

EKG Conference Review for IM boards

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Cardiology Fellow, PGY 6
May 24, 2006

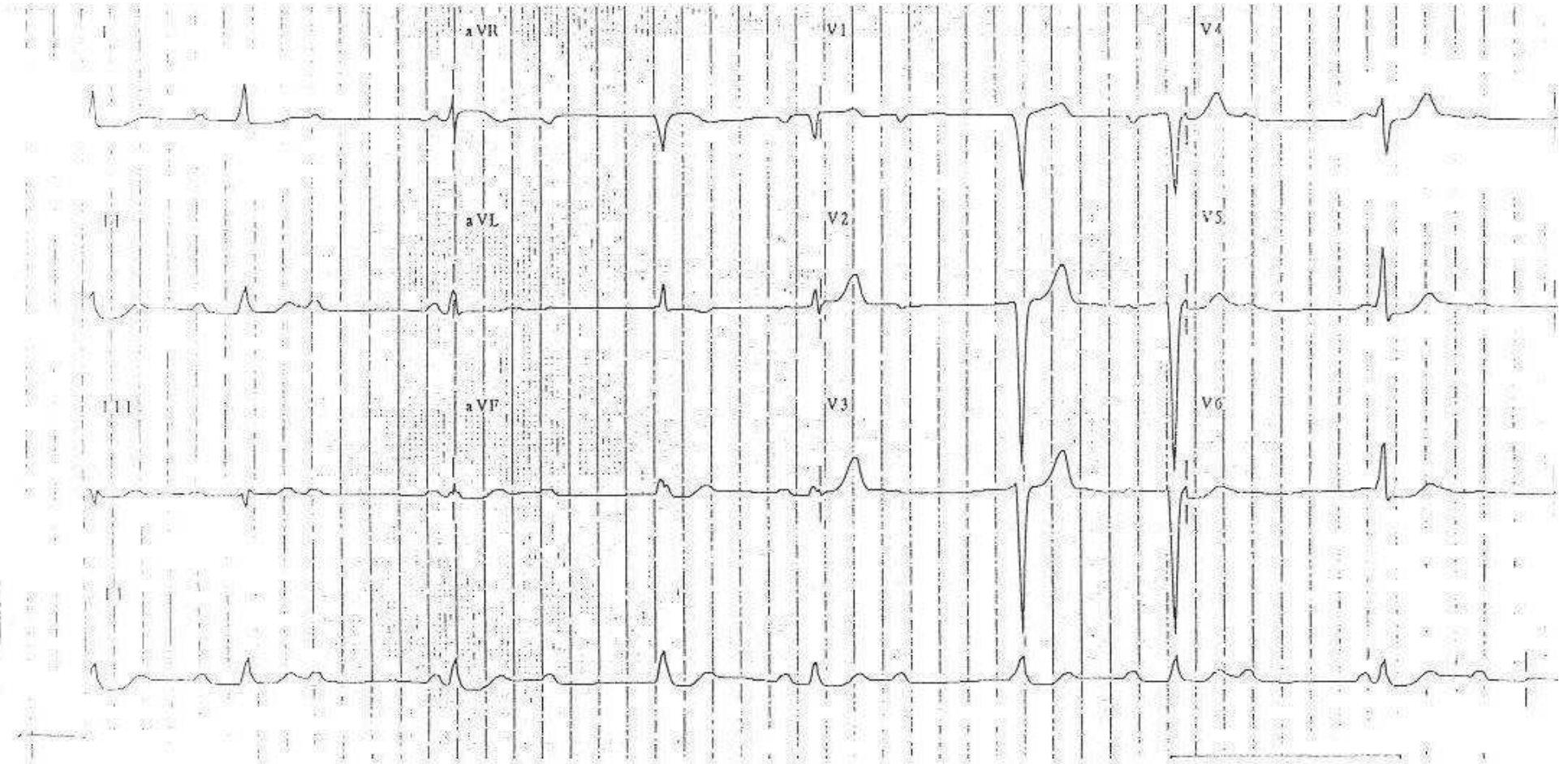
Case #1

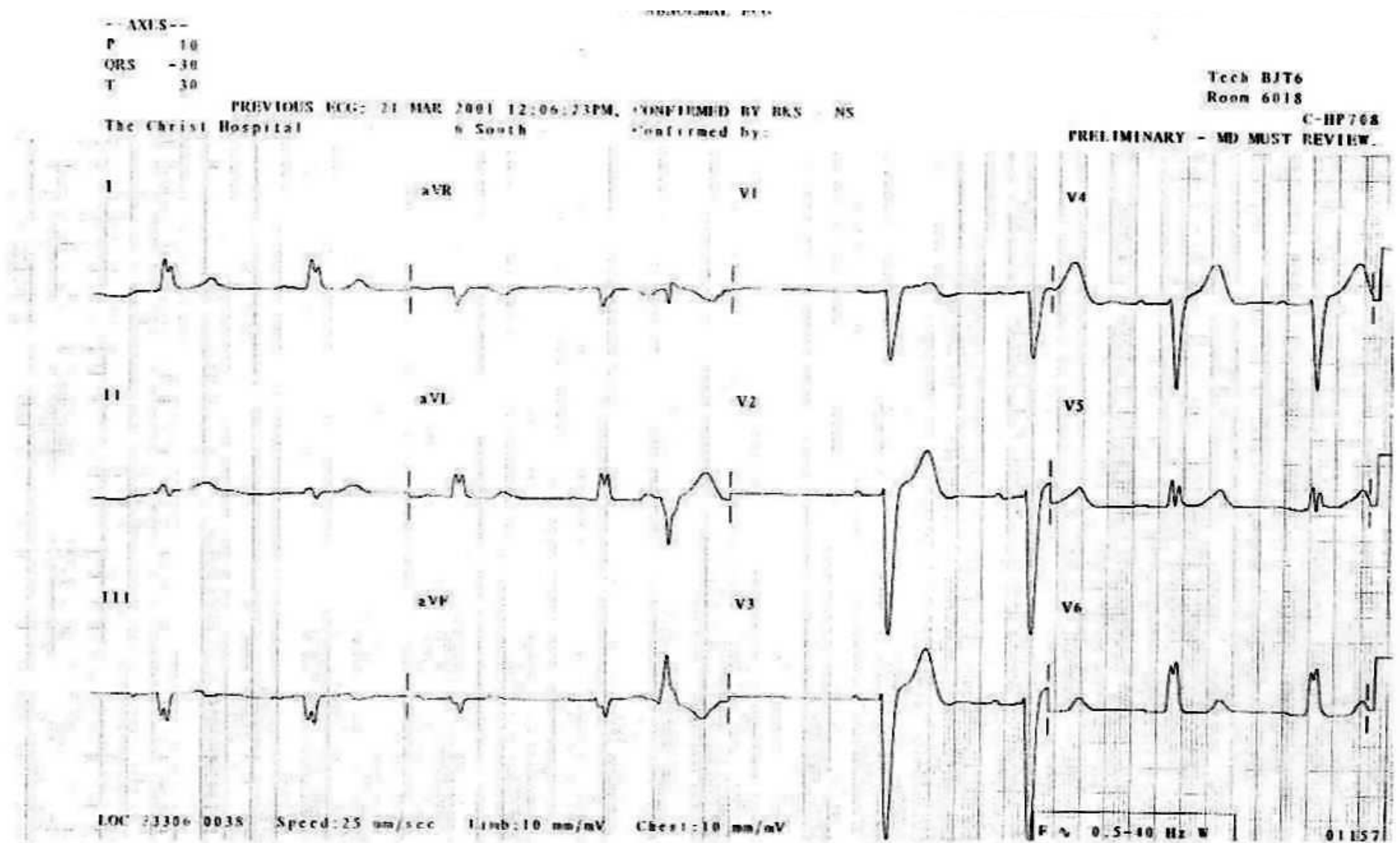
- Patient presents with syncope
- Does this EKG warrant a pacemaker?

Rate 48
PR 187
QRSD 108
QT 508
QTc 454

--AXIS--
P 56
QRS 30
T 87

3rd degree heart block
Pacemaker indicated!





