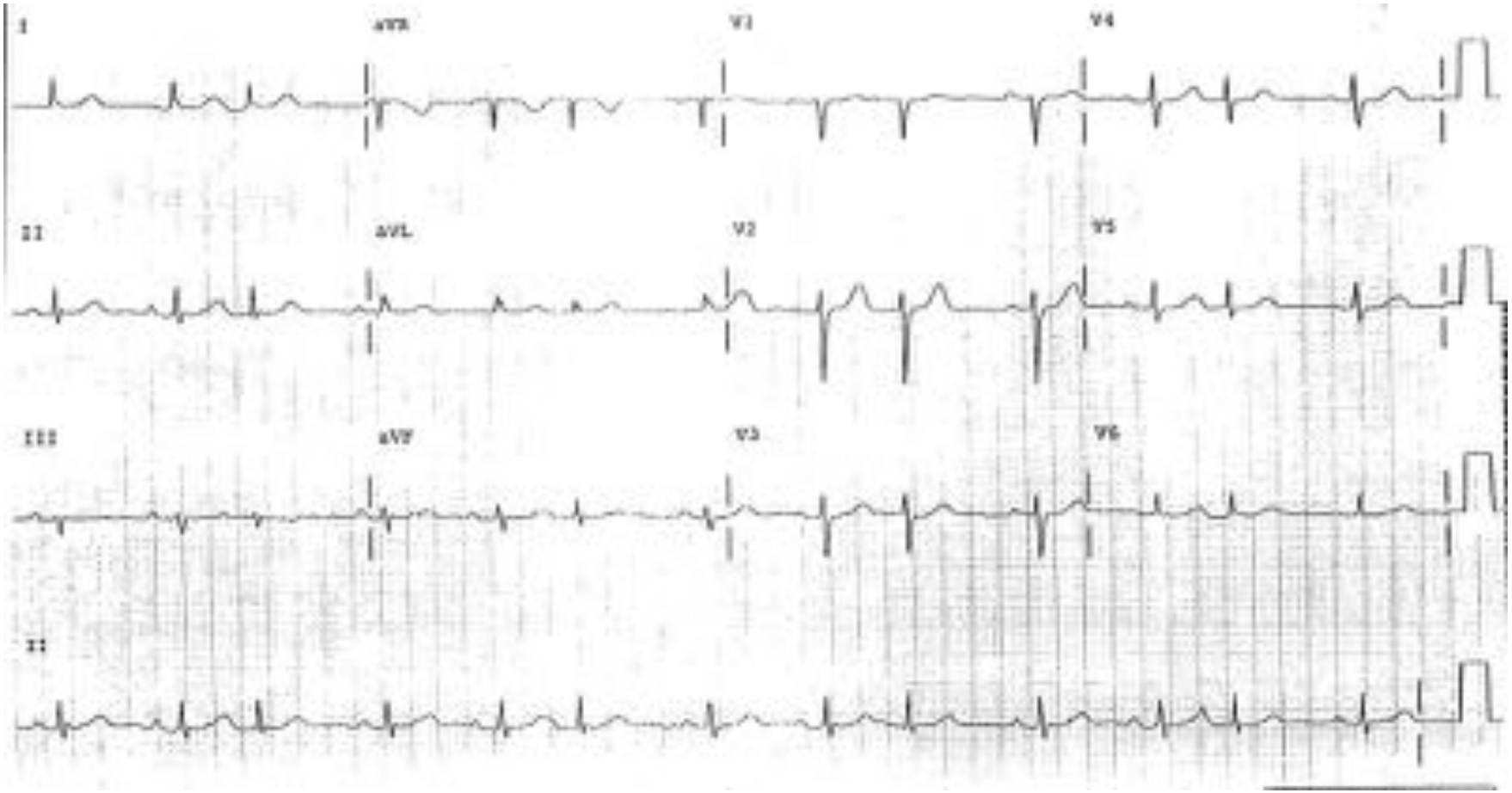
What is the pattern?

What is the origin of the rhythm & interuption?

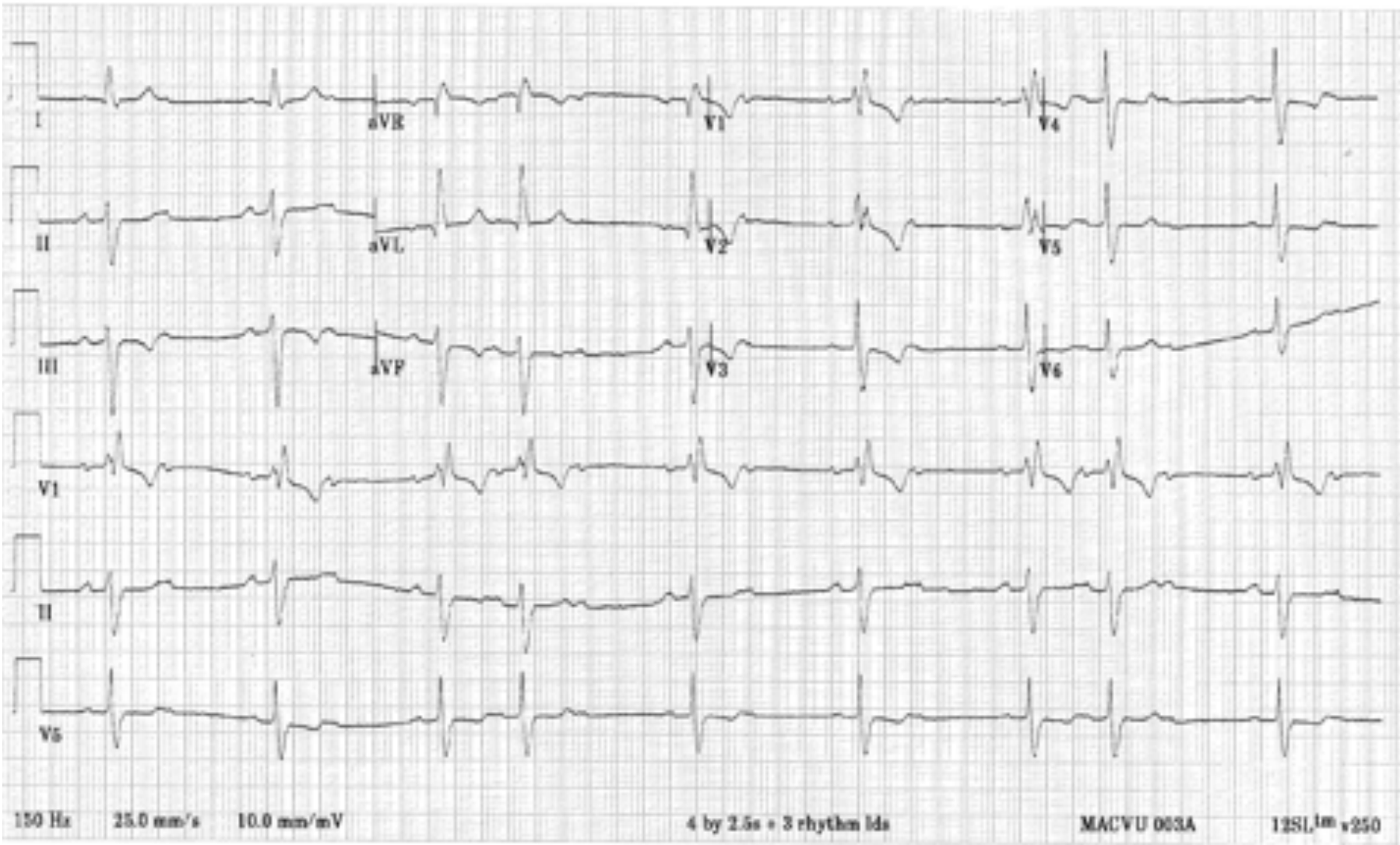


Interpret EKG #11:

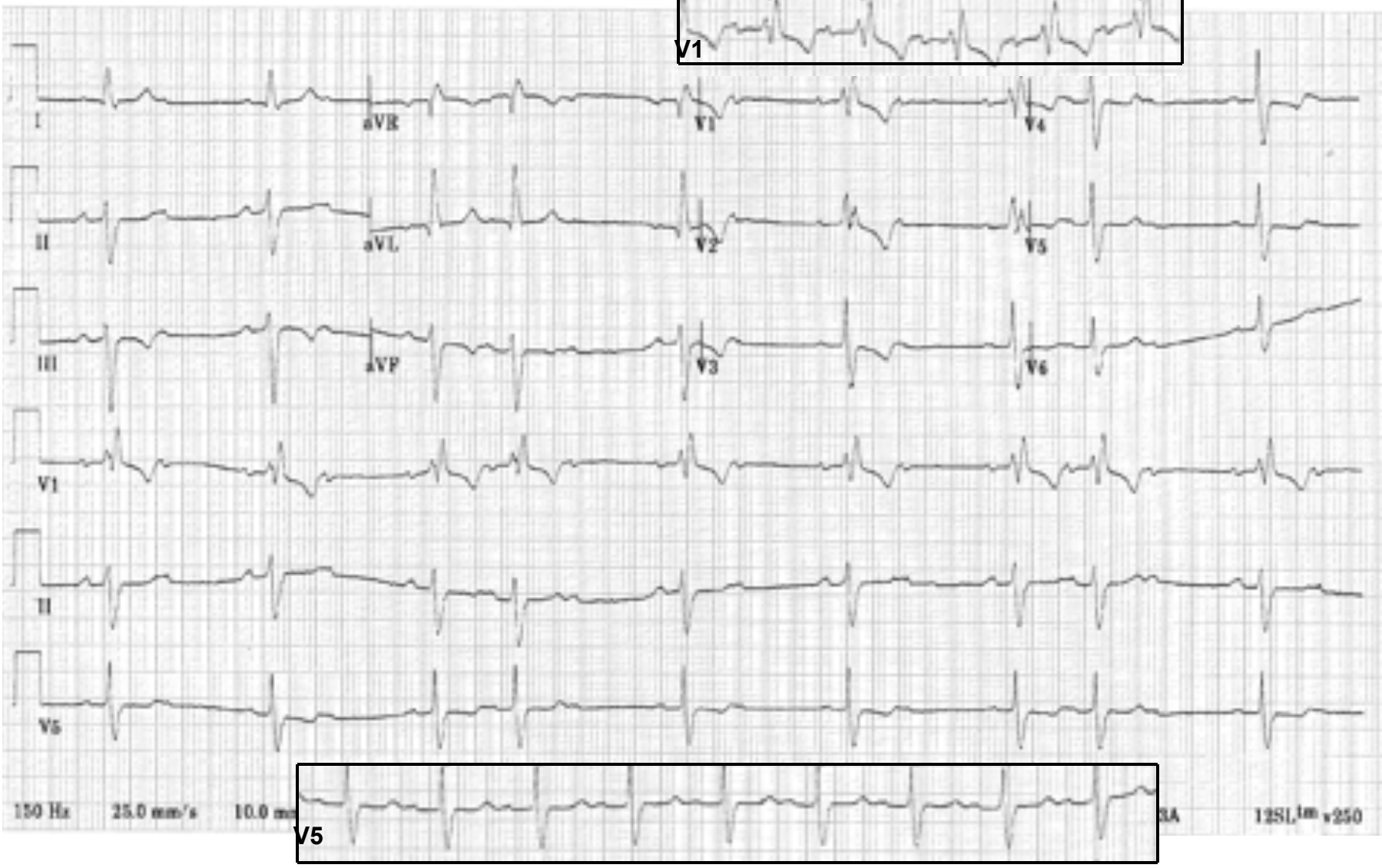
Atrial Trigeminy



Interpret EKG #12

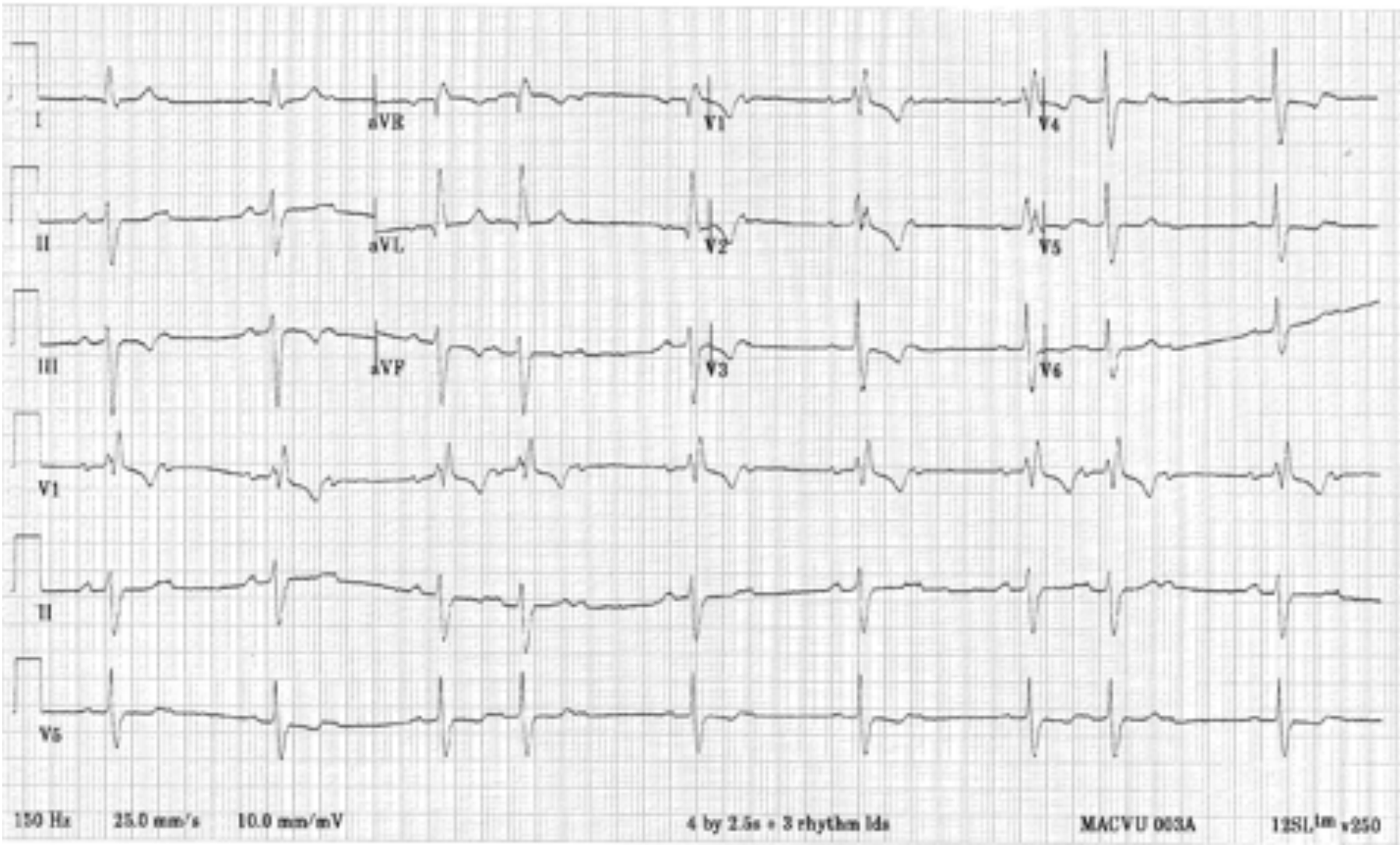


Rhythm strip – same patient

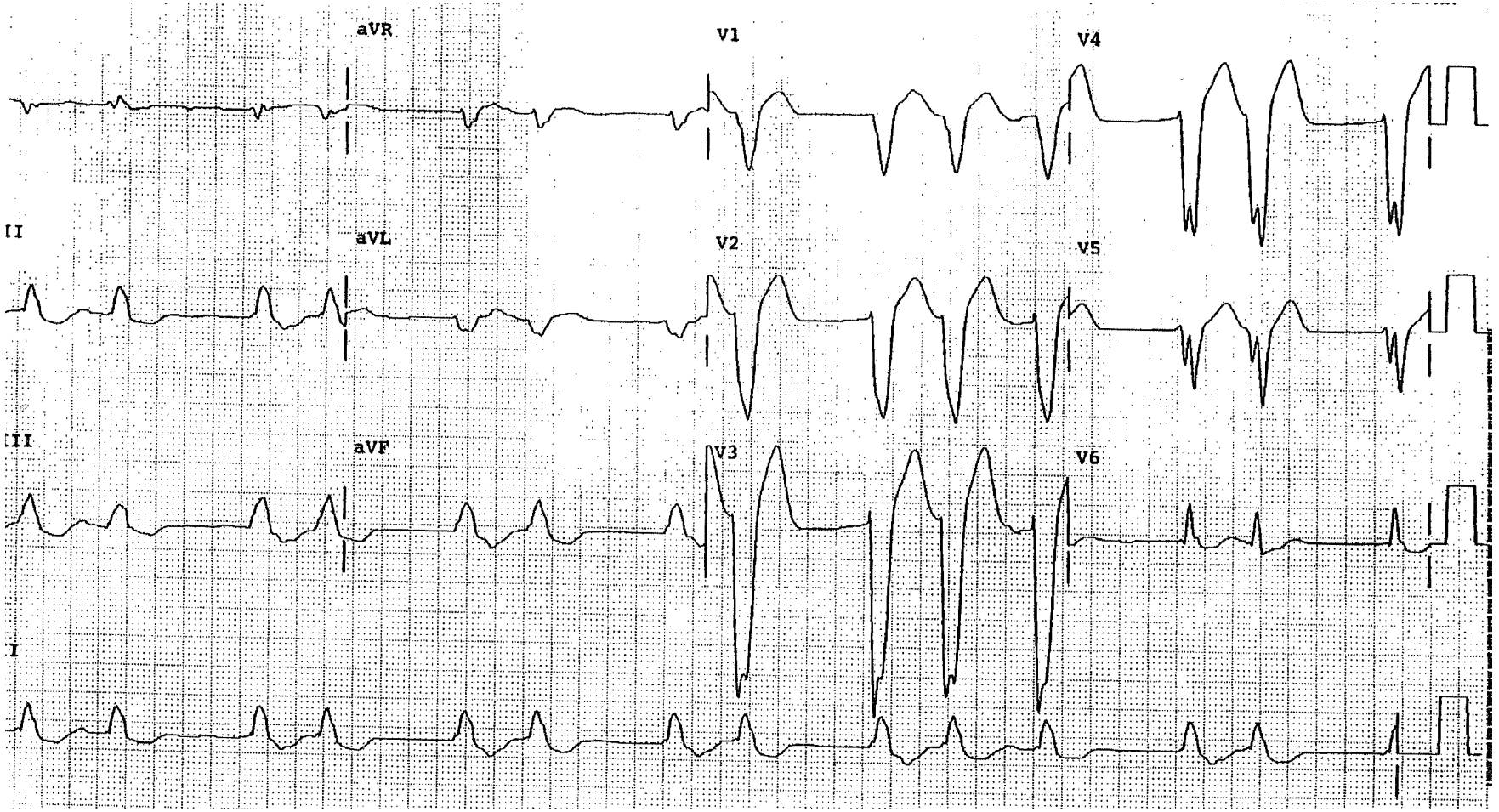


Rhythm strip from the same patient earlier in same appt

Interpret EKG #12: NSR w/ 2° AVB Mobitz type 2, (pwaves conducted every other and every 4th beat each p wave gets conducted) Pt got immediate transfer and pacer



