

# Interpretation of ECGs

## GP CME 2009

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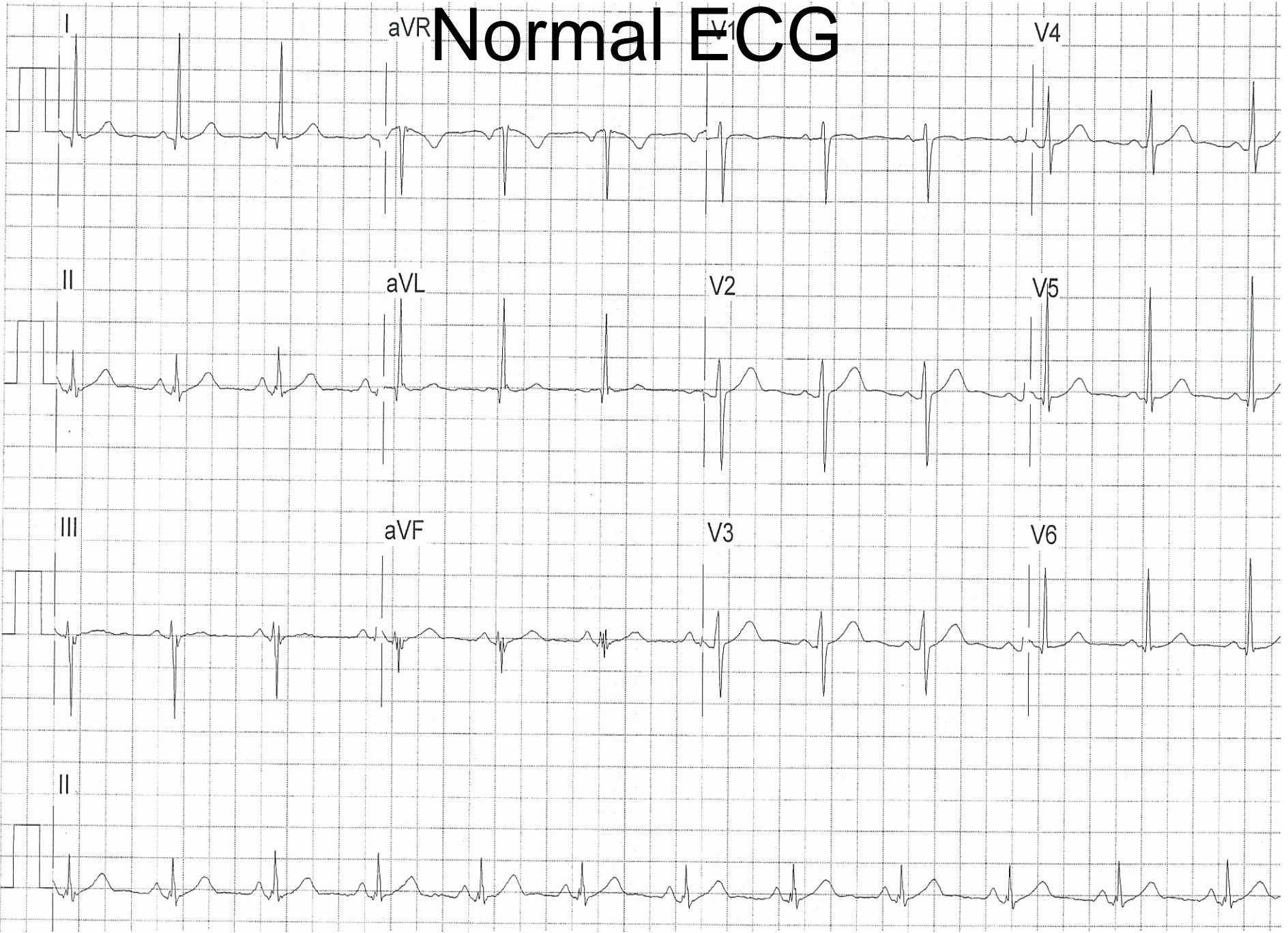
# The Normal ECG

- Correct paper speed 25mm/s
- Calibrated machine
- Correct lead positioning
- Minimal background interference
- 3 complexes/lead
- Rhythm strip
- Avoid signal averaging