1st degree AVB

LBBB

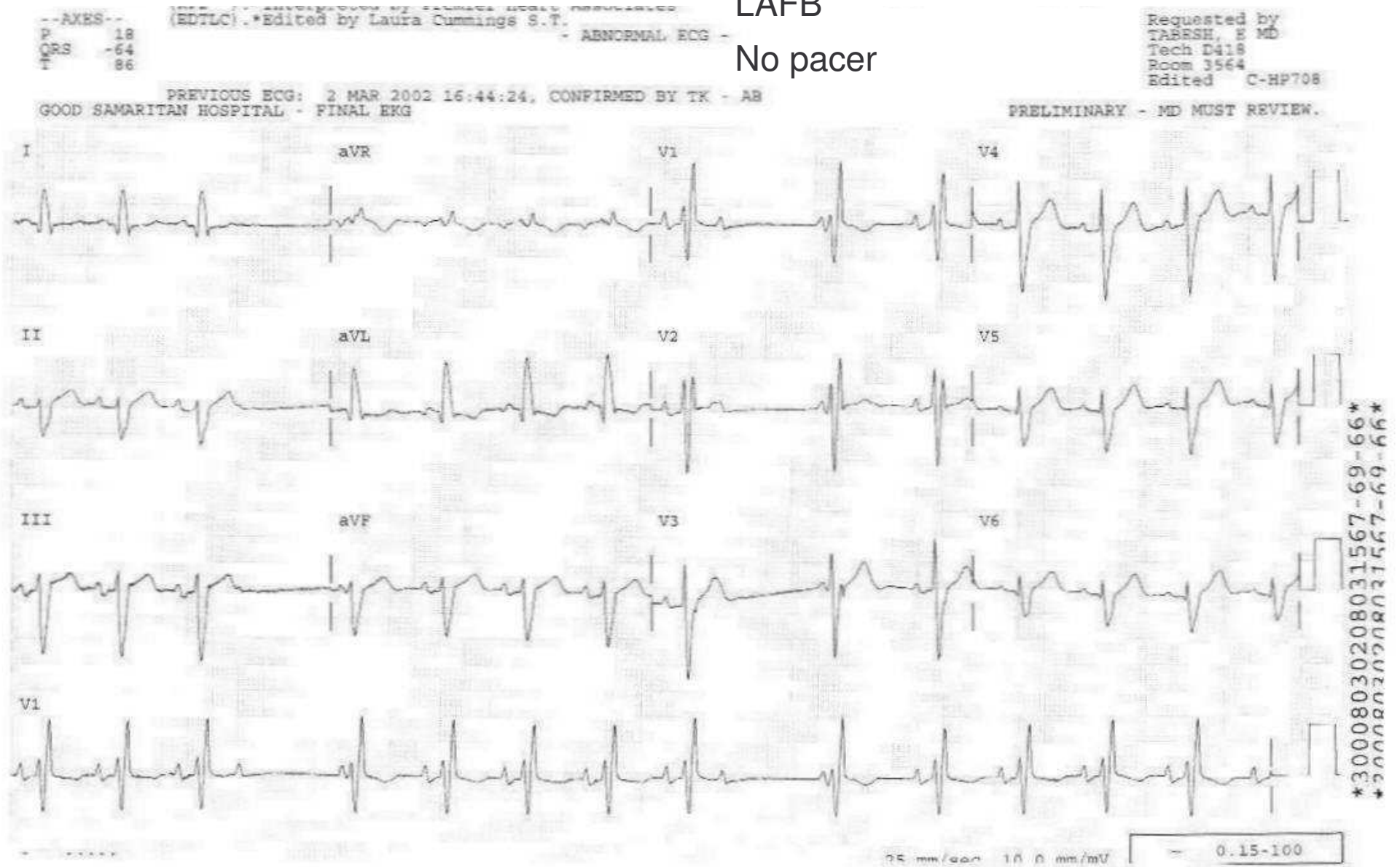
No pacemaker indicated

2nd degree type 1 (Wenkebach) AV block

RBBB

LAFB

No pacer



78 years
Male

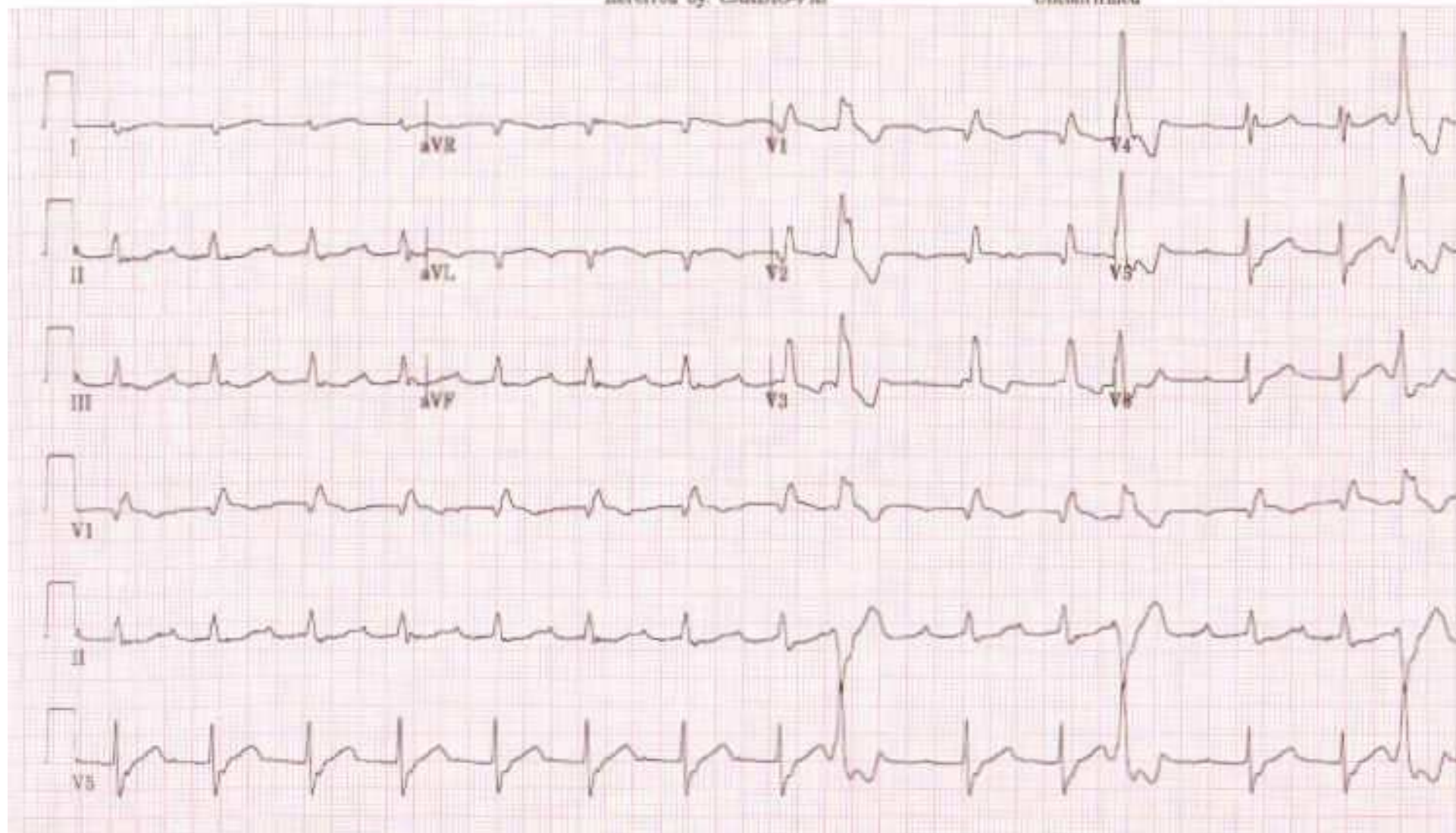
Room: OPT
Loc: 2 Opt: 64

Vent. rate 90 bpm
PR interval 296 ms
QRS duration 158 ms
QT/QTc 374/457 ms
P-R-T axes 92 100 -4

Test ind:

Referred by: CARDIO-FRI

Unconfirmed

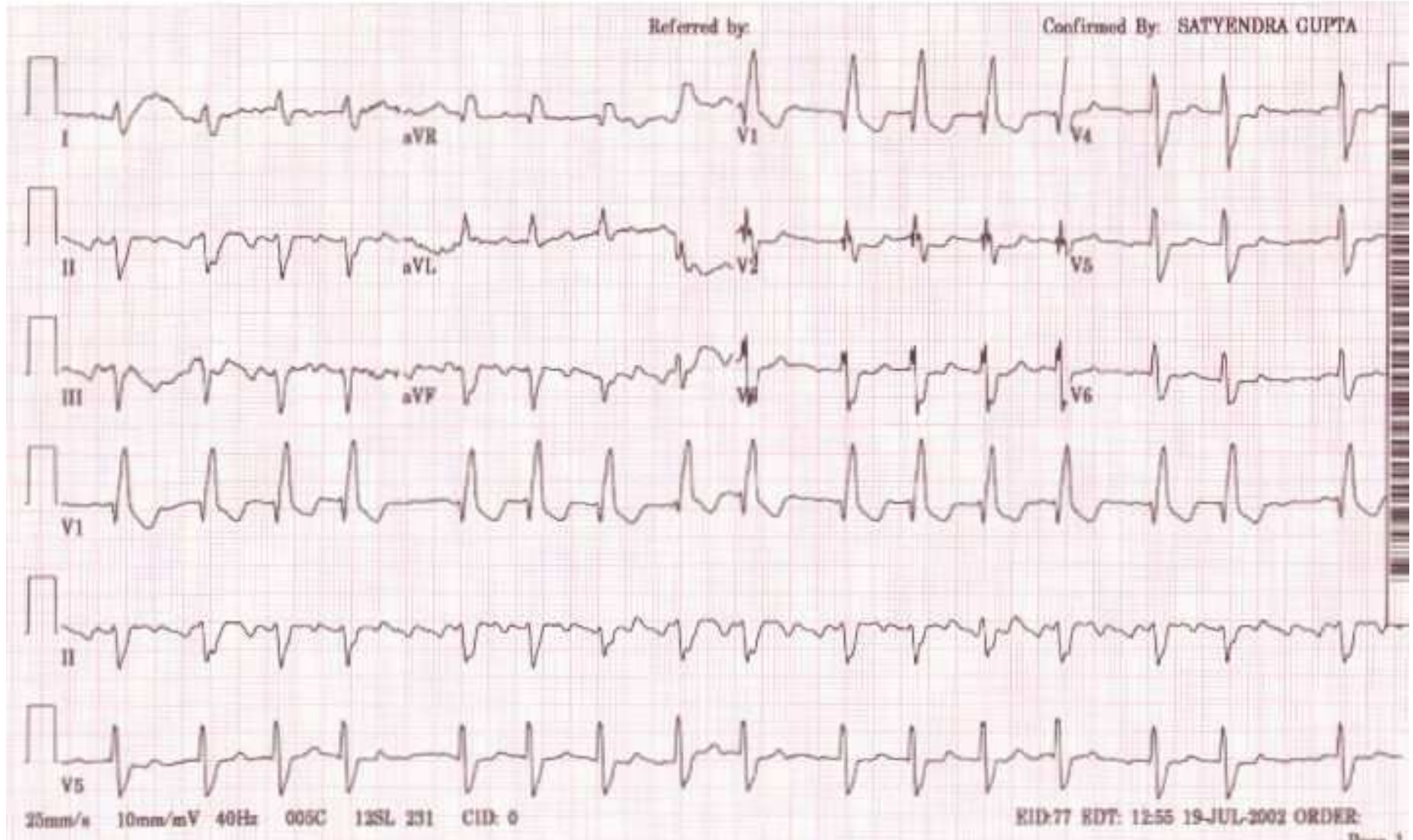


© 59 yr Male Caucasian
 59in 211lb
 Loc:2 Position:20

Heart rate	98	bpm
PR interval	*	ms
QRS duration	152	ms
QT/QTc	392/500	ms
P-R-T axes	-76 -88	25

Technician:REBECCA DONESE

Atrial flutter with variable conduction
 Left anterior fascicular block
 Right bundle branch block
 No pacer



Vent. rate 102 BPM
PR interval 240 ms
QRS duration 92 ms
QT/QTc 324/422 ms
P-R-T axes -90 59 96

Atrial tachycardia with 2:1 conduction
No pacer

Technician: CHERYL ROBINSON
Test ind: A FLUTTER

Referred by: EDWARDS-DEAL

Confirmed by: A POTHOUKAKIS M.D.



Rate 46
PR
QRSD 141
QT 539
QTc 471

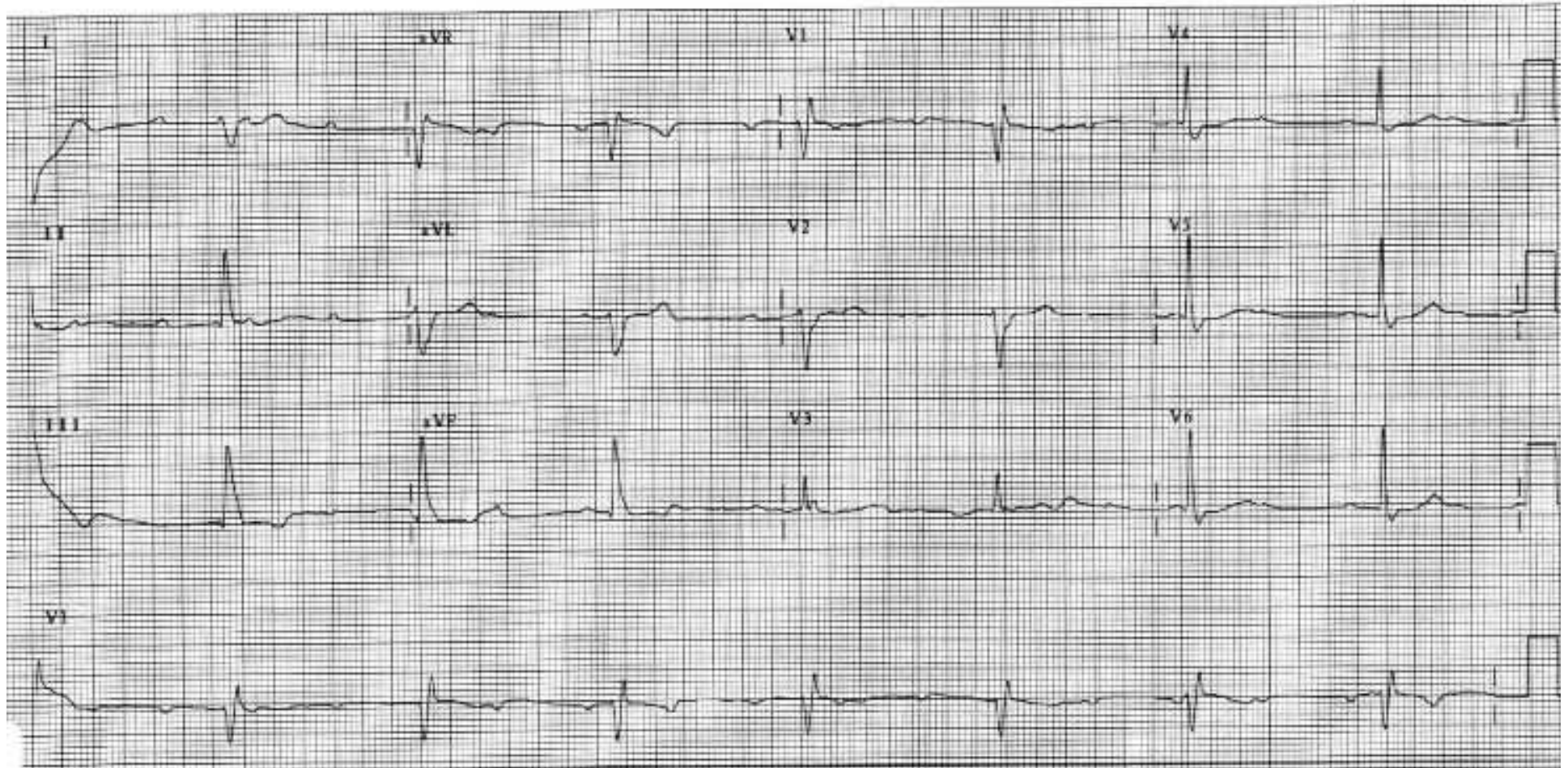
--AXIS--
P Ind.
QRS 107
T -9

3rd degree AV block
Pacemaker indicated!