Interpret EKG #13

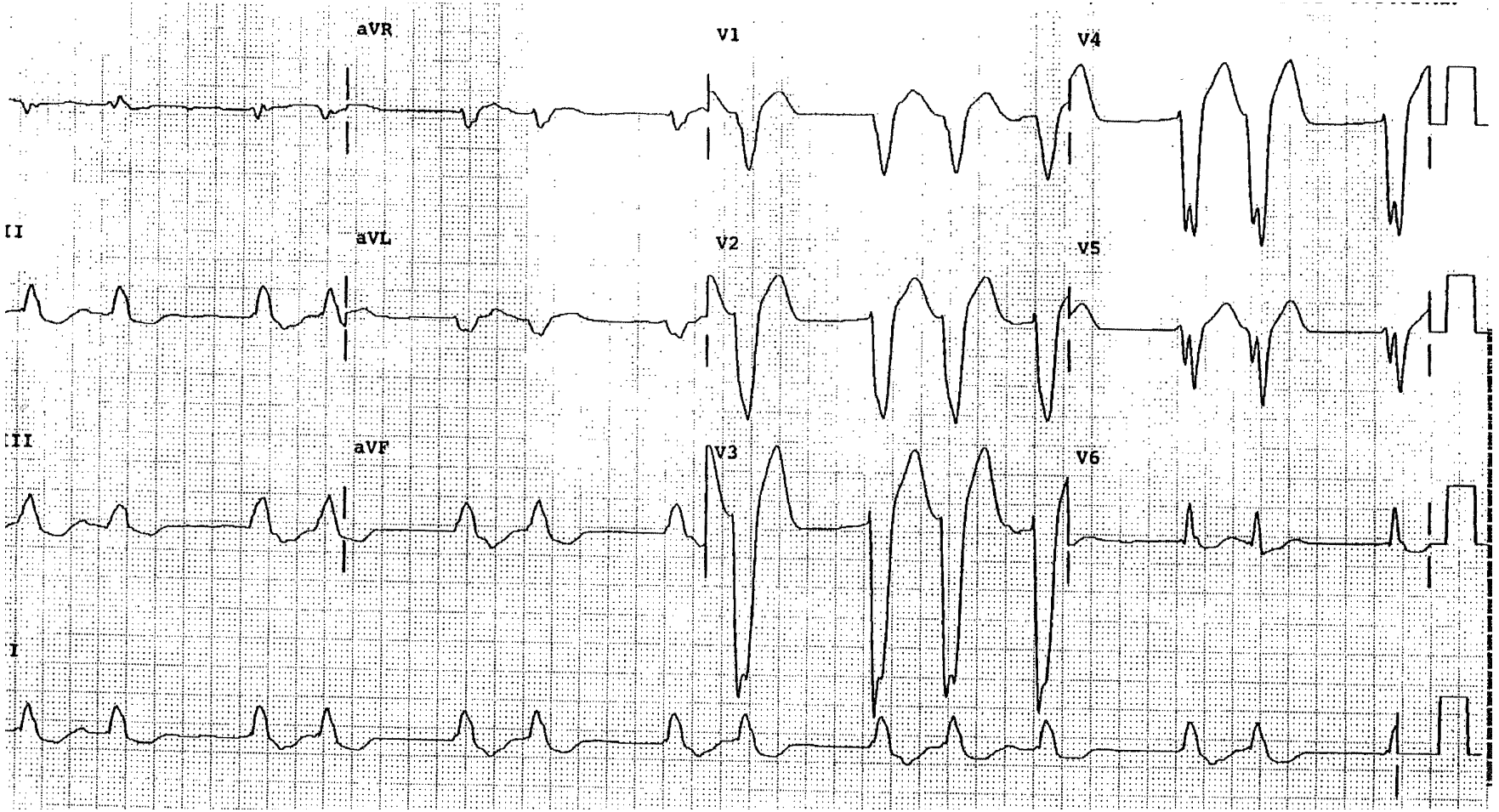


ORIGIN

Sinus
Atrium
Jxn (AV)
Vent

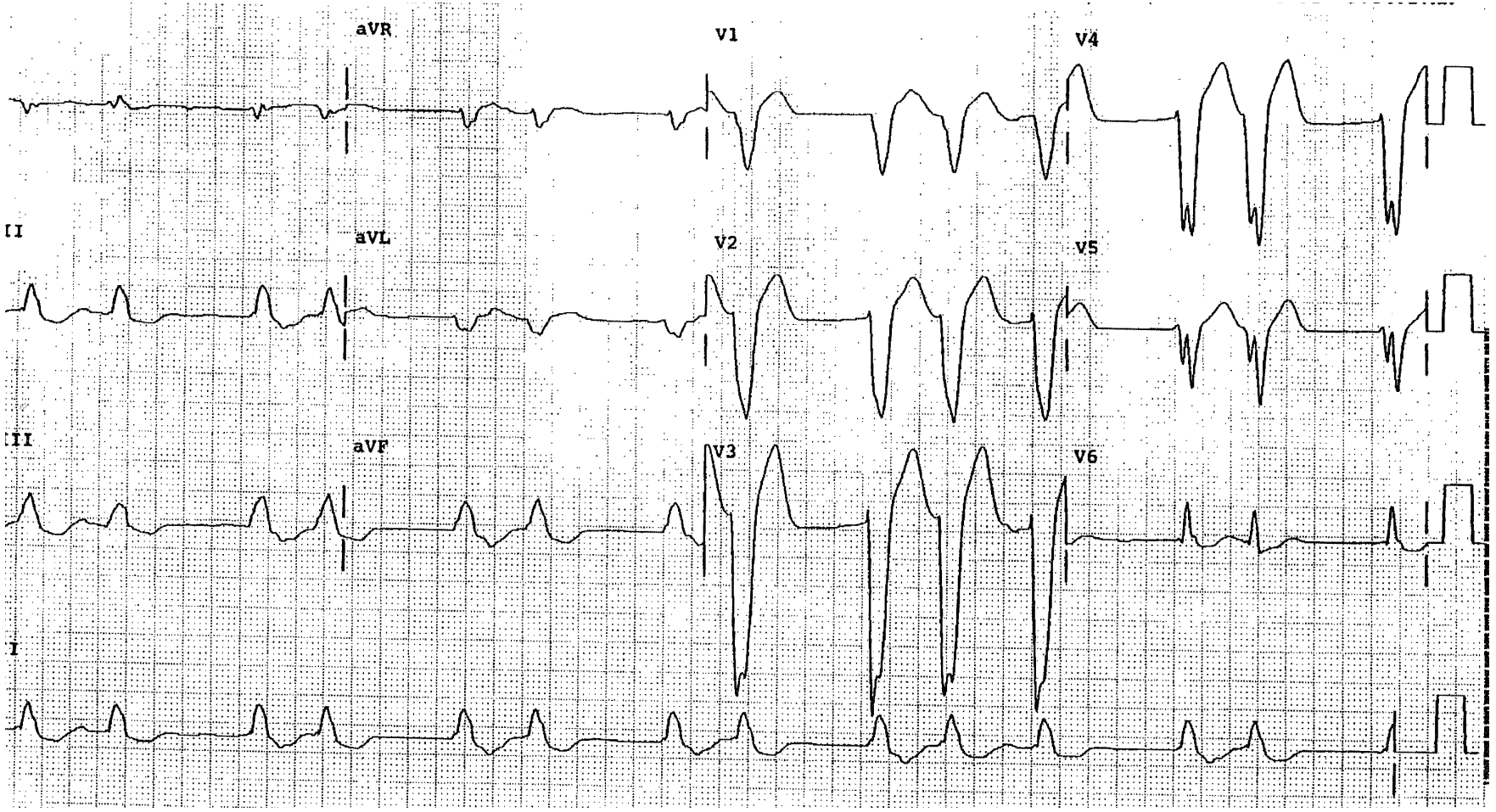
BEAT-Type

contraction
flutter
fib



Afib // LBBB

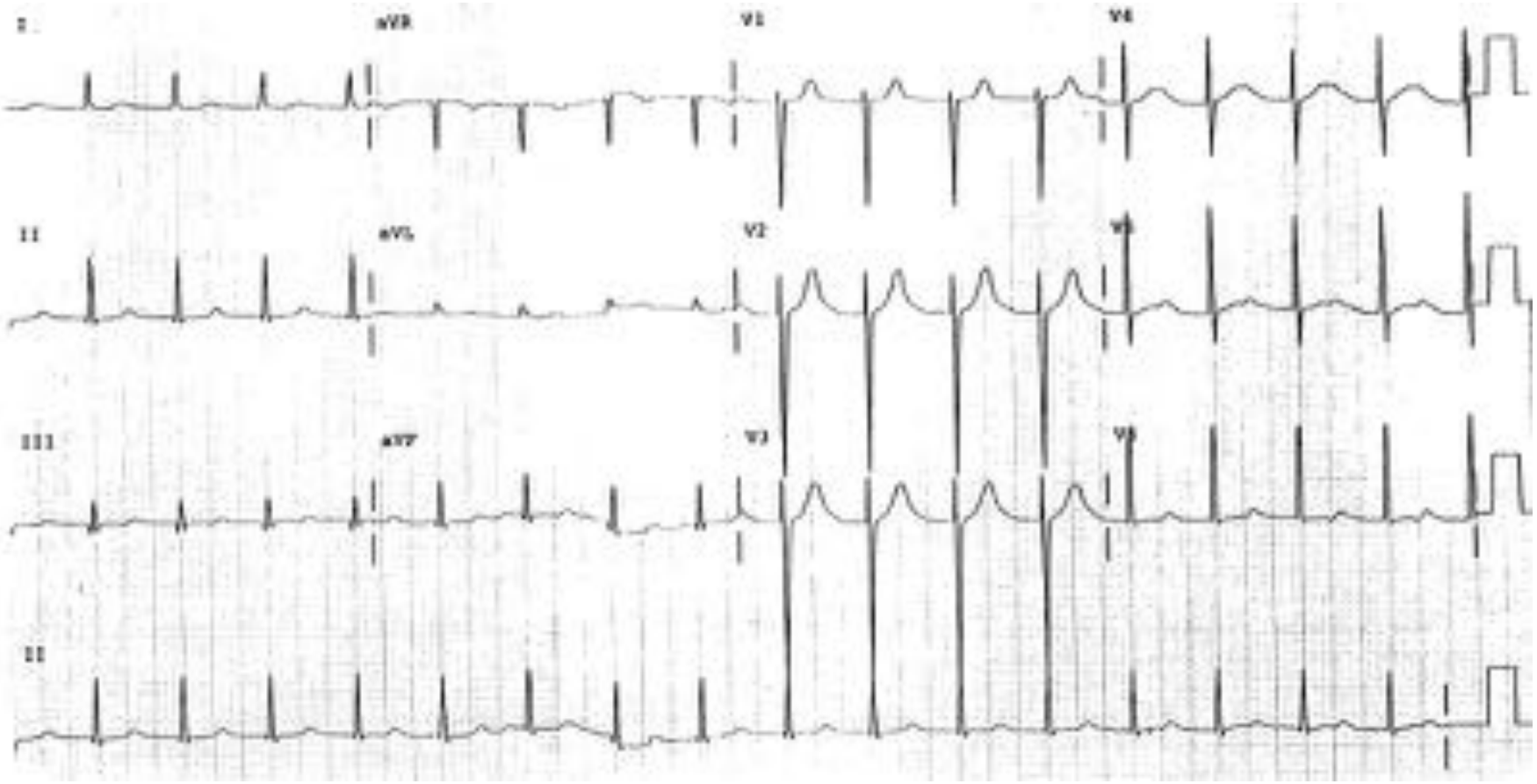
You should still be using all the steps!