# Normal ECG

- Rate
- Rhythm
- Intervals PR, QRS (BBB), QT
- Axis
- Other changes

# Normal ECG



# ECGs - Rate

Normal    50 – 90

Fast       >90

Slow      <50

# ECG - Normal Rate

Rhythm

Regular

Sinus

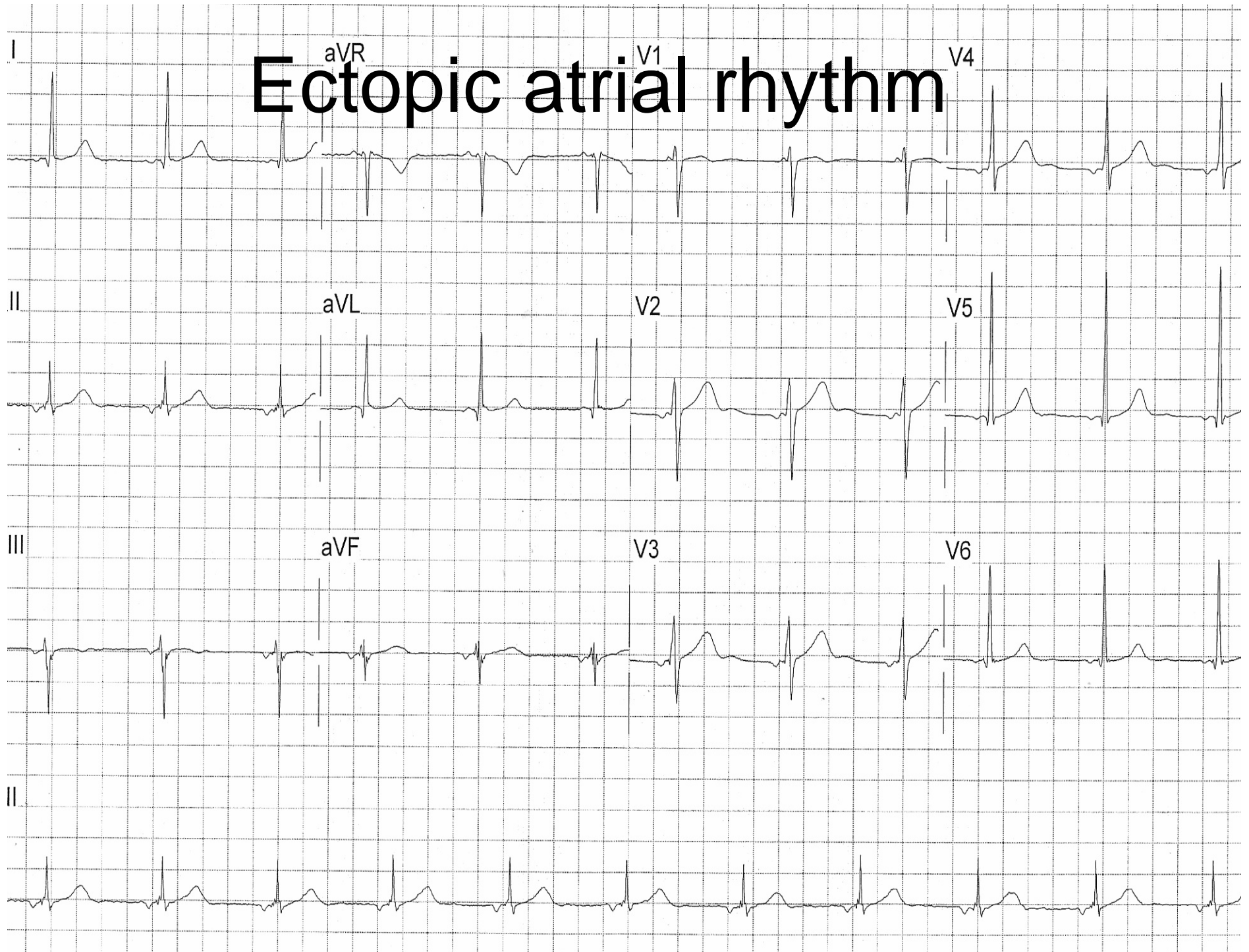
Ectopic atrial

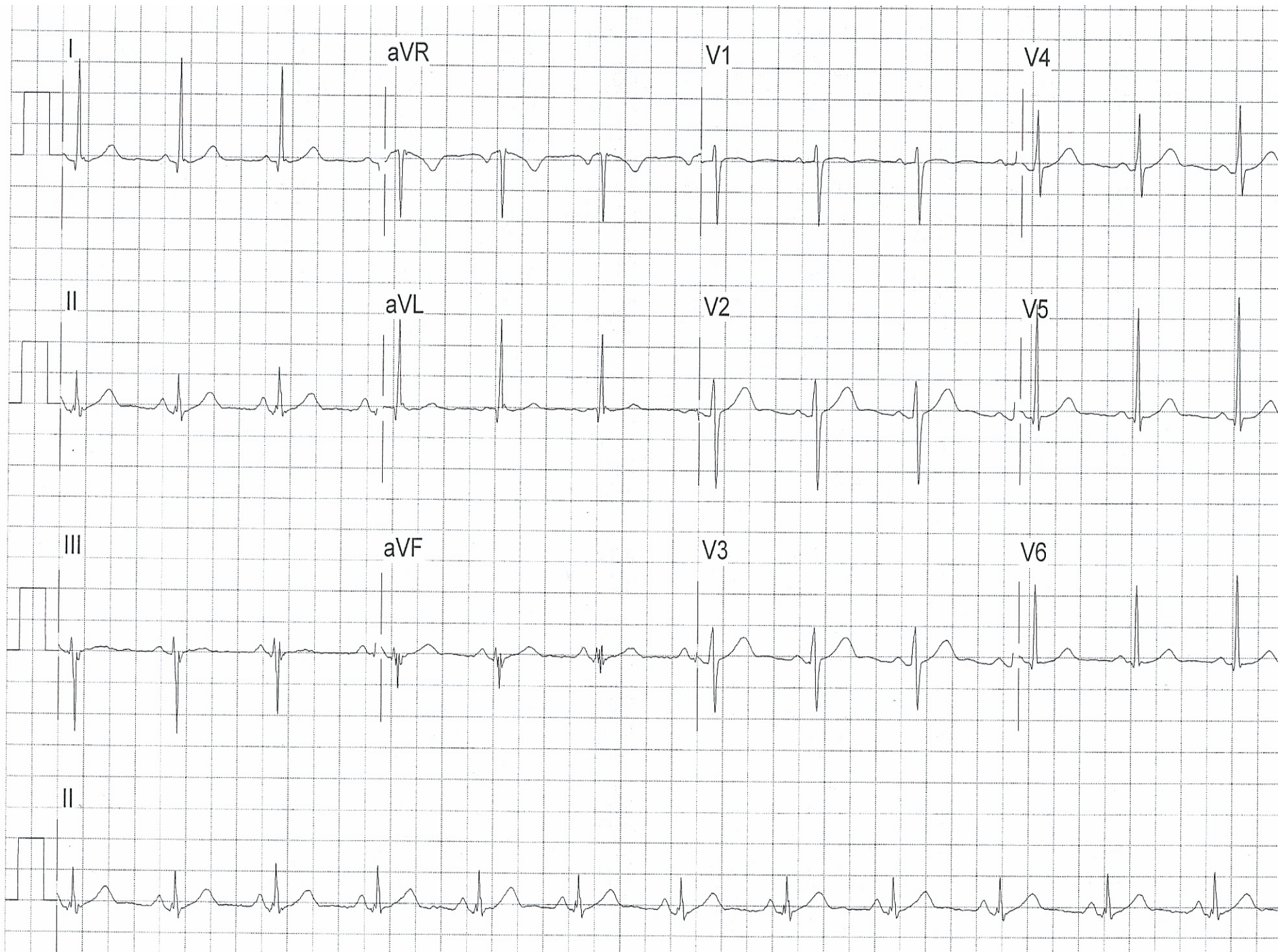