Requested by:

- ABNORMAL ECG -

PRELIMINARY-MD MUST REVIEW



LOC 12330-0000 Speed:25 mm/sec Limb:10 mm/mV Chest:10 mm/mV

F 60% 0.5-100 Hz W RPT08 01321

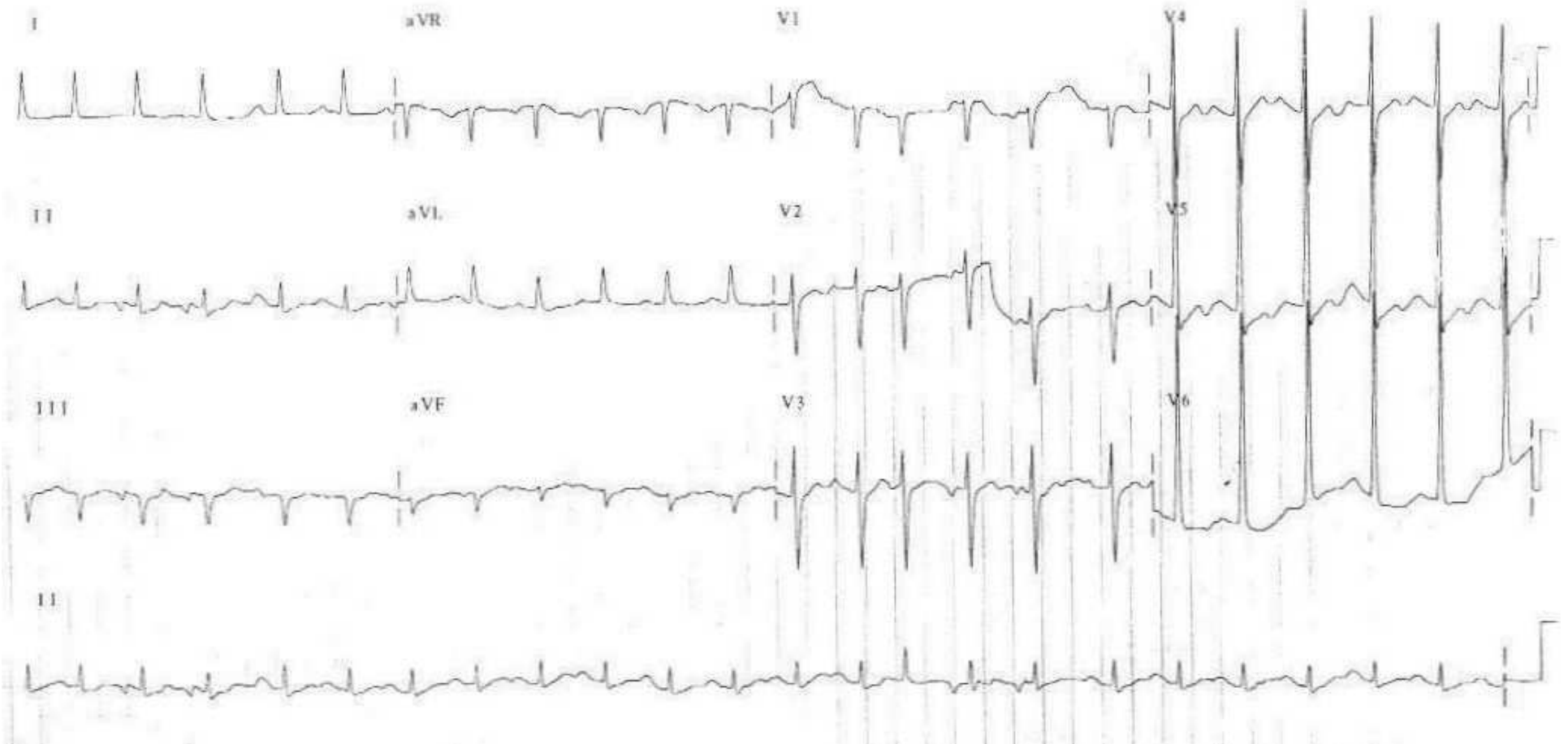
Rate 141
PR 151
QRSD 69
QT 314
QTc 481

--AXIS--
P Ind.
QRS -1.3
T /2

MAT – Multifocal Atrial Tachycardia

LVH

No pacer



Vent. rate 38 BPM
PR interval * ms
QRS duration 84 ms
QT/QTc 466/370 ms
P-R-T axes * 84 86

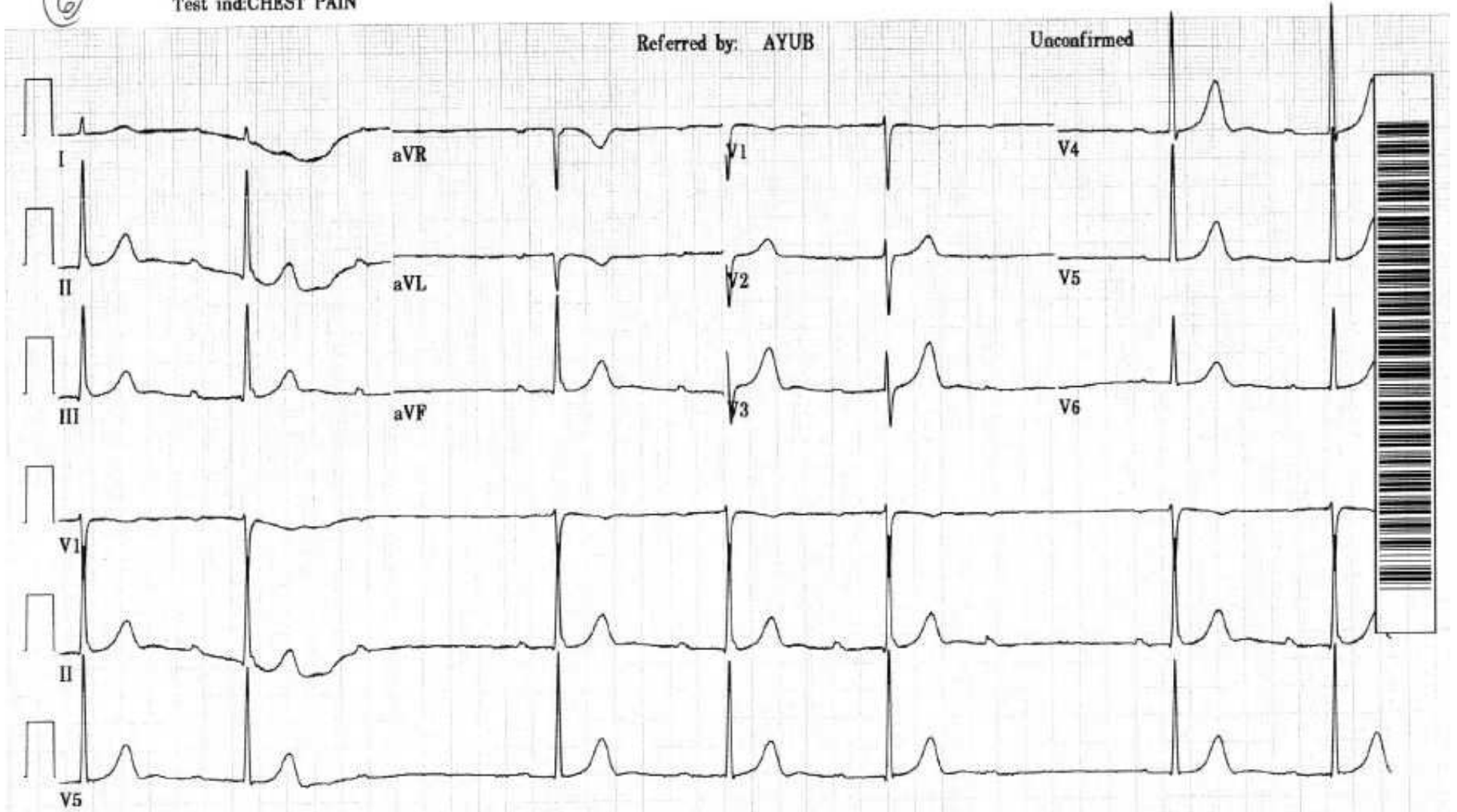
ion:39

Sinus rhythm
2nd degree type 1 AVB (Wenkebach)
No pacer

Technician: LOUISE ROSCOE (ER)
Test ind: CHEST PAIN

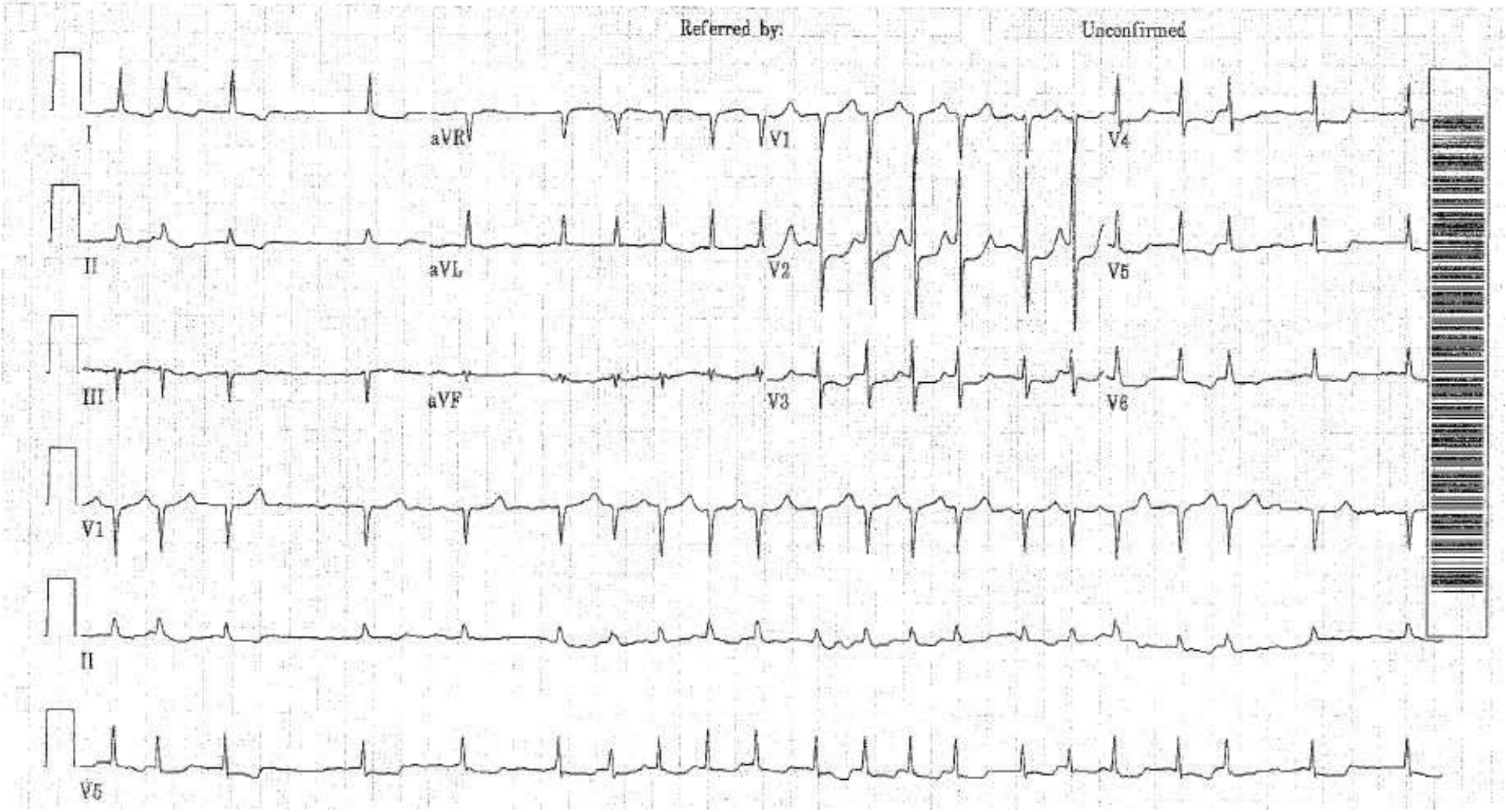
Referred by: AYUB

Unconfirmed



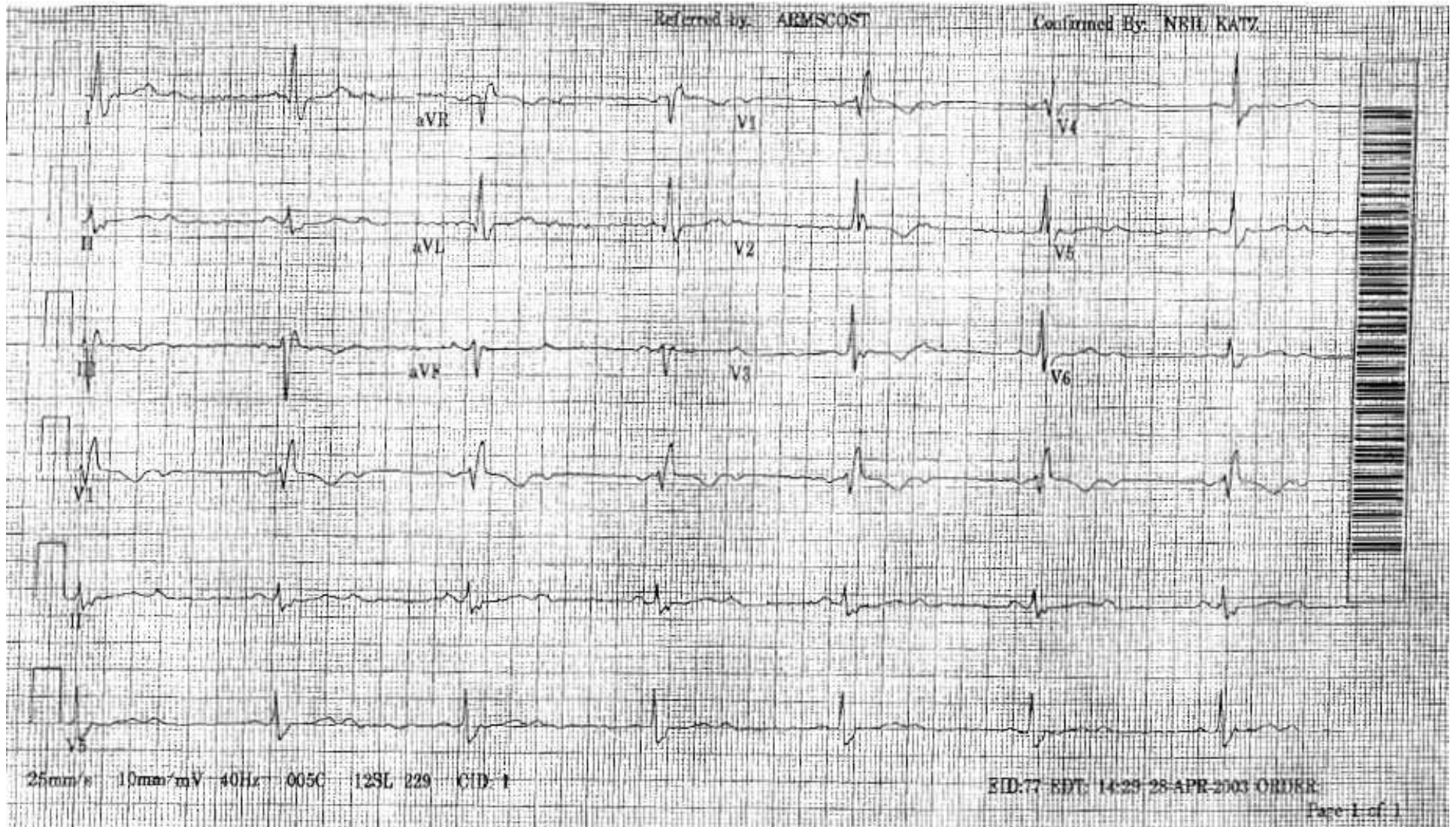
Referred by:

Unconfirmed

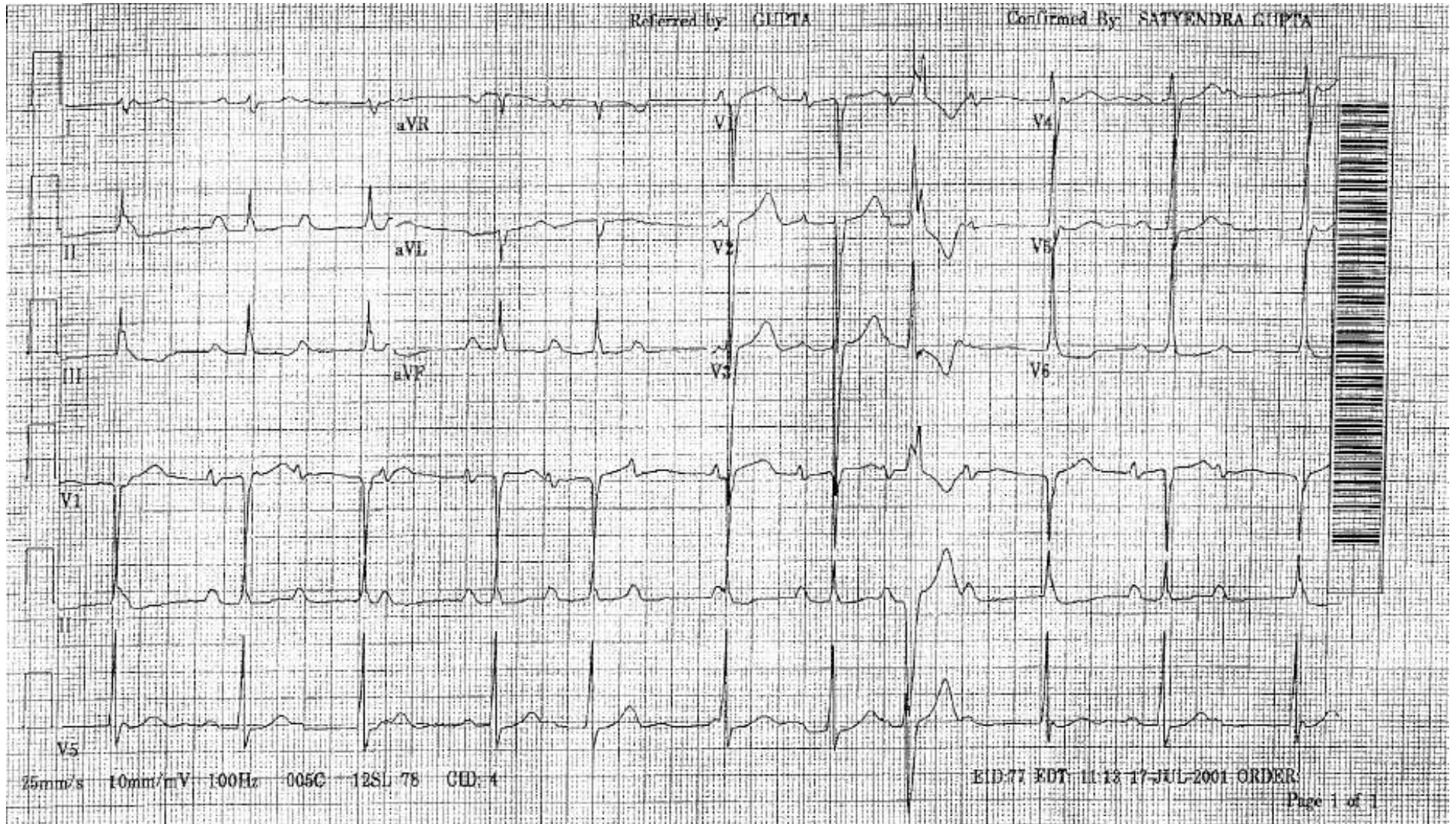


Atrial fibrillation, lateral ST-T depression

No pacer



Sinus rhythm, 2:1 AV block, RBBB
Probably pacer



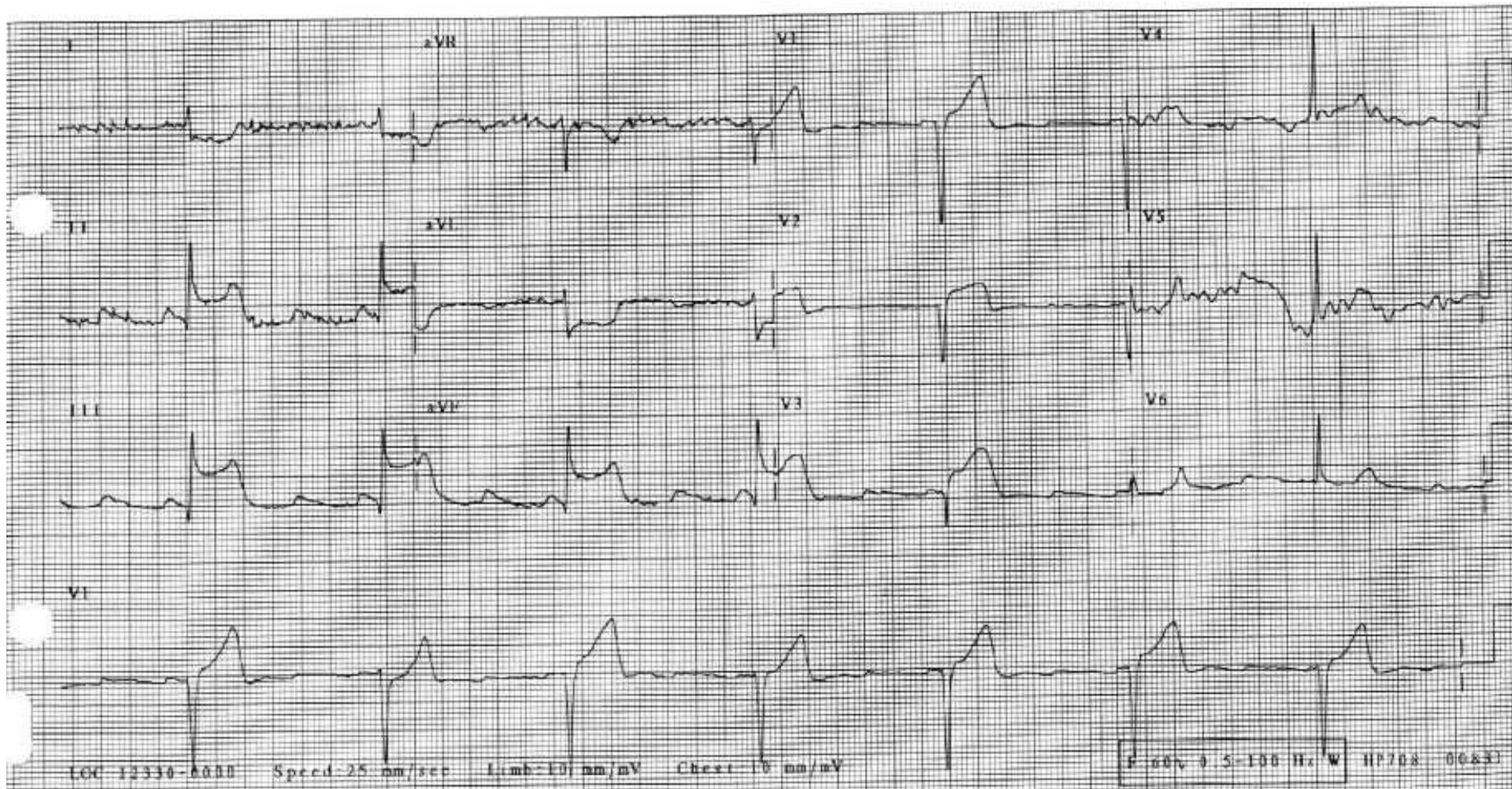
Sinus Rhythm
3:2 AV block (2nd degree, Wenkebach)
PVC
LVH
No pacemaker

Summary of Heart Blocks

- 1st degree AVB – PR>200ms – no pacer
- 2nd degree AVB
 - Mobitz 1 (Wenkebach) – no pacer
 - Mobitz 2 – pacemaker
- 3rd degree AVB – pacemaker
- Bundle branch blocks do not get a pacemaker
 - Isolated RBBB, LBBB, LAFB, LPFB
 - “Bifascicular” and “Trifascicular” blocks

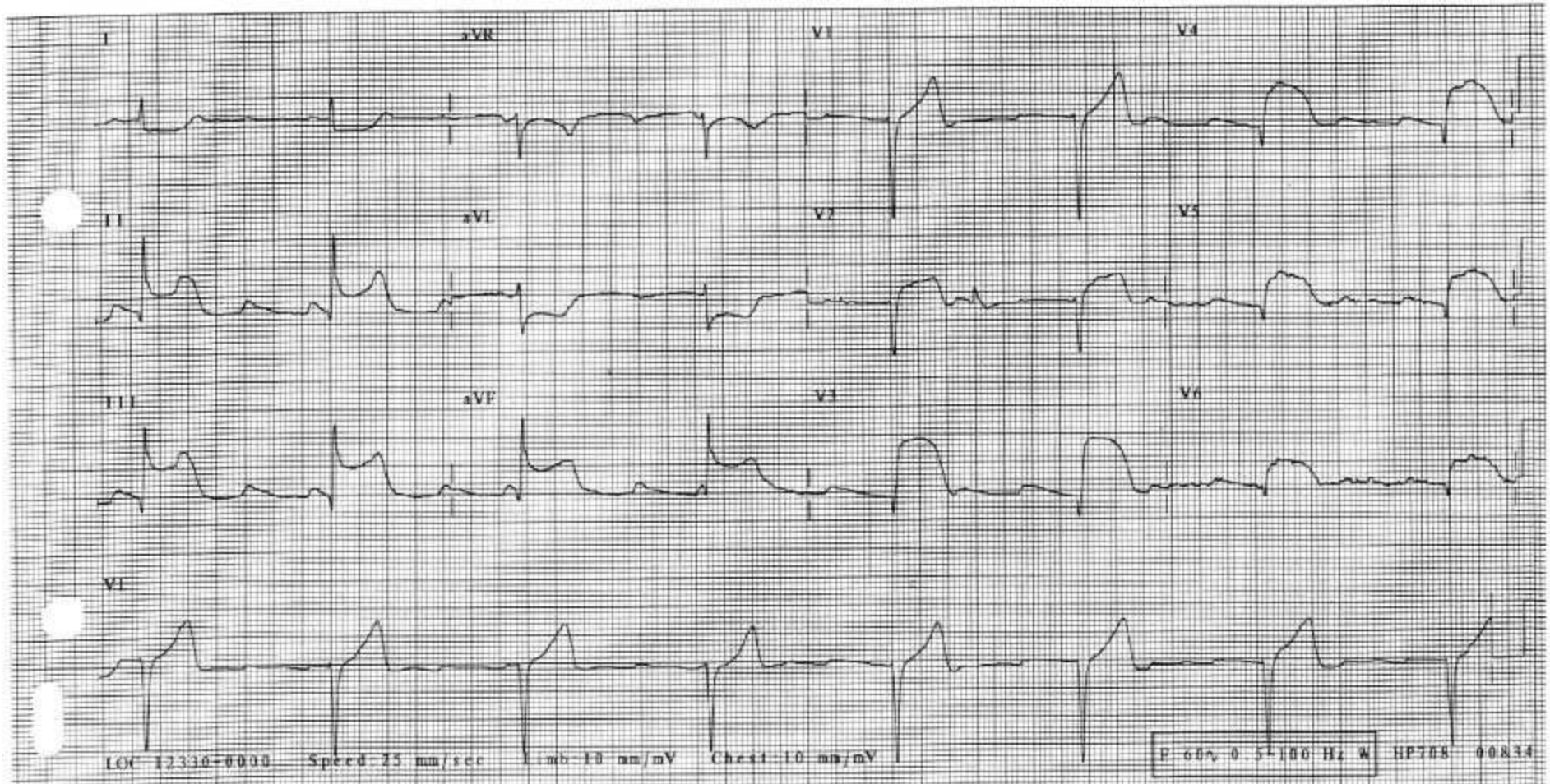
Chest pain syndromes

- Patient presents with chest pain
 - For reference, pt had a 'normal' EKG 3 weeks ago
- Does this EKG show
 - A. Diagnosis of ST elevation MI – rush to cath lab
 - B. Diagnosis of unstable angina/NSTEMI – admit for cath within 48 hours
 - C. Etiology of chest pain other than ACS
 - D. No specific findings for chest pain – admit/observe patient