Interpret EKG #14

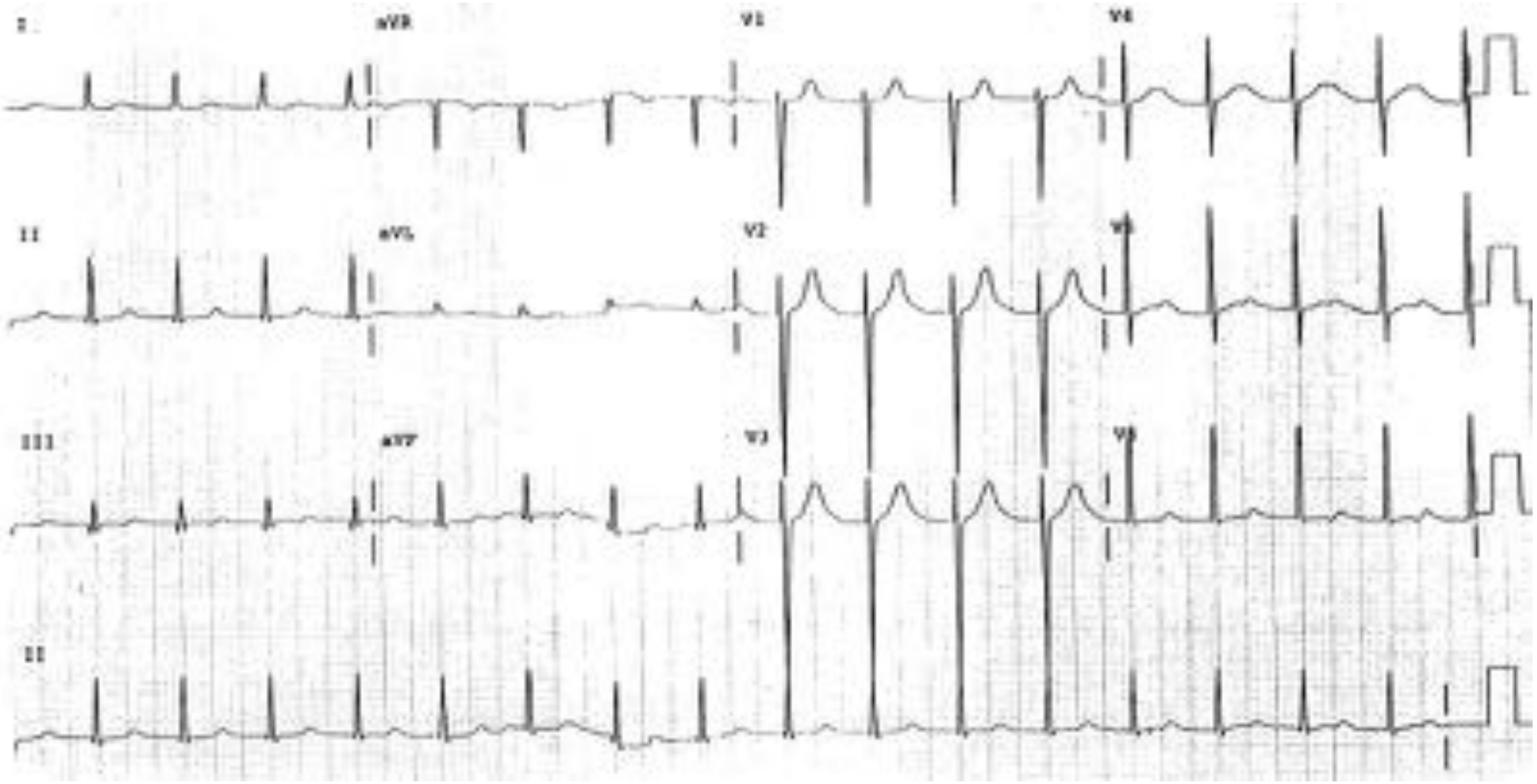
Rate

Reg vs Irreg vs Patterned



Interpret EKG #14

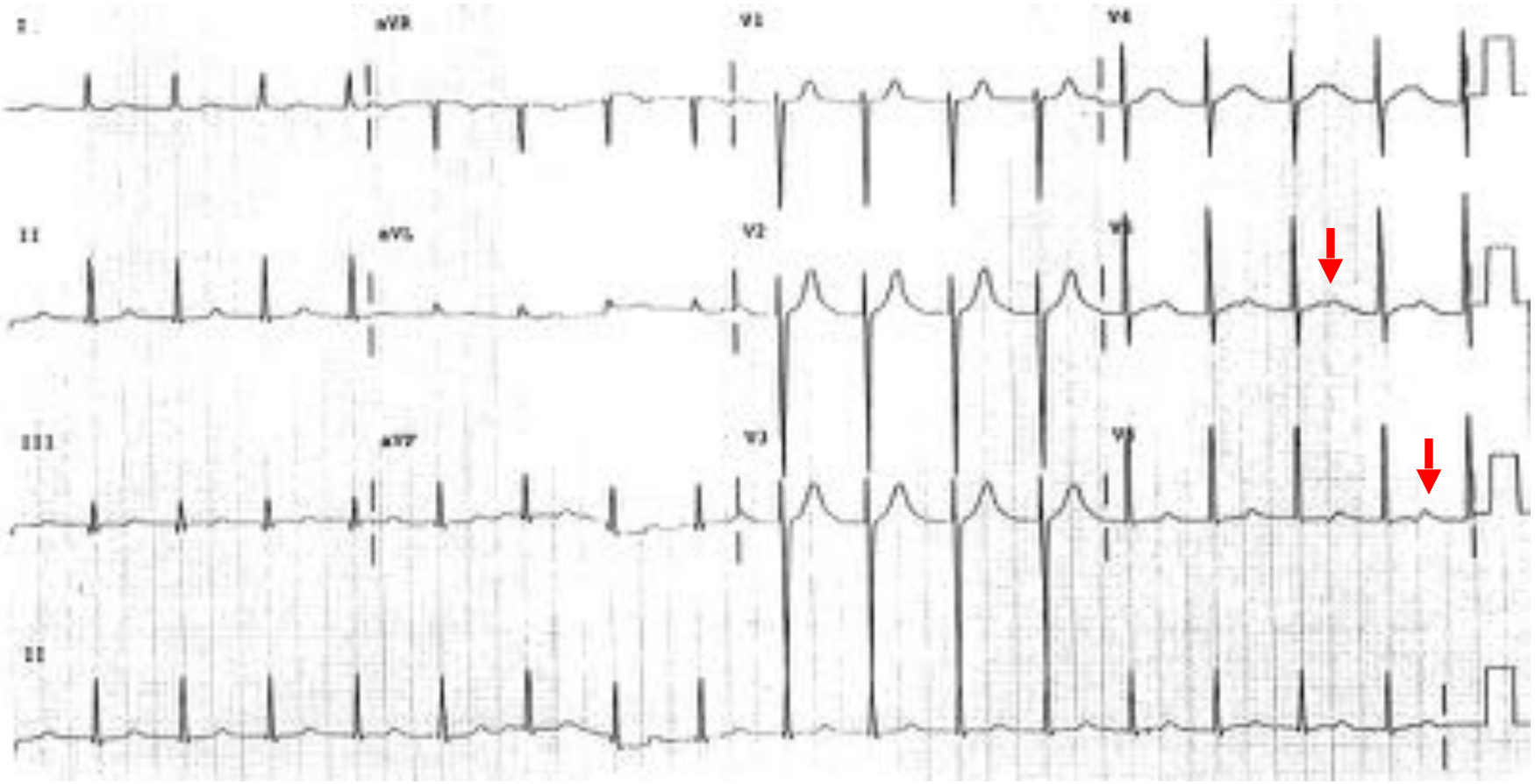
Reg…narrow complex…what is the origin of these beats?



Interpret EKG #14

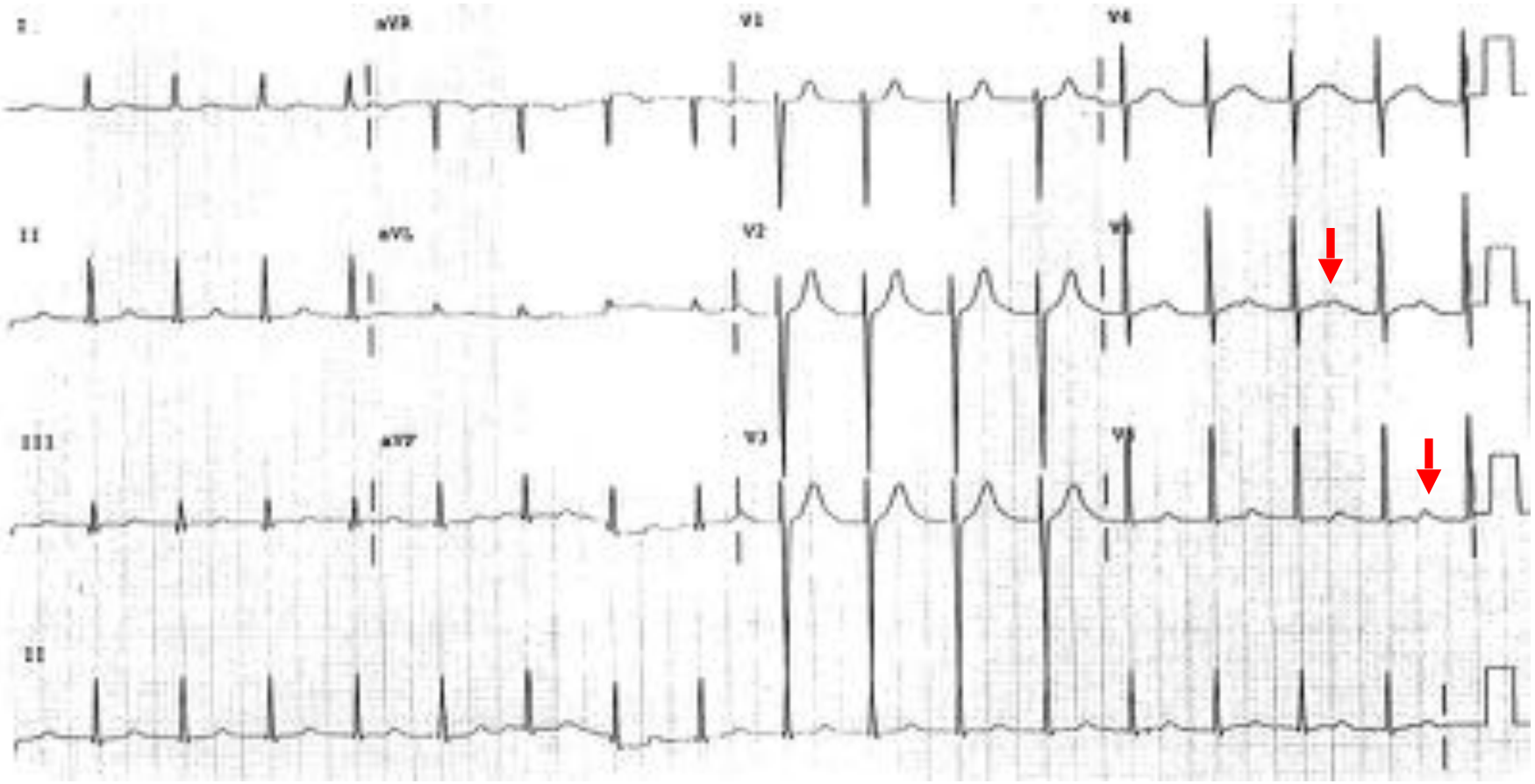
Junctional Tachycardia? Vs Sinus with 1^0 AVB (p wave in T?)