Irregular

Ectopics

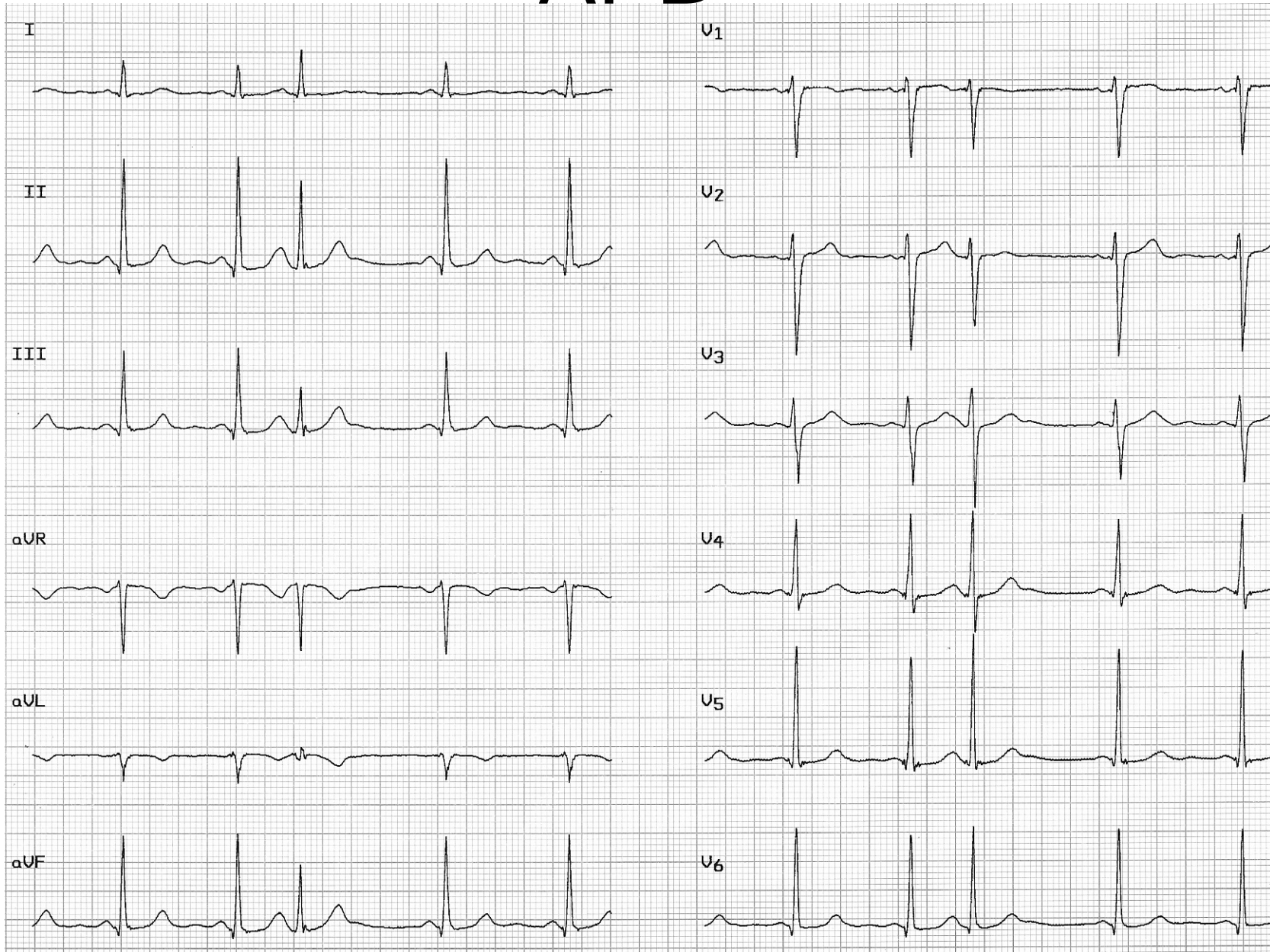
Atrial fibrillation

# Ectopic atrial rhythm