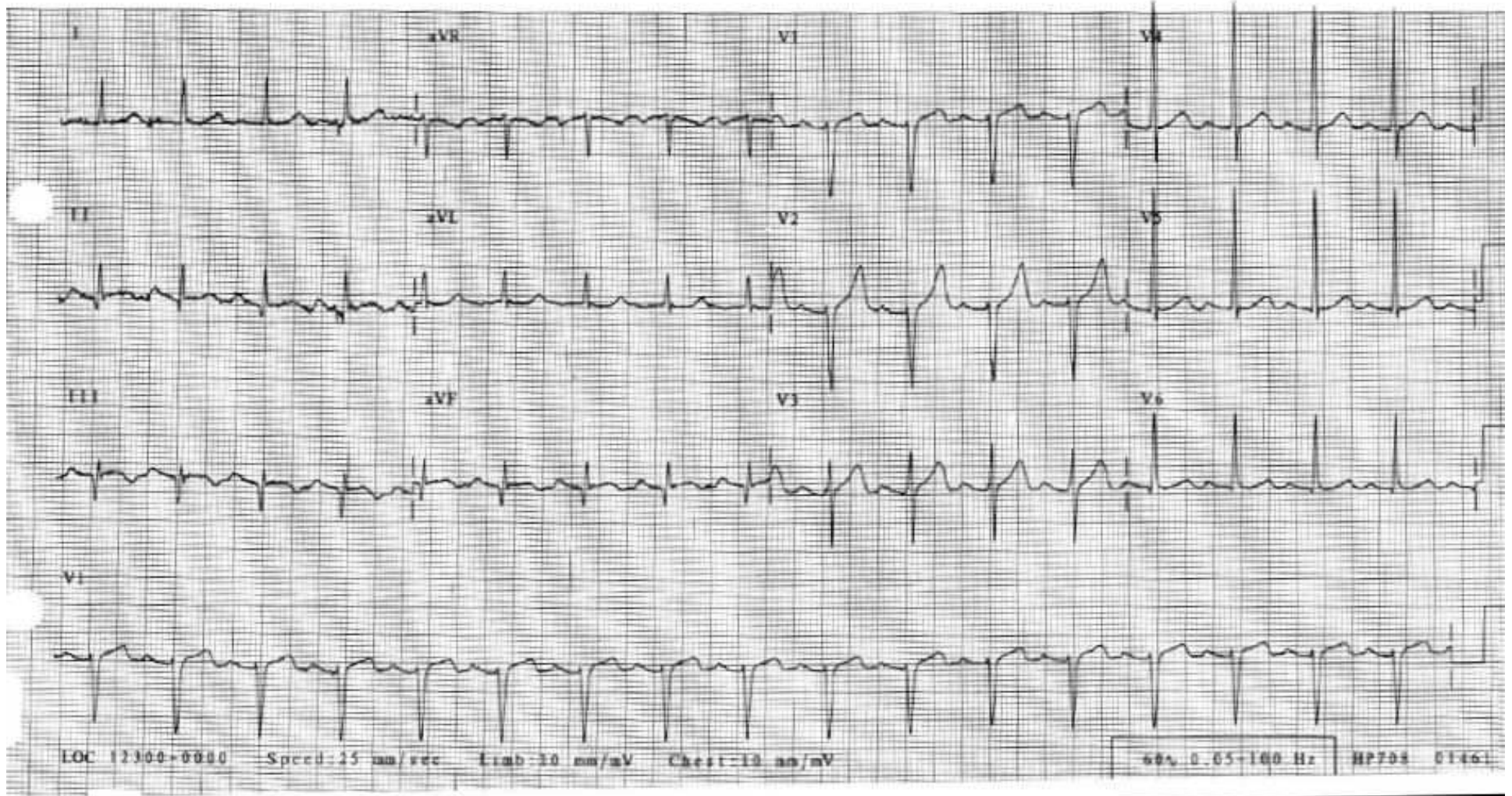
Sinus rhythm
3:1 AV block
Acute inferior injury
? Anteroseptal Q's with injury
STEMI – cath lab