We could argue both choices. Which do you favor?



Interpret EKG #14

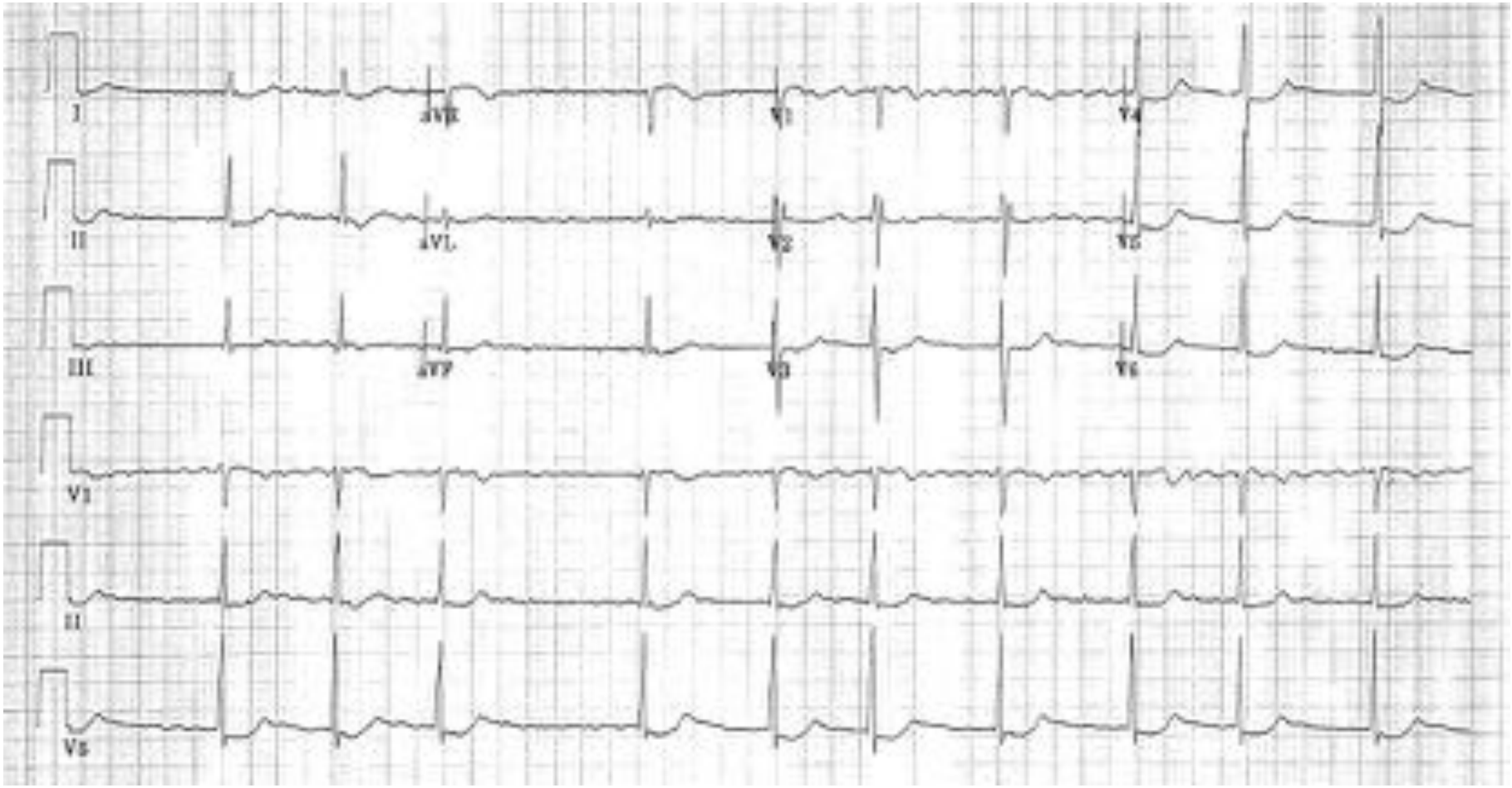
My opinion- Sinus with 1^0 AVB (p wave in T?)



Interpret EKG #15:

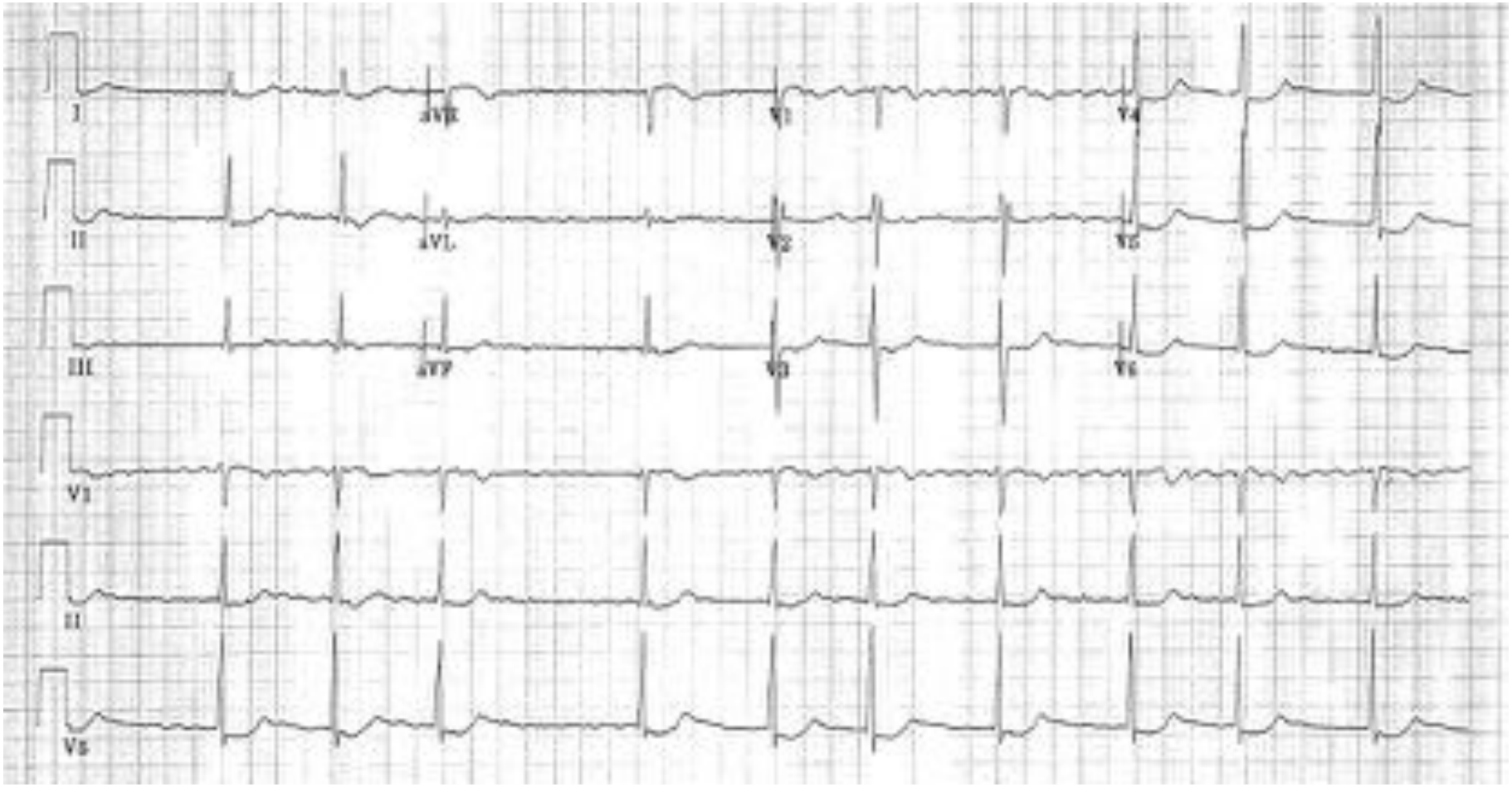
Rate

Reg vs Irreg vs Patterned



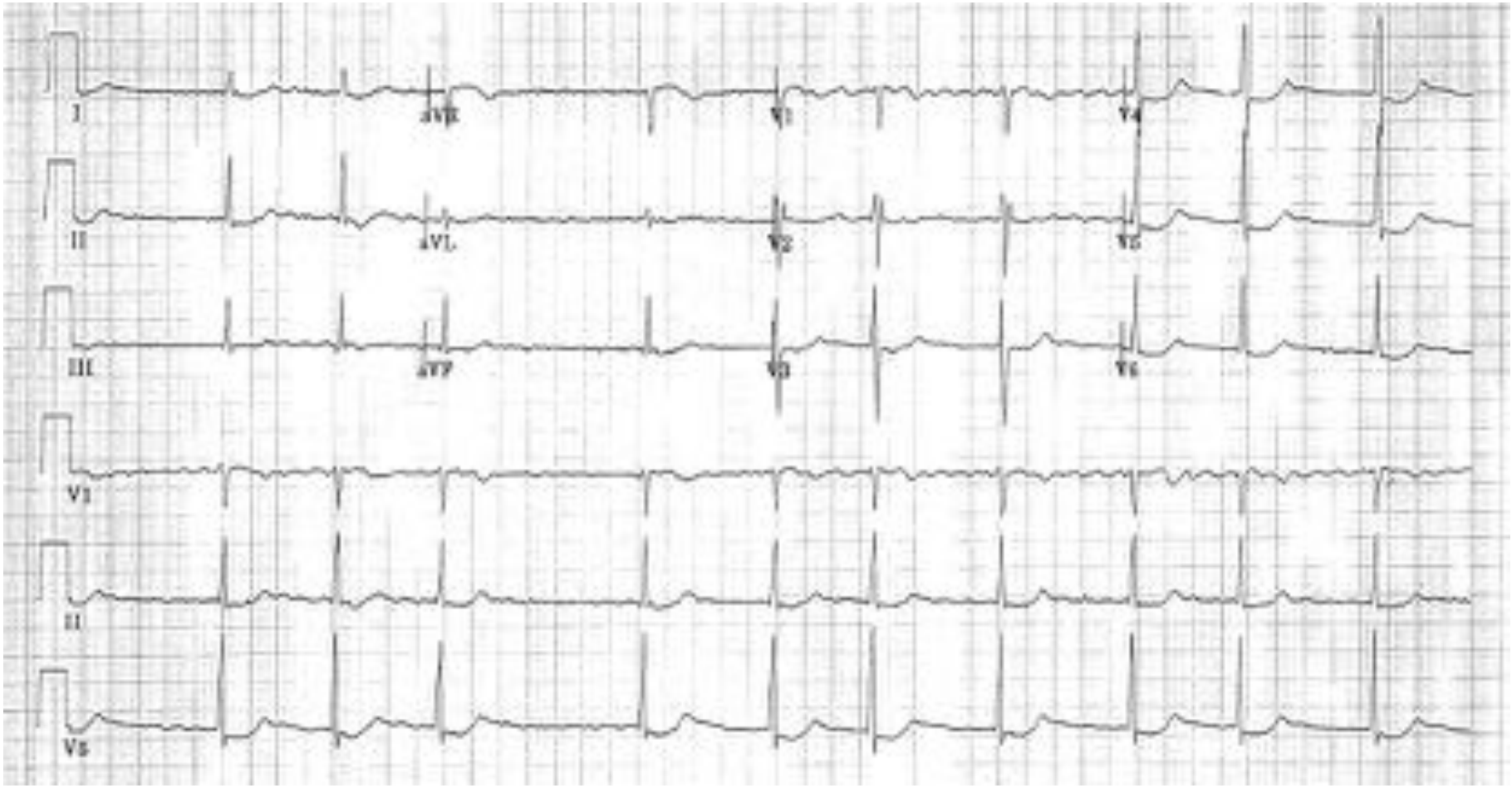
Interpret EKG #15:

It looks like a pattern…but is it really?



Interpret EKG #15:

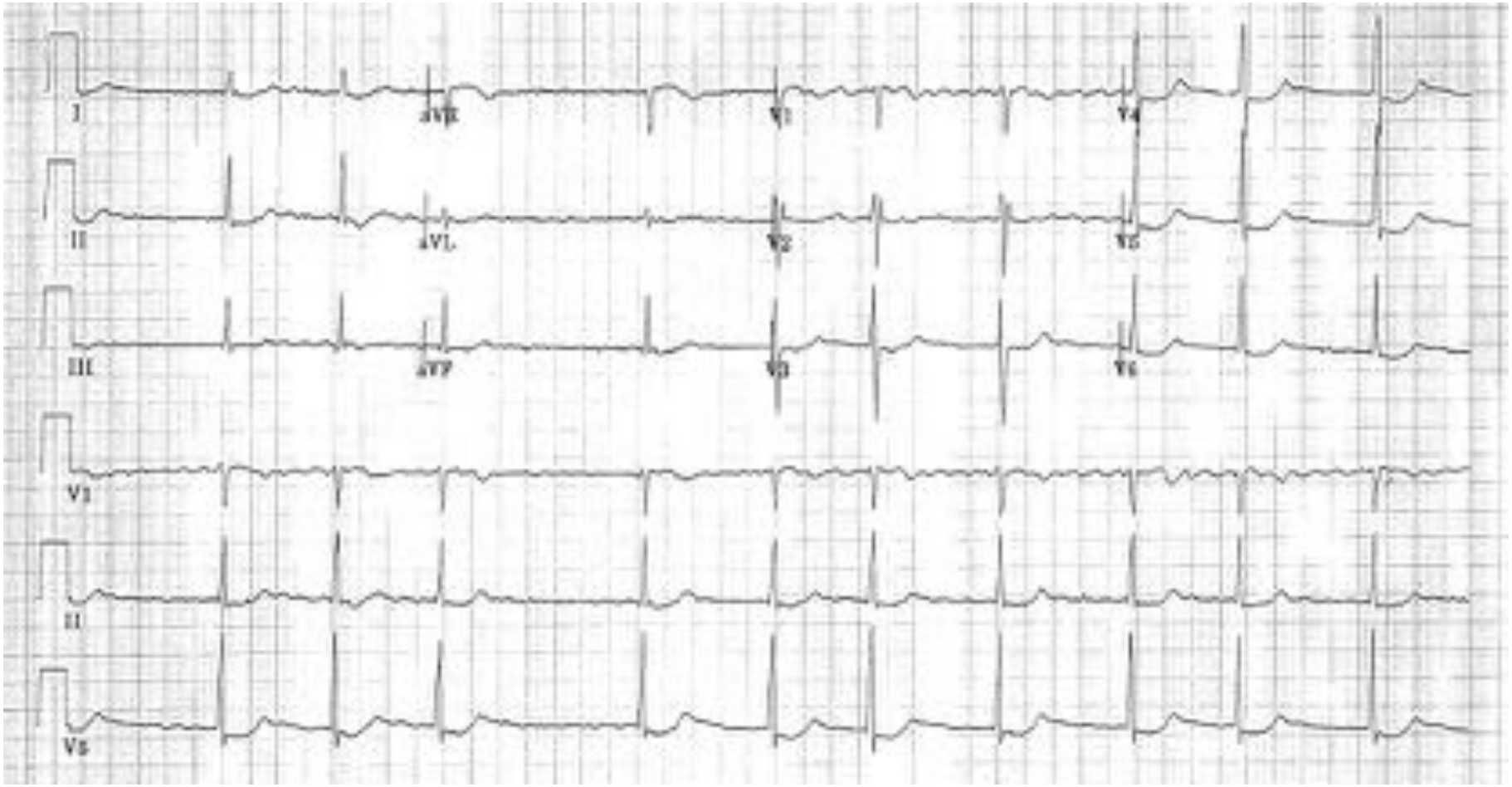
Irreg… now are there P waves?



Interpret EKG #15:

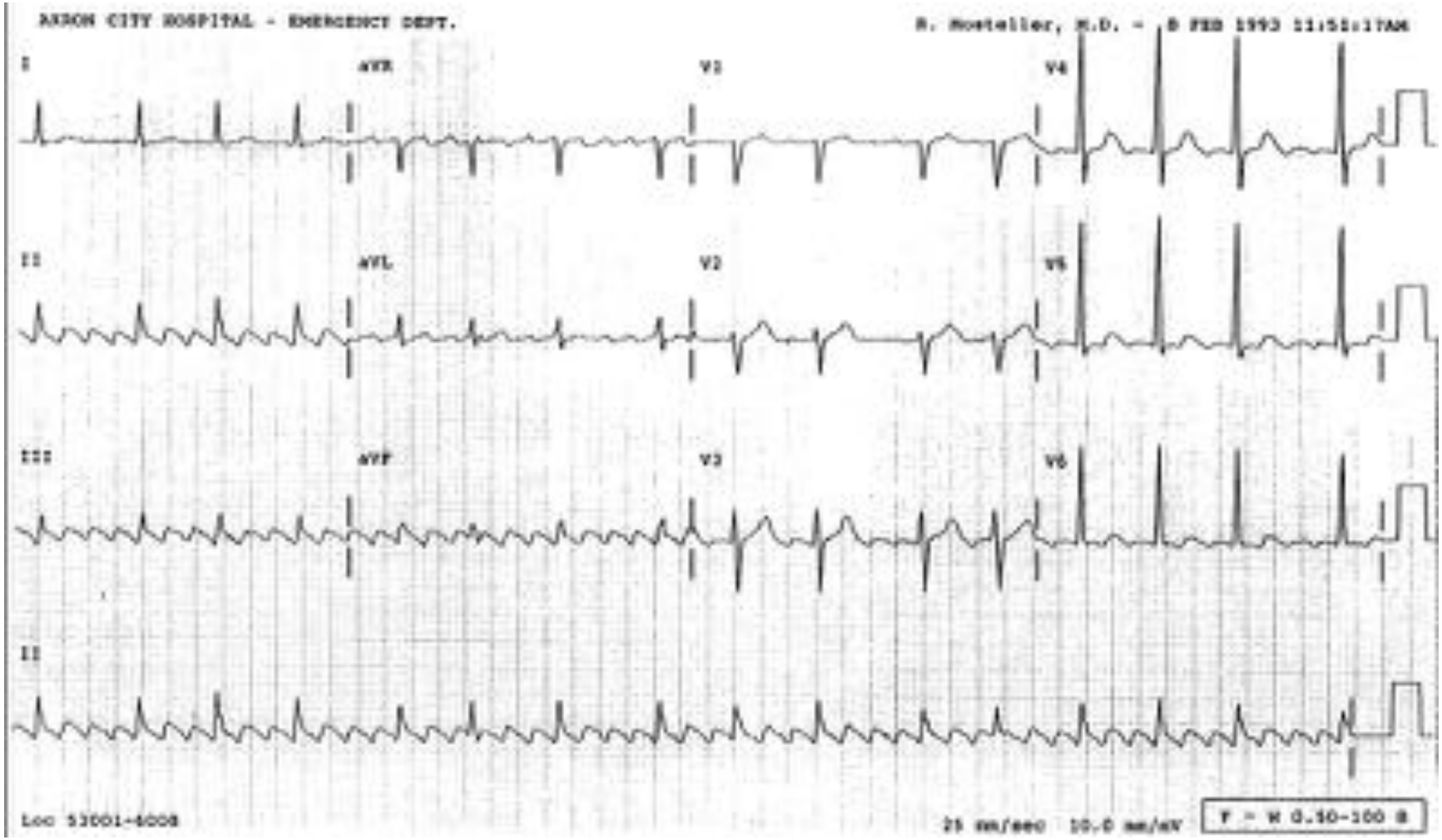
No p waves… that is course atrial fibrillation