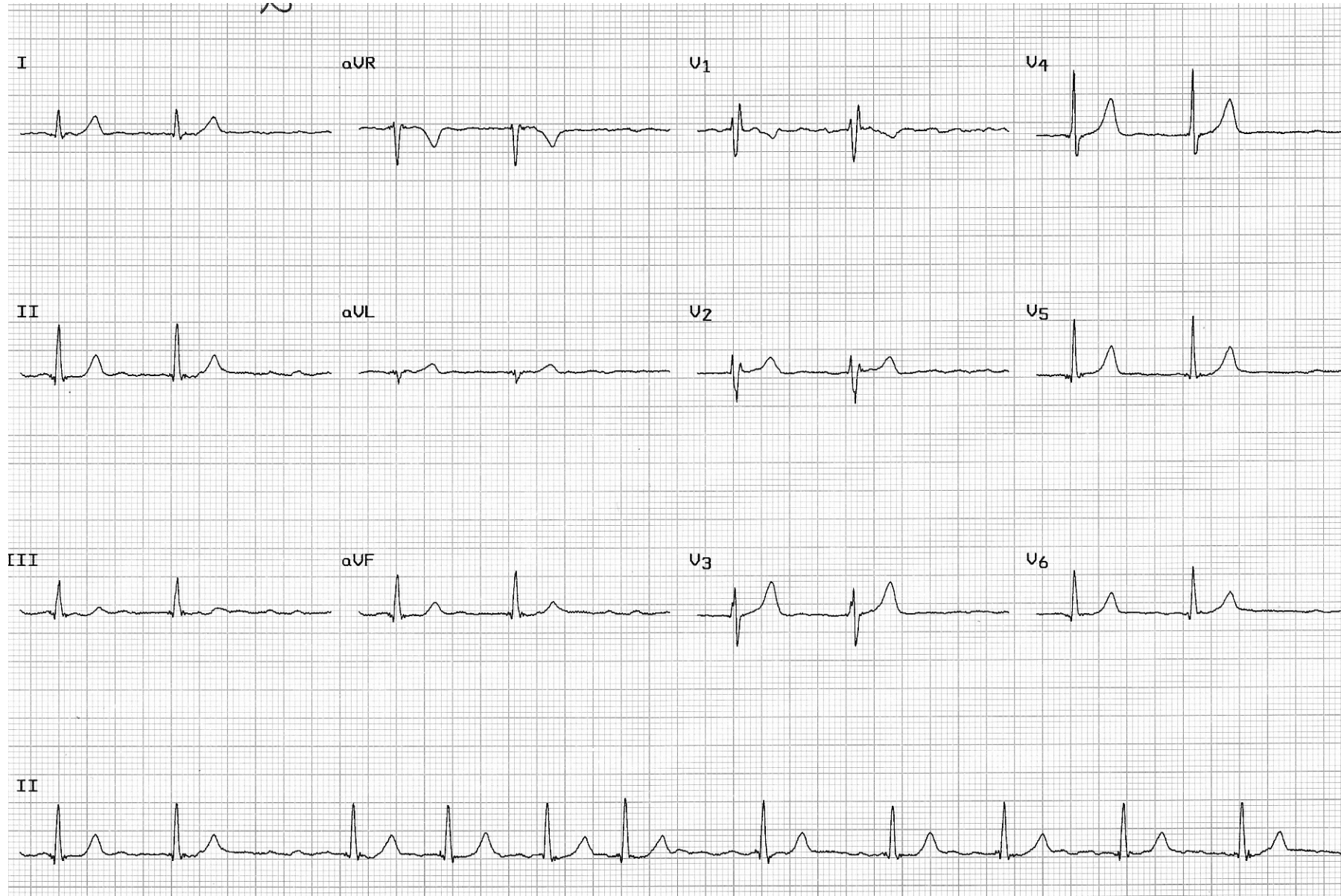
# APB



# VPBs



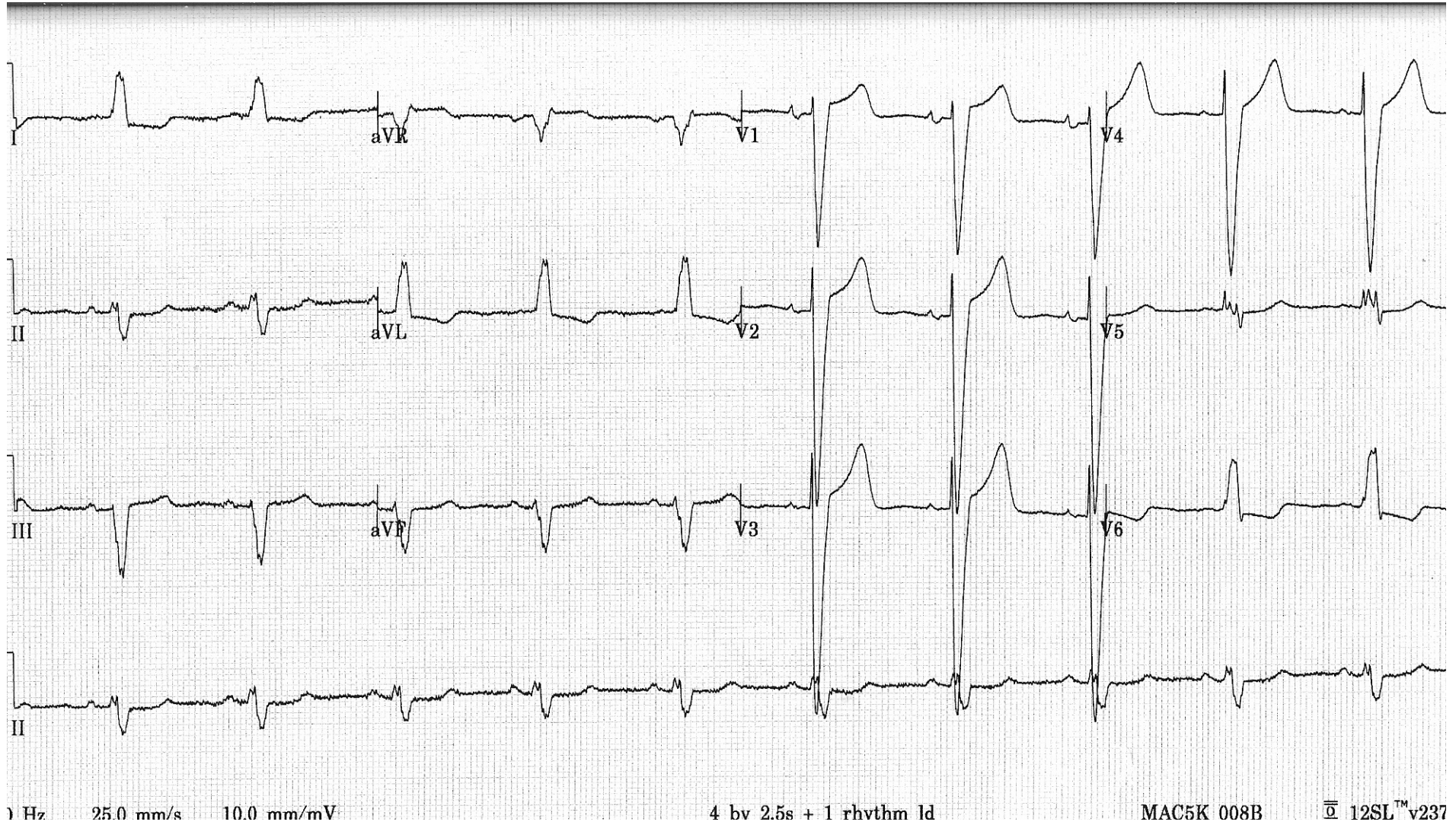
# Atrial Fibrillation



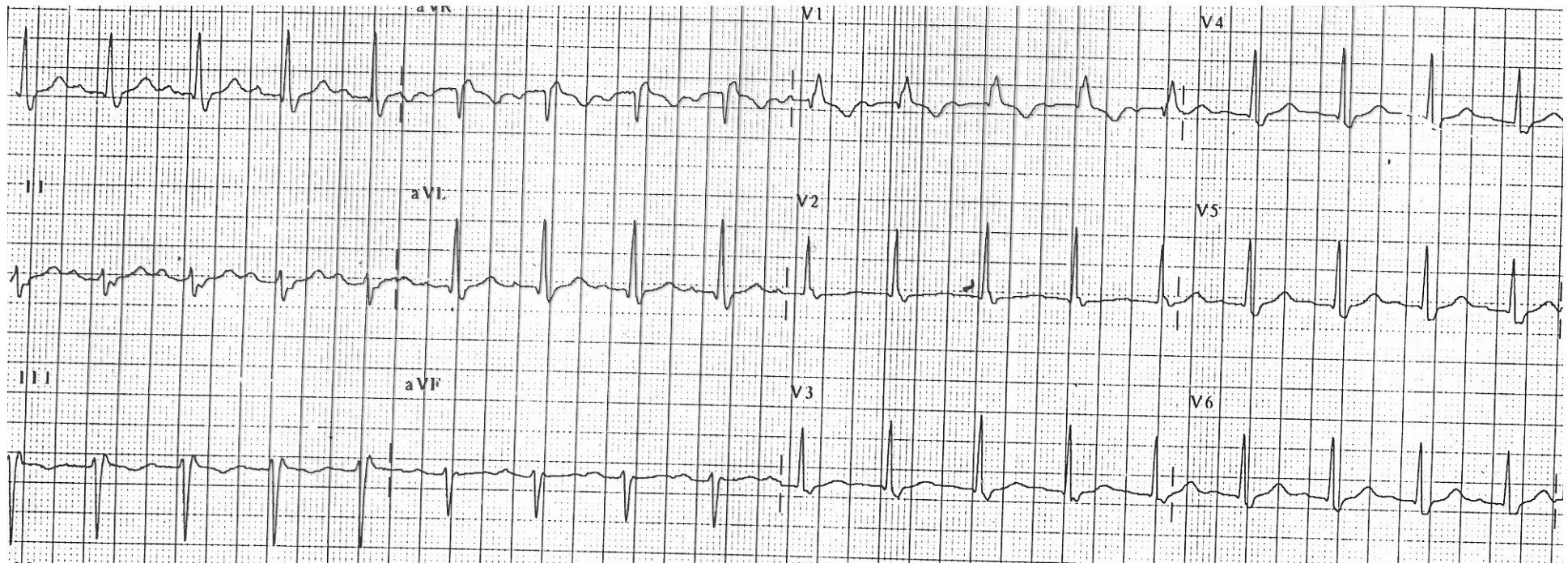
# Intervals

- Is the PR interval normal? (0.16s)
  - Prolonged 1°HB
- Is the QRS normal? (0.12s)
  - Prolonged LBBB/RBBB
- Is the QT normal?