Right Sided EKG

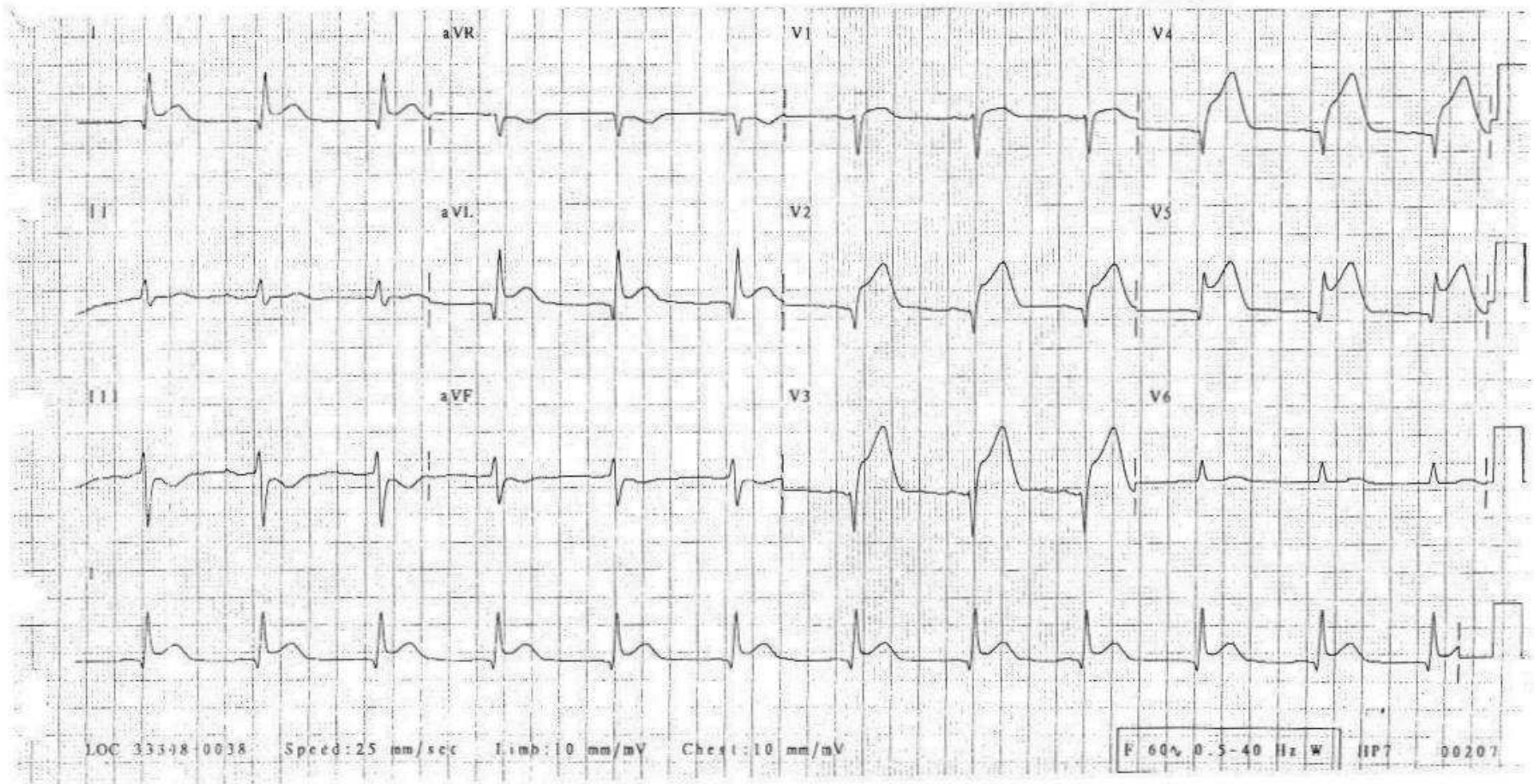


≥ 1 mm ST Elevation in V4 = RV infarction

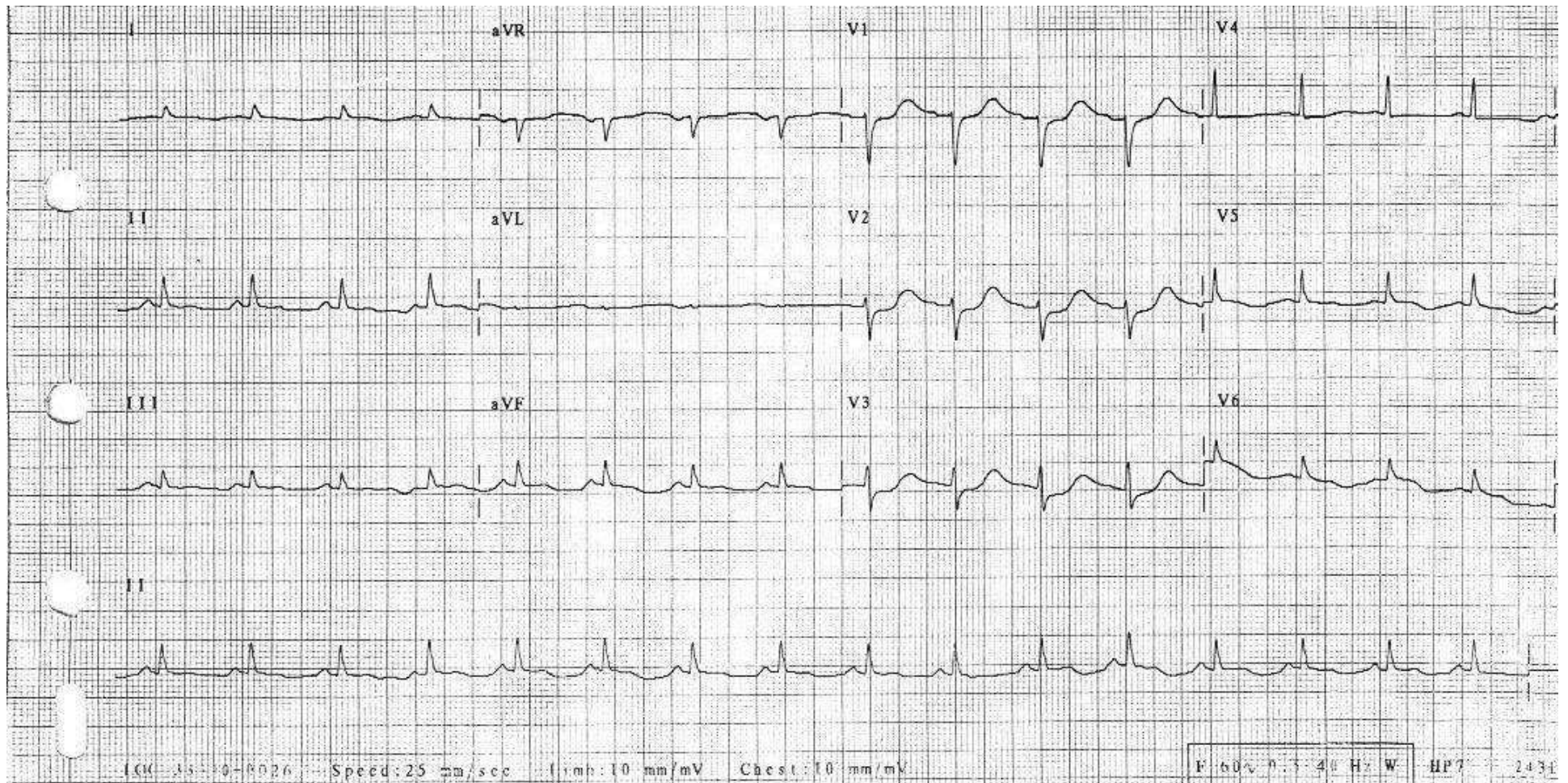
100% mid RCA patent LAD, Cx



Next EKG



Anterolateral injury pattern
STEMI – cath lab



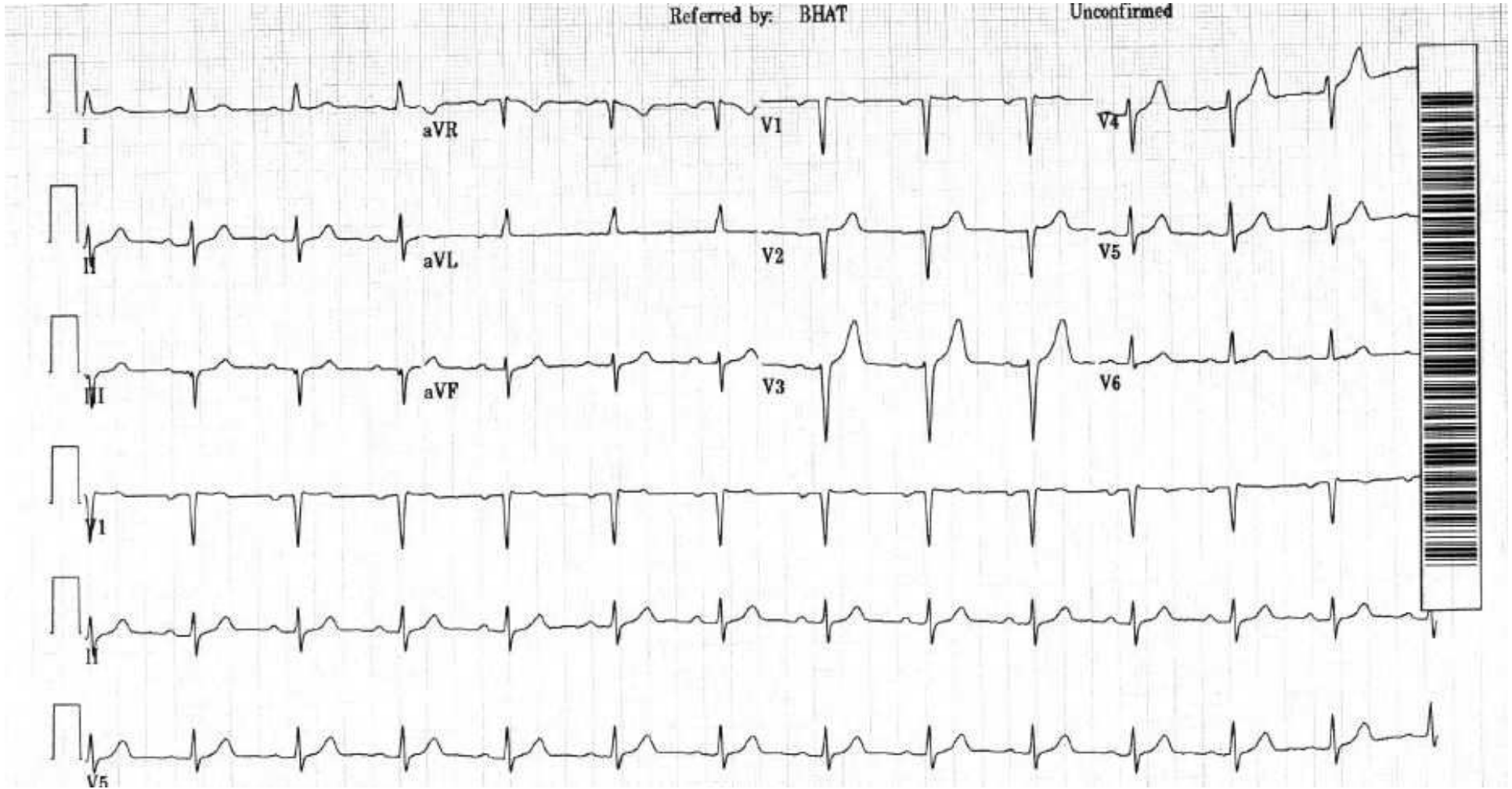
Posterior injury (STEMI)
Vs Anterior ischemia
Favors urgent cath lab
90% RCA, 90% Cx



Old inferior infarct
No specific findings
Admit/observe

Referred by: BHAT

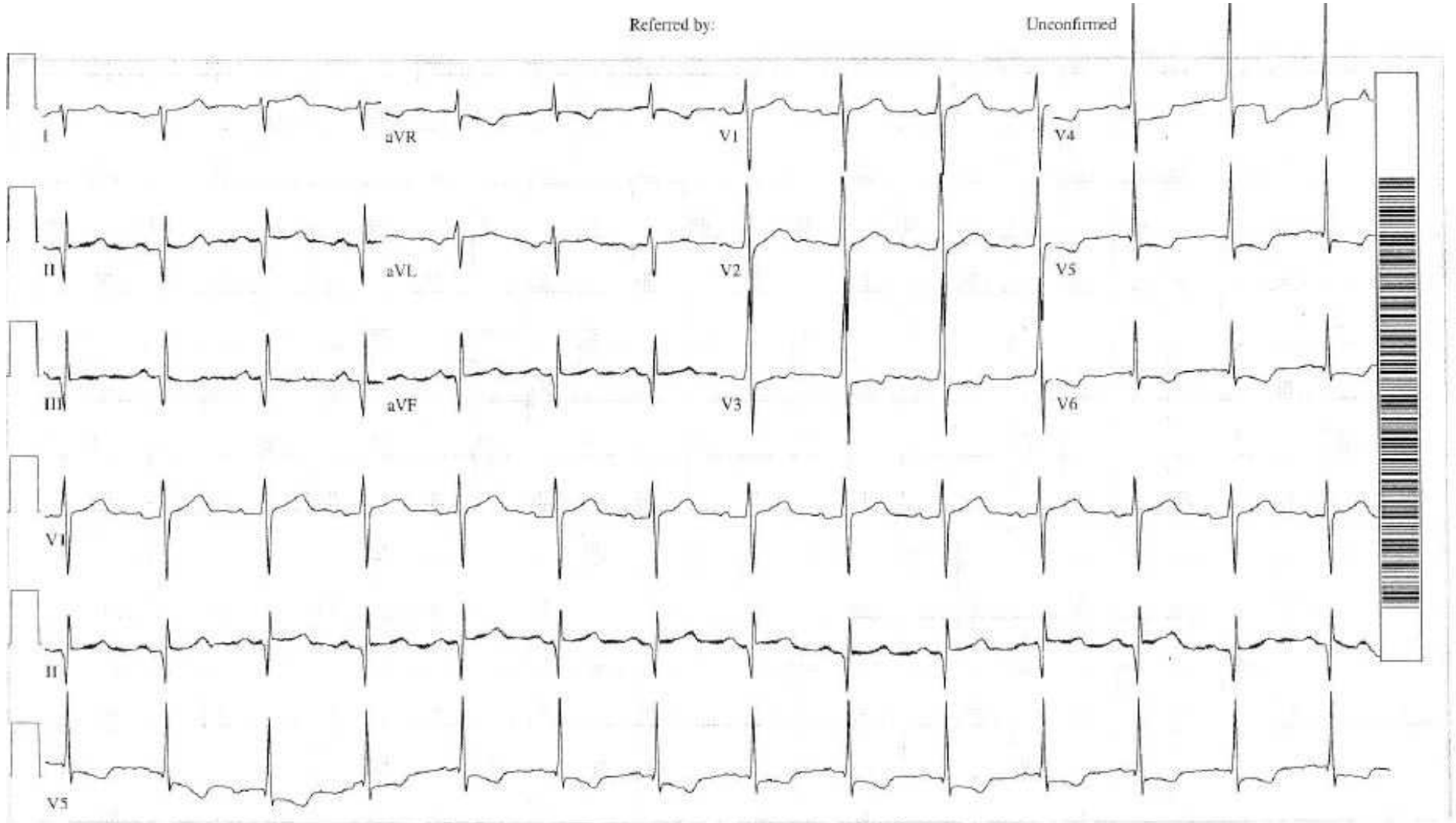
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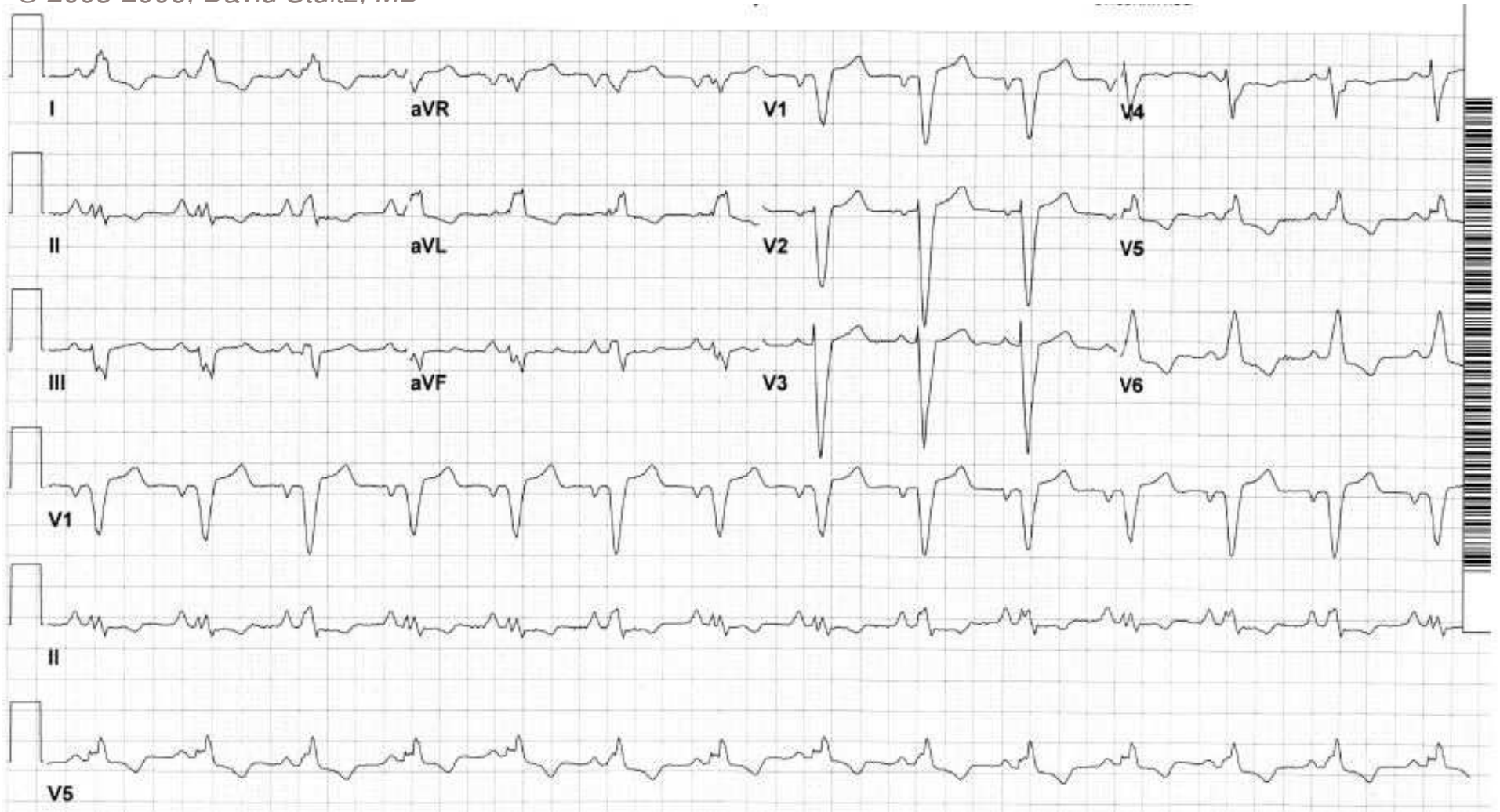
Old anterior infarct
No specific findings
Admit/observe

Referred by:

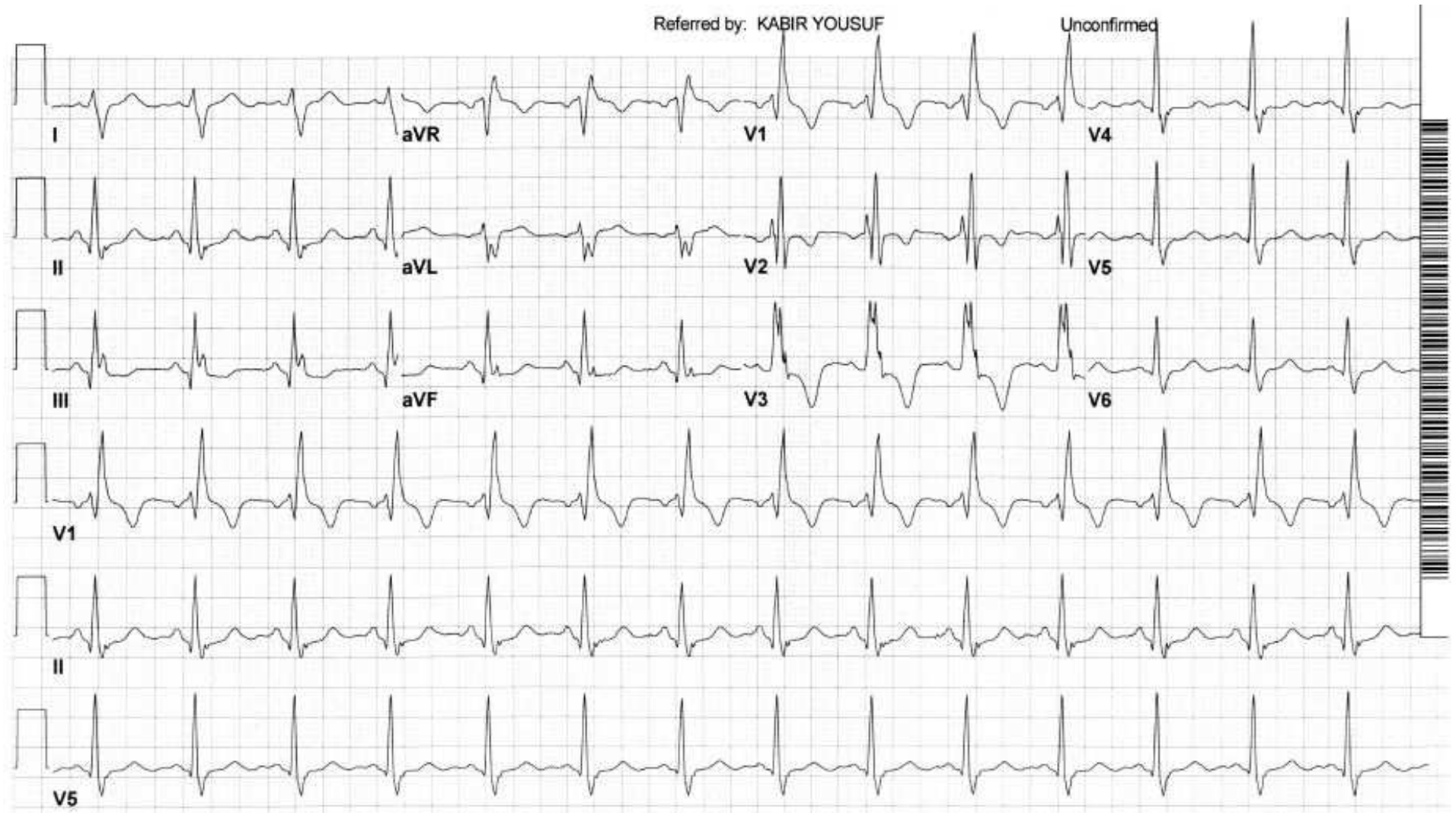
Unconfirmed



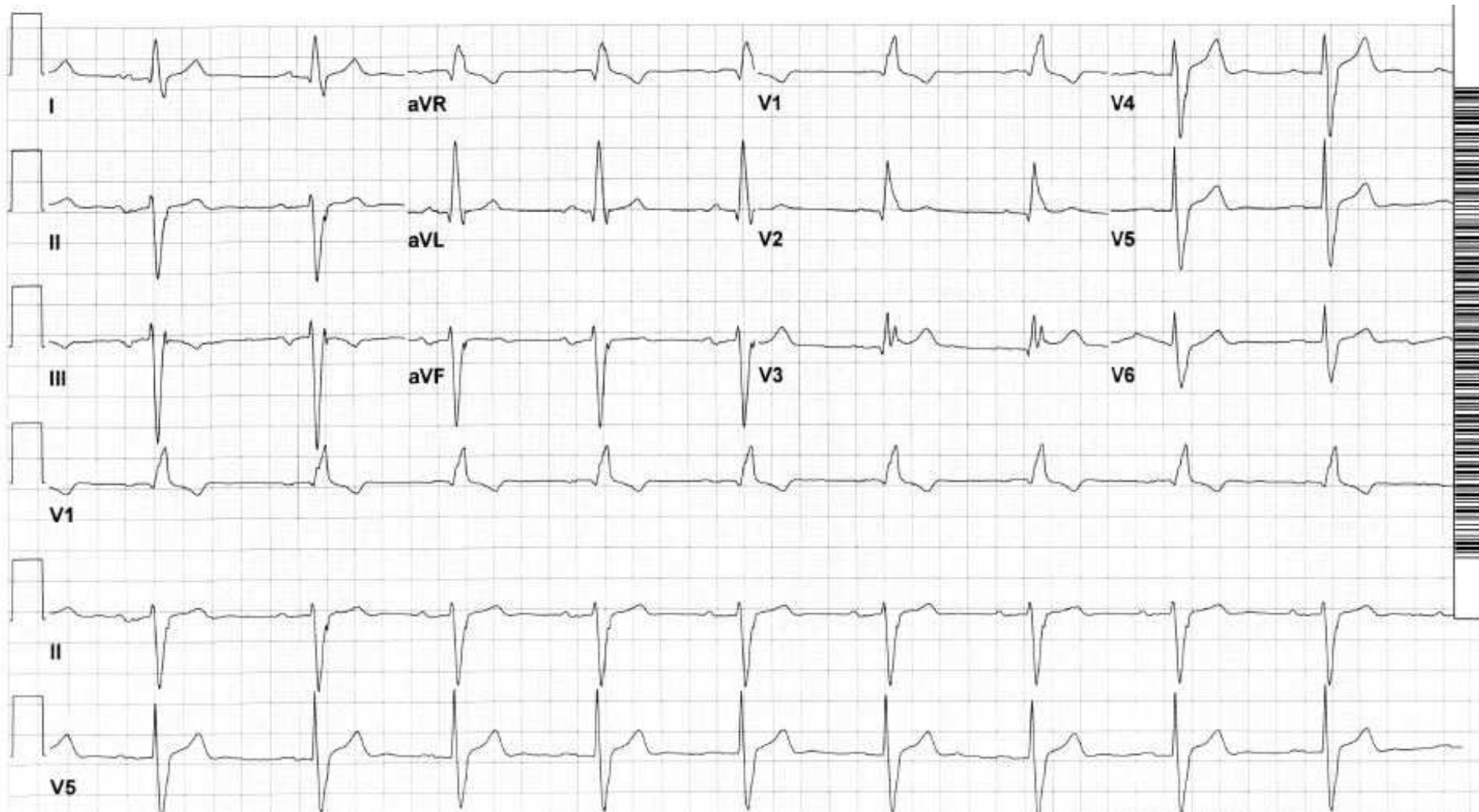
Old inferior infarct
Anterolateral ST depression
NSTEMI/UA – admit for cath in next 48h



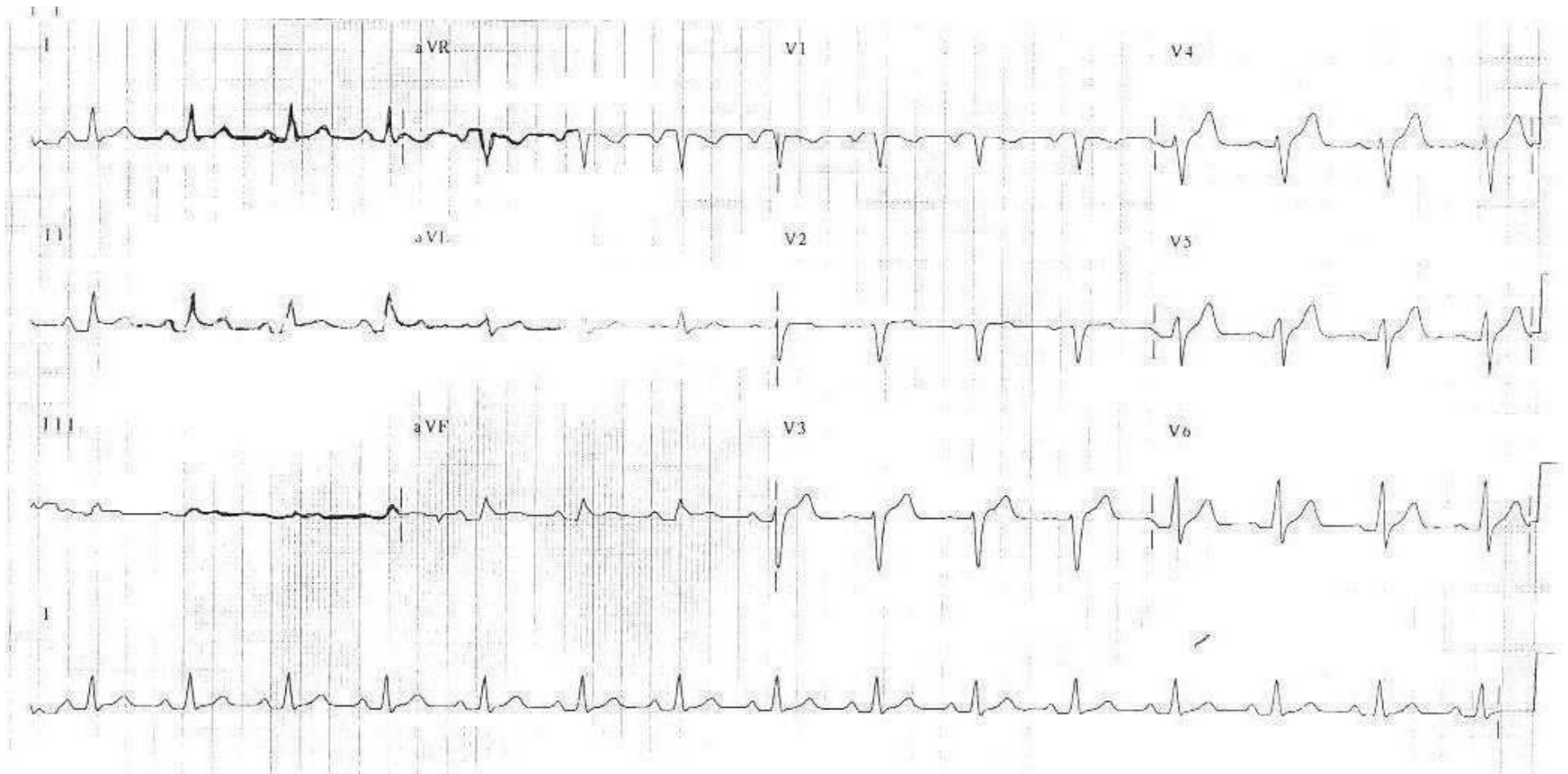
Left Bundle Branch Block
New (or presumed New) LBBB with chest pain is STEMI!
STEMI – urgent to cath lab



Right Bundle branch block with secondary t wave inversions
Right Axis deviation
S1, Q3, T3 pattern
Suspicious for pulmonary embolism



Sinus bradycardia
RBBB with secondary ST-T changes
LAFB
LVH
1mm ST elevation in V3 only
No diagnostic findings of ACS
Admit/observe



PR depression in lead II
Pericarditis

Summary of Chest Pain EKG's

- STEMI
 - ST elevation of 1mm or more in 2 or more anatomical leads
 - “convex pattern
 - R in lead V1 with flat ST depression V1-V3 = posterior infarction
 - New left bundle branch block with chest pain
- NSTEMI/UA
 - ST depression
 - T wave inversions
 - T wave flattening
- Pericarditis – diffuse ST elevation with PR depression (esp in lead II)
- Pulmonary embolism – suspect with RBBB and Right Axis

Other high yield EKG's

Rate 80
PR 139
QRSD 127
QT 398
QTc 459

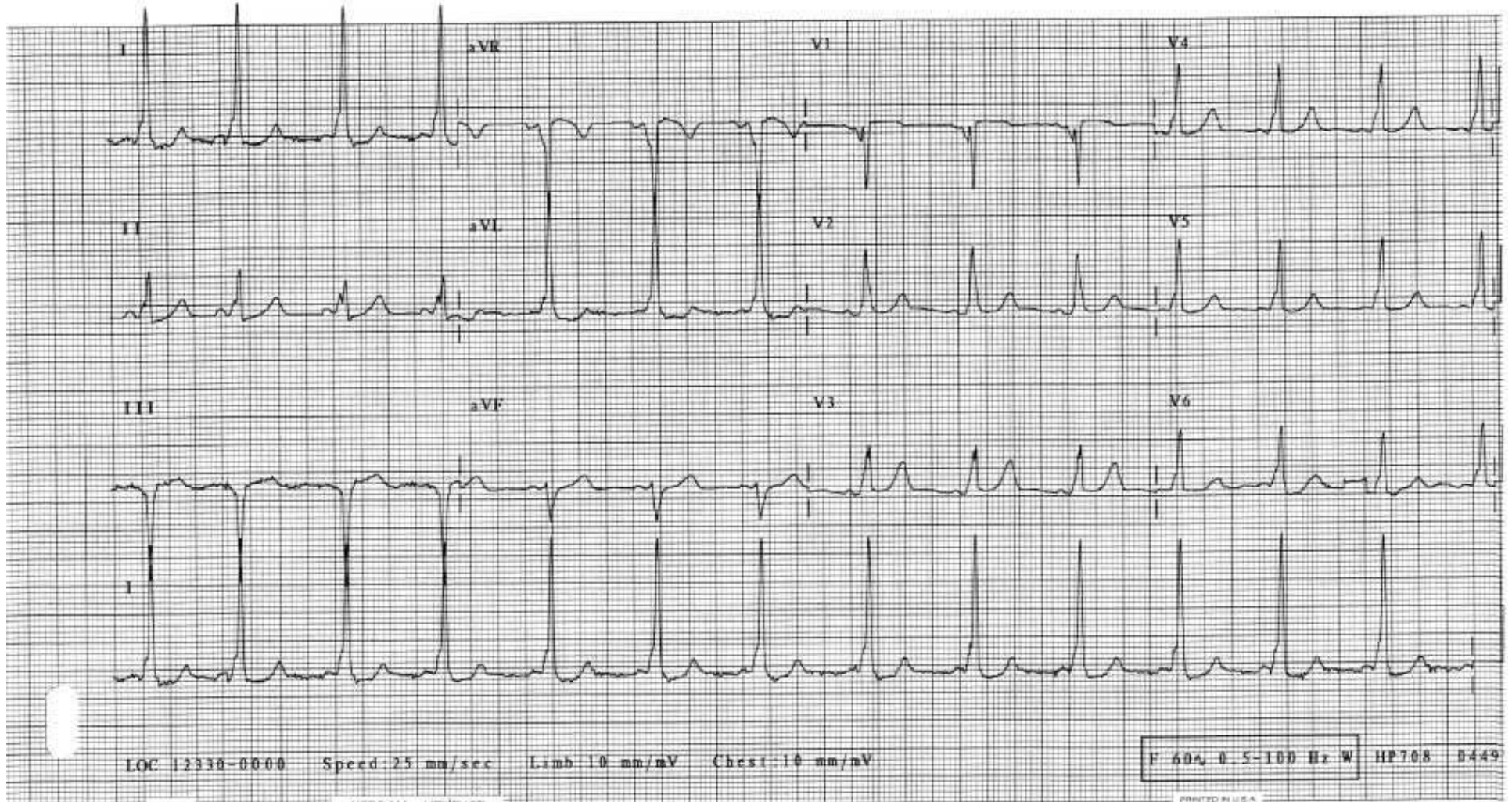
--AXIS--
P 88
QRS -13
T 61

35 yo Asymptomatic female

requested by:

- ABNORMAL ECG -

PRELIMINARY-MD MUST REVIEW



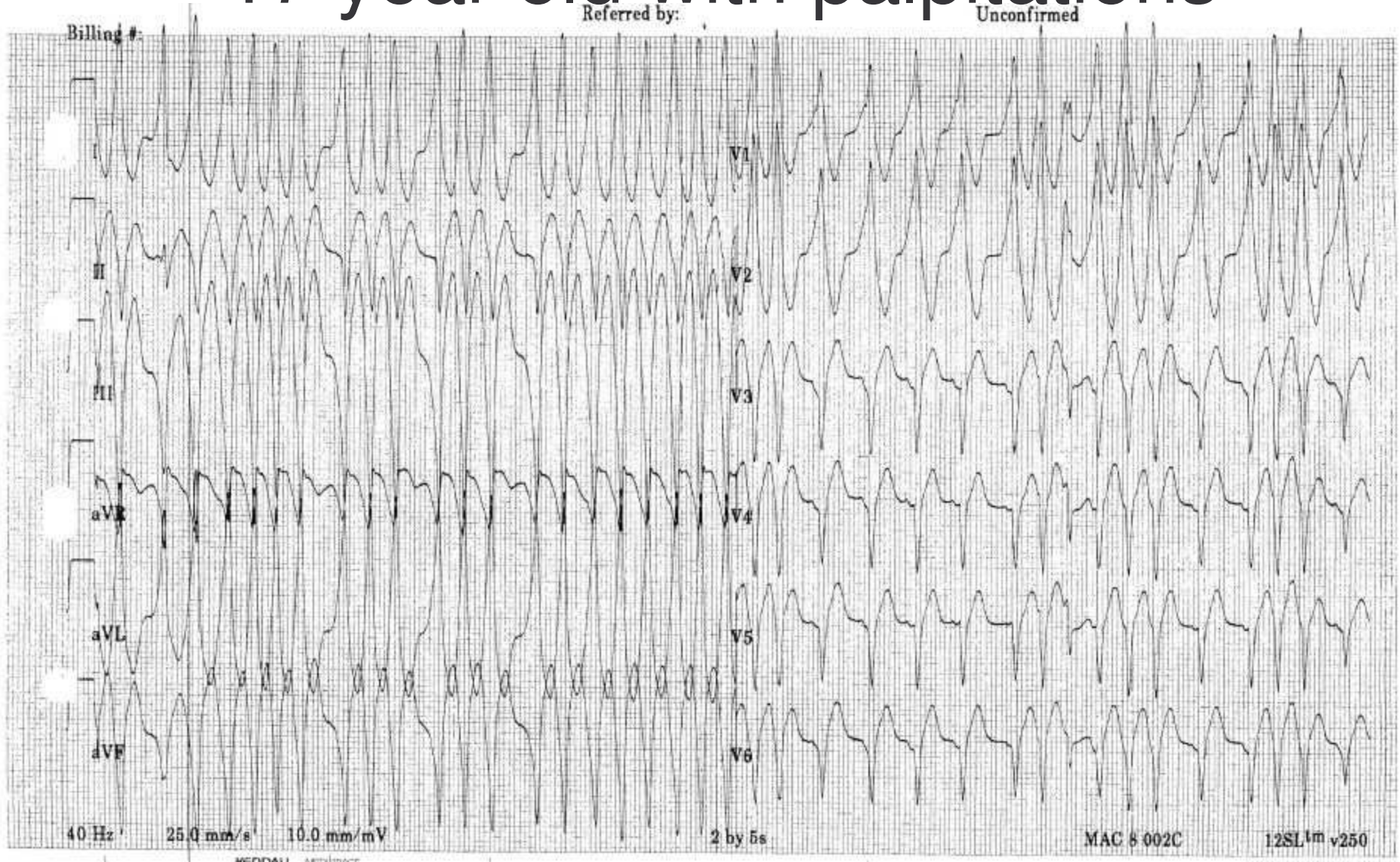
What is your next step in workup? (Boards perspective)

- A. Electrophysiologic (EP) study +/- ablation
- B. Cardiac catheterization
- C. Holter monitor
- D. Tilt Table
- E. Nothing/reassurance

17 year old with palpitations

Referred by:

Unconfirmed



Atrial Fibrillation

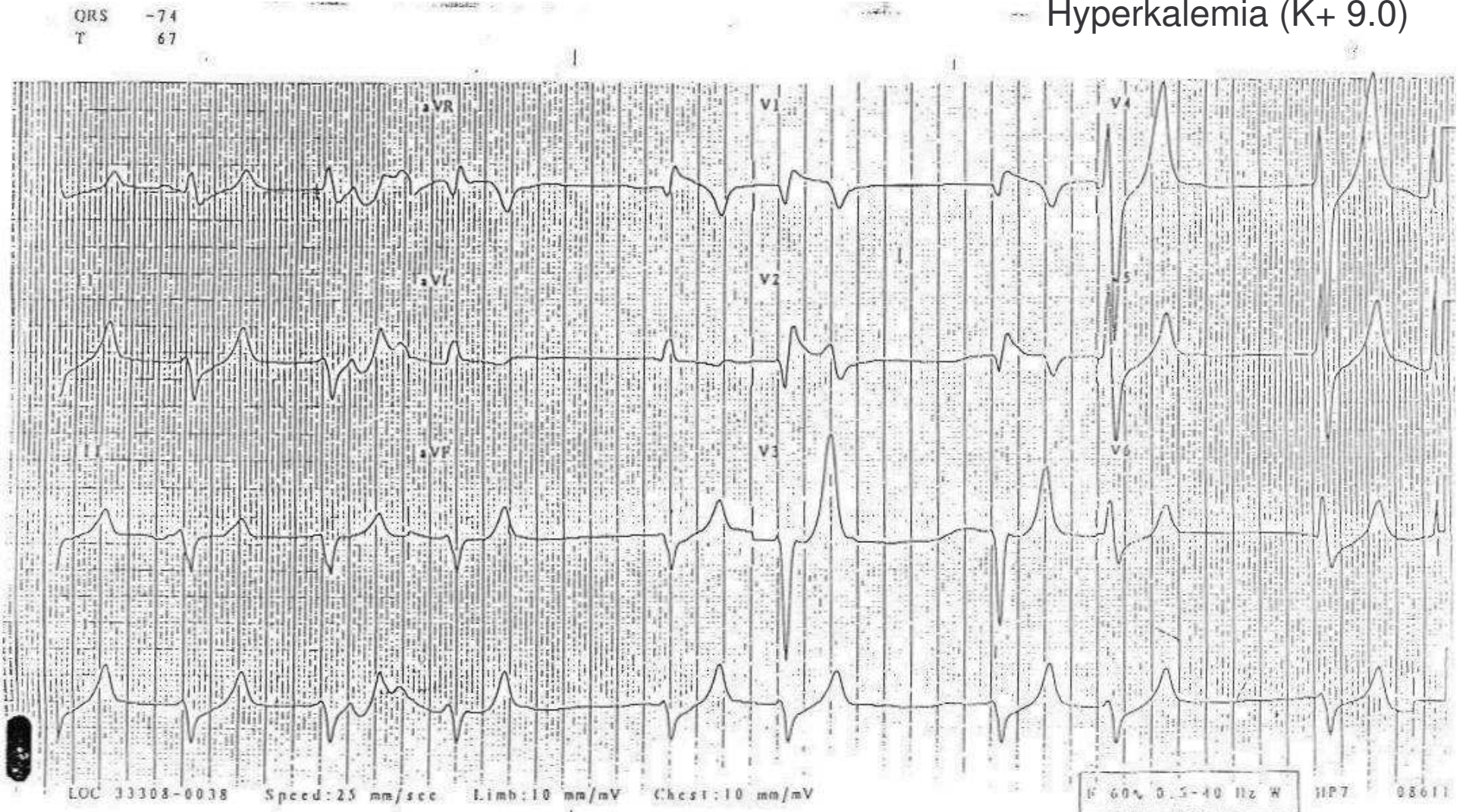
WPW – wide complex, irregular tachycardia

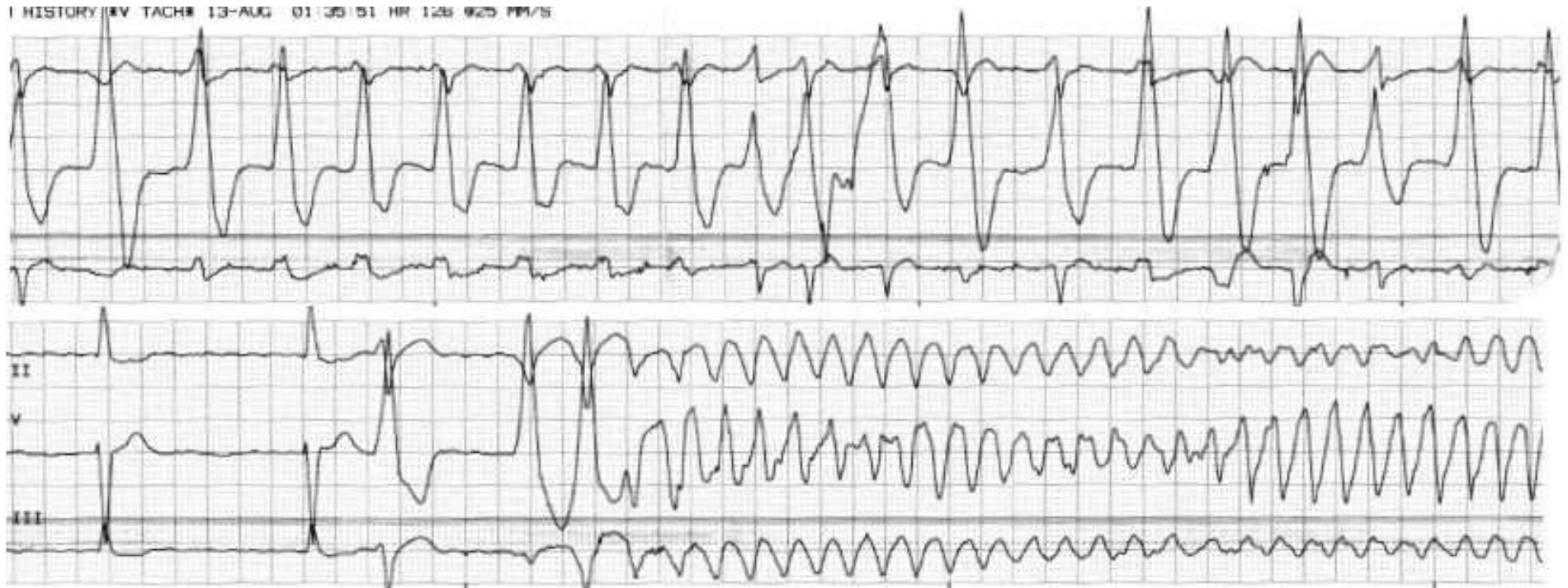
Procainamide

Treatment??

49 yo with DM, HTN, ESRD/HD with 2 hours nausea

Hyperkalemia (K⁺ 9.0)





Polymorphic VT
Torsades de Pointes