AFIB with ventricular rate of 55-60



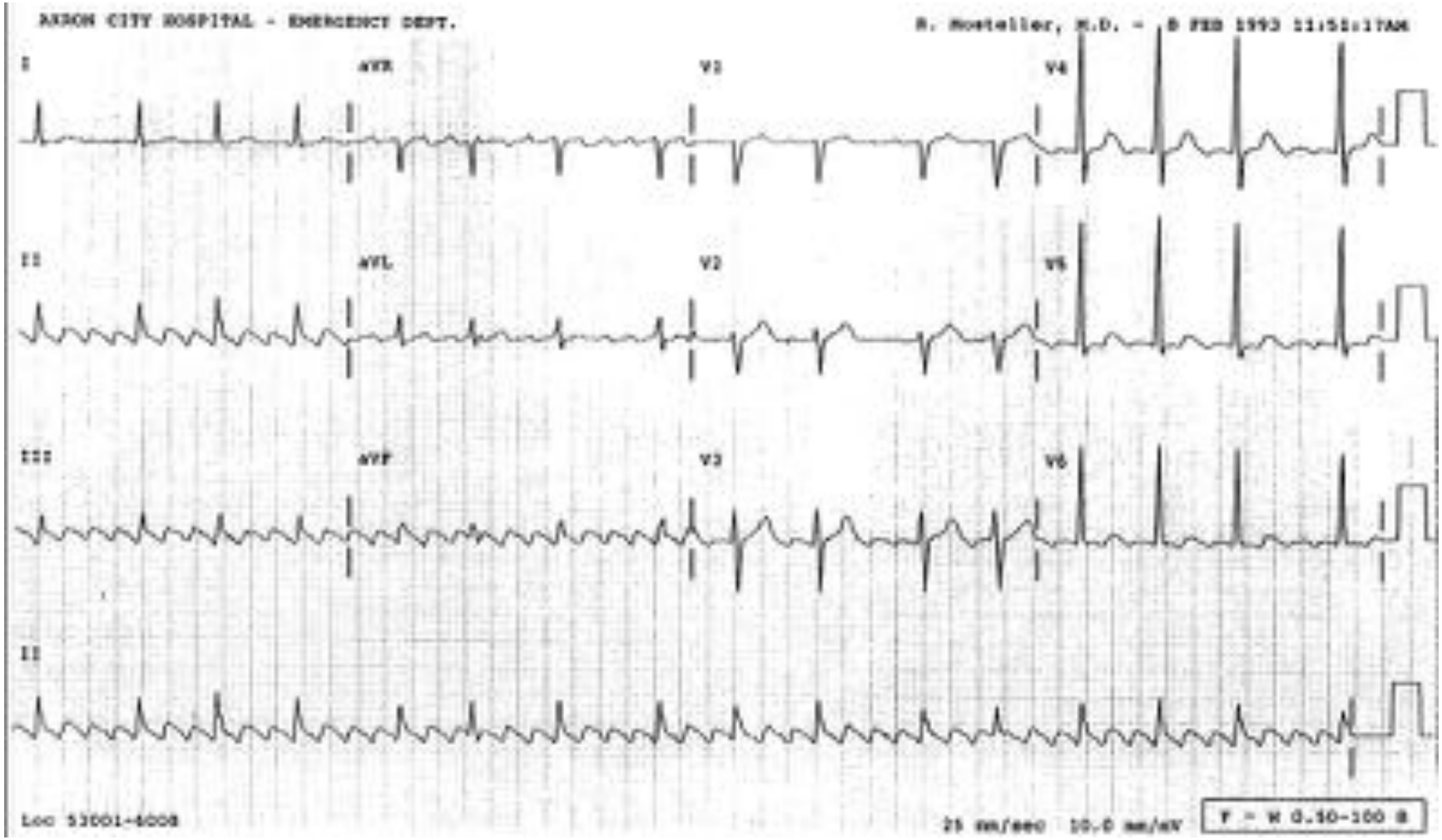
Interpret EKG #16:

Really this is an easy one…



Interpret EKG #16:

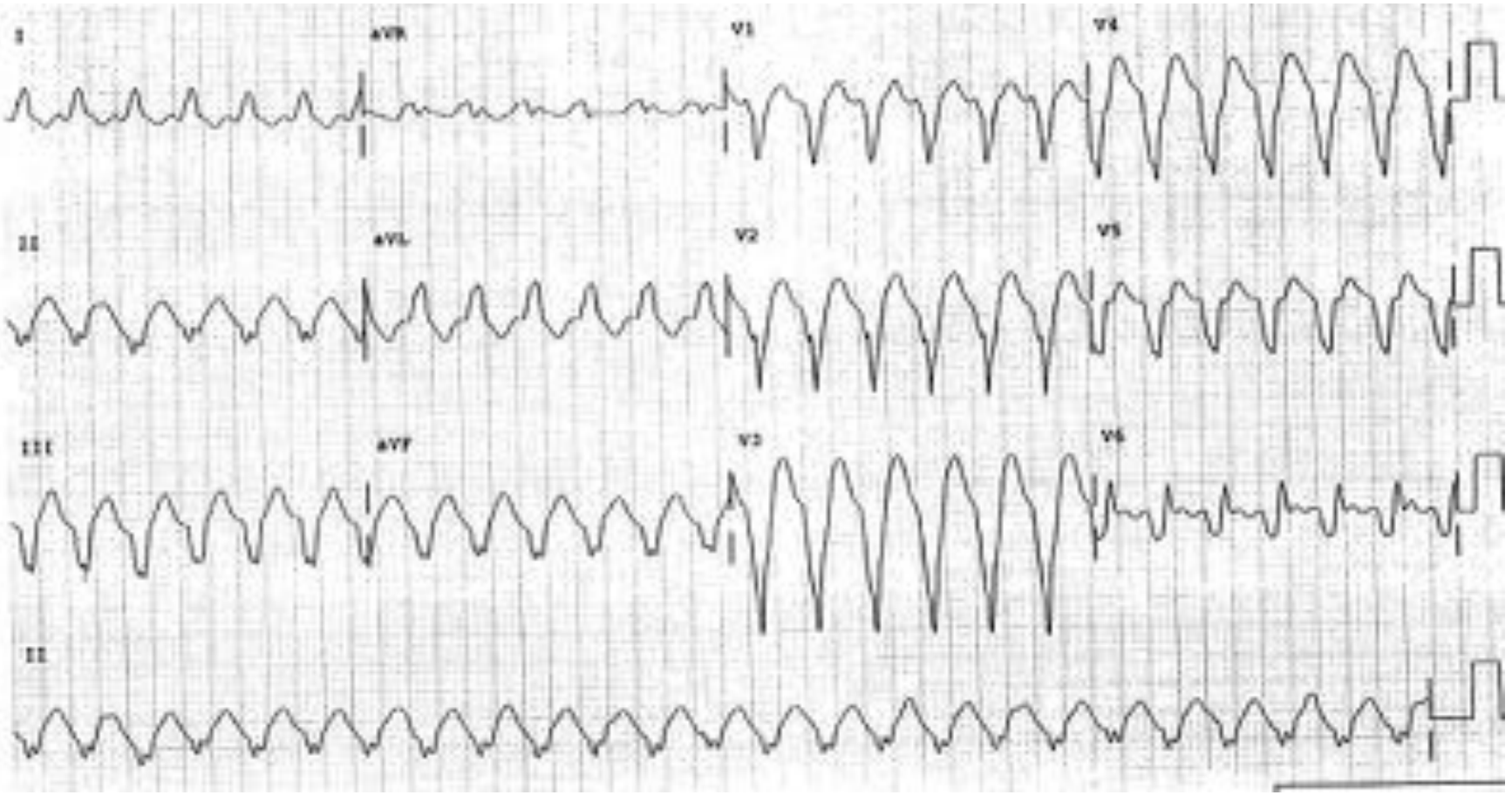
Atrial Flutter with 3:1 conduction through AV node varying with 4:1 conduction



Interpret #17:

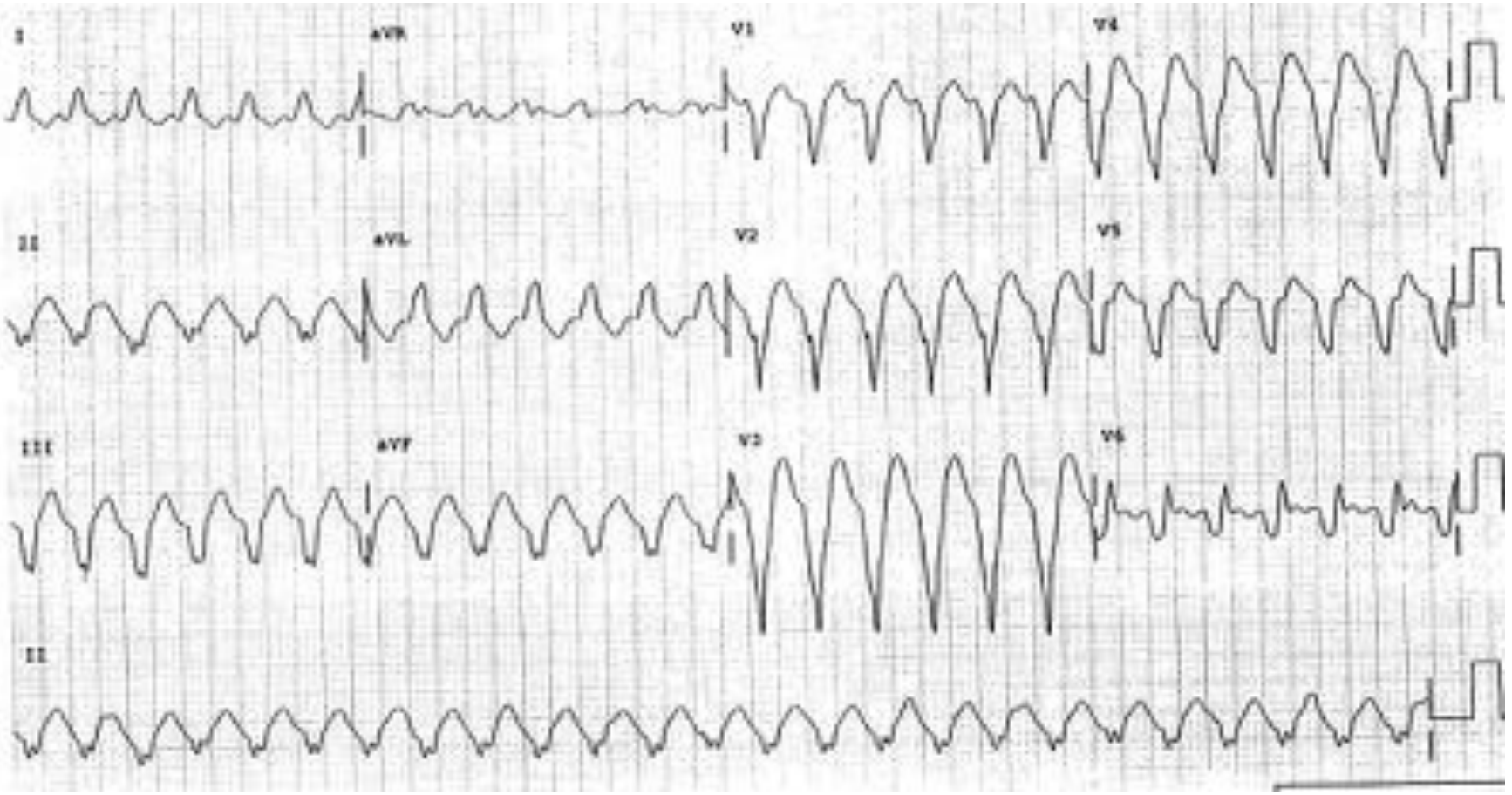
Rate… yes it is fast

Reg vs Irreg vs Patterned



Interpret #17:

V- tach… someone get the crash cart!