# LBBB



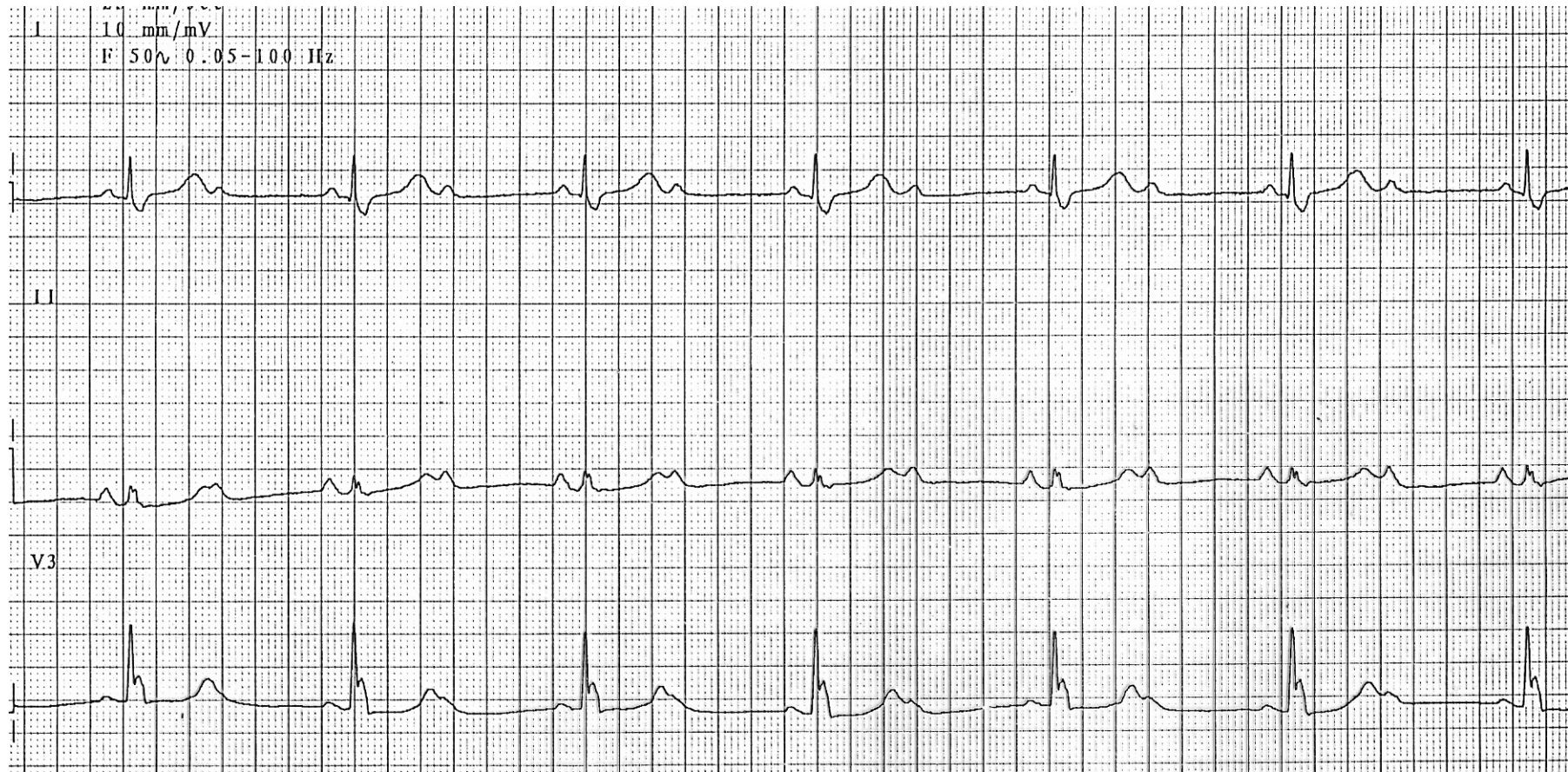
# RBBB LAH 1°HB



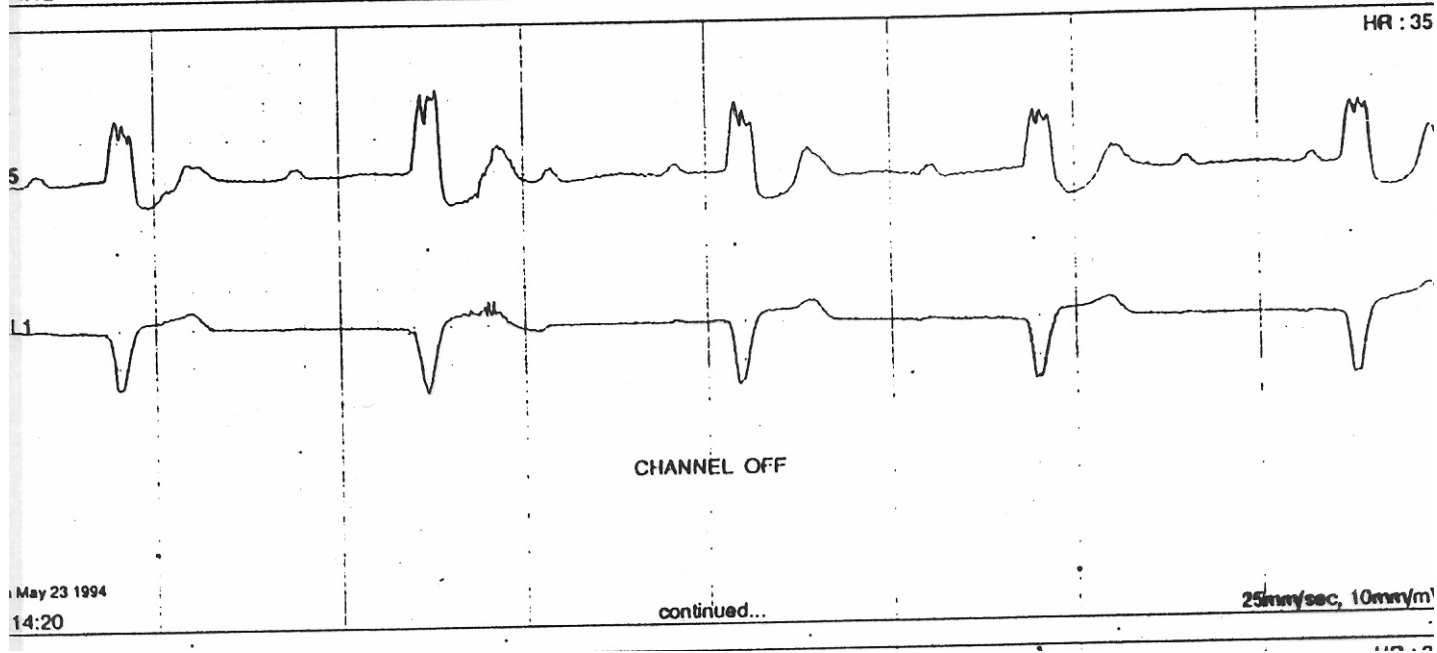