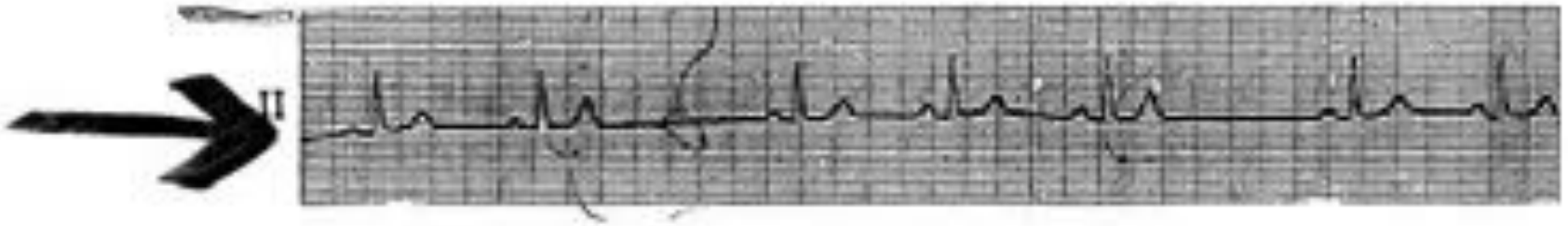


Interpret this Rhythm Strip #18

You must presume the patterned is repeated on either edge of the strip

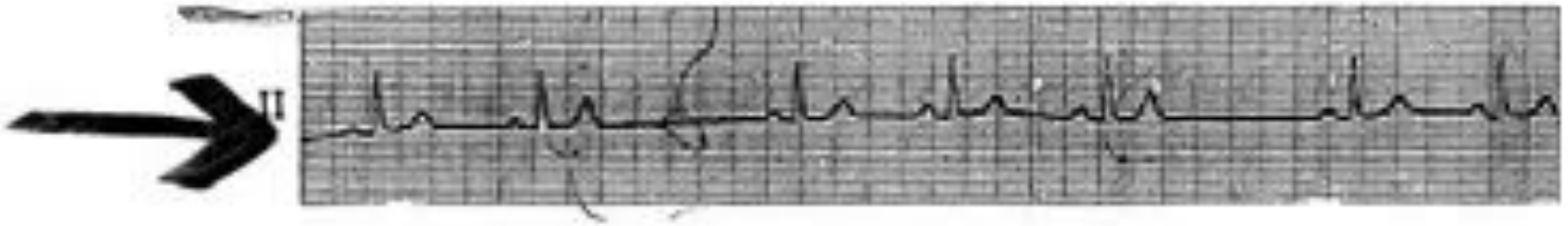
Three beats…then space

Why is this happening?

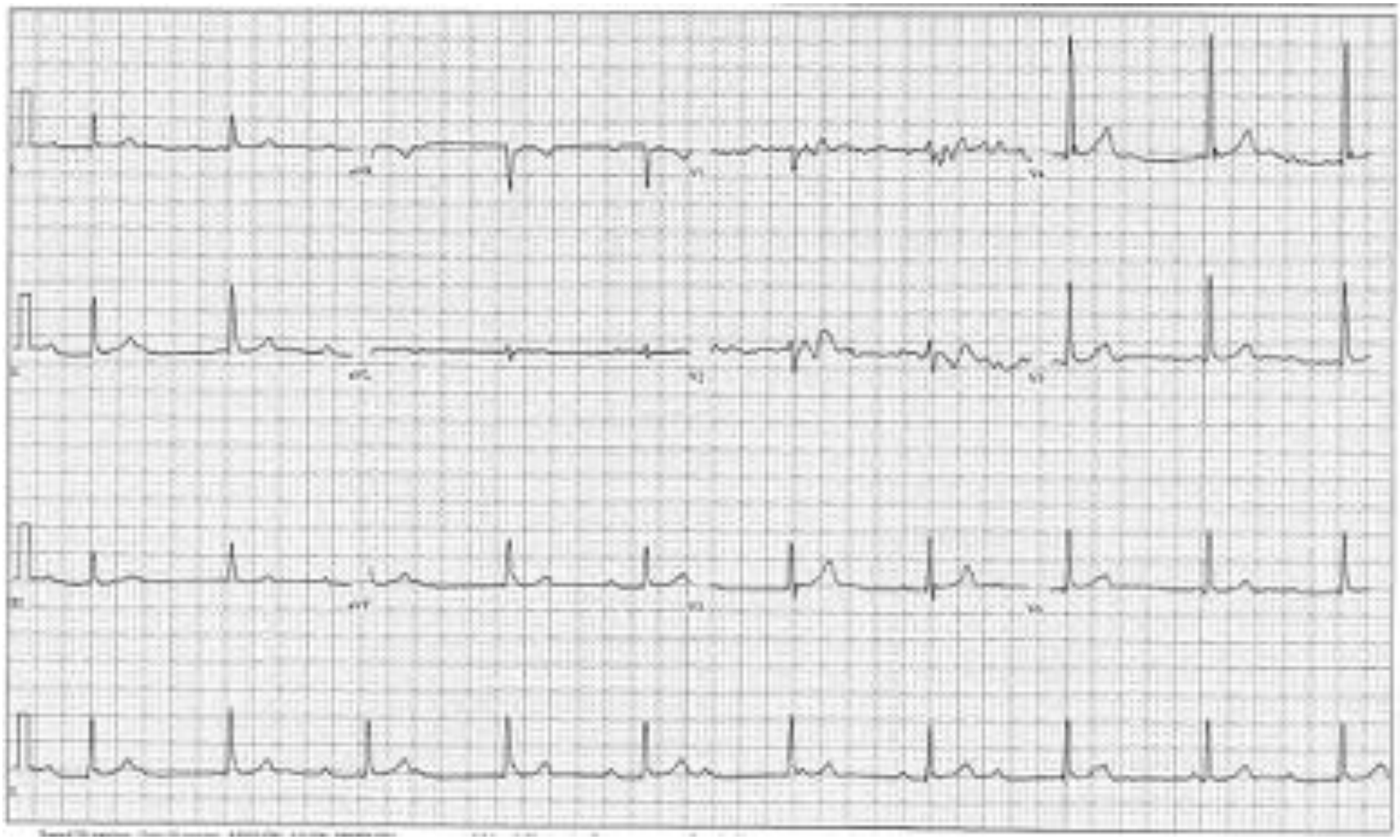


Interpret this Rhythm Strip #18

This is NSR with every fourth beat being a PAC with the Pwave being buried in the T wave and not being conducted through the refractory AV node

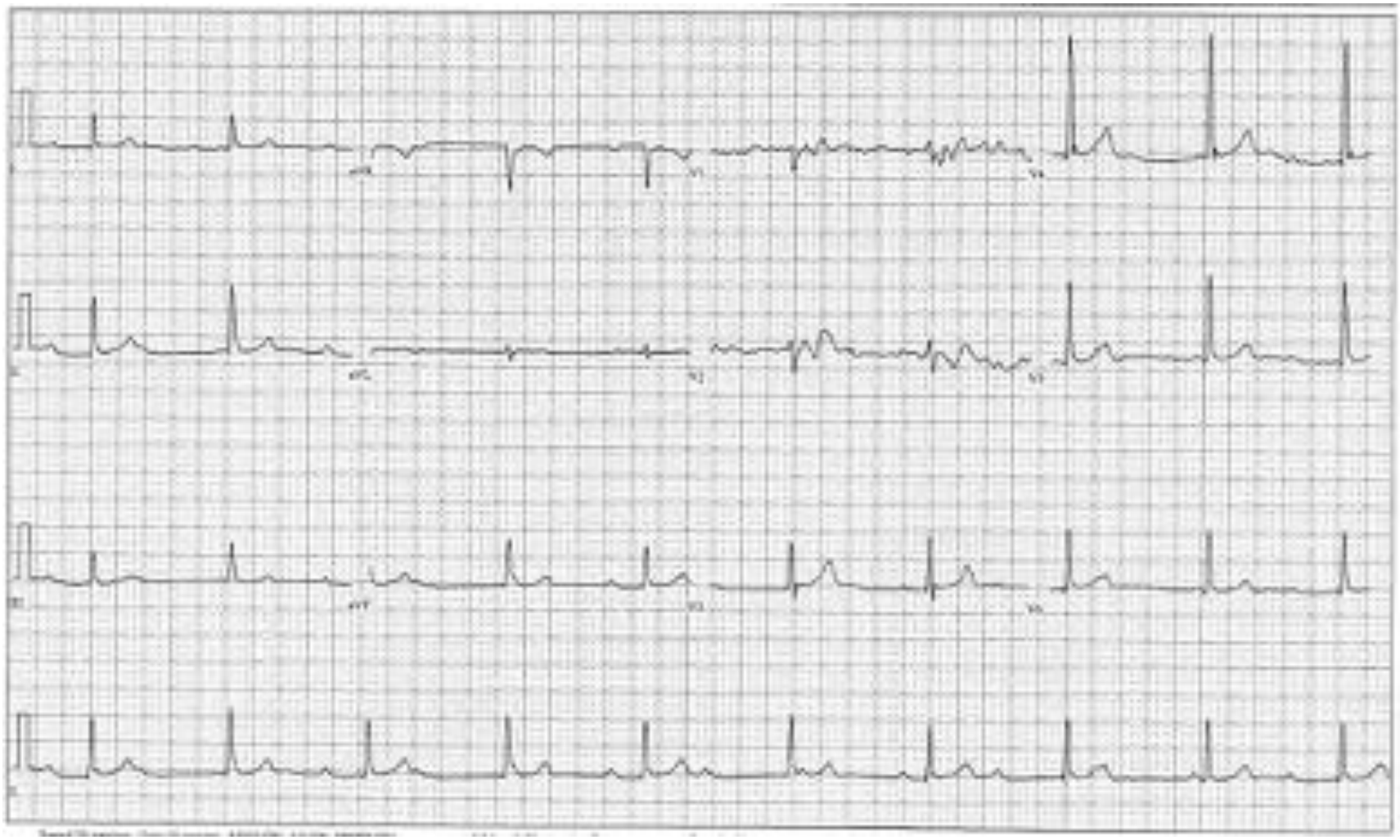


Interpret EKG #19:



Interpret EKG #19:

3rd Degree AV block with junctional escape



Great job…keep practicing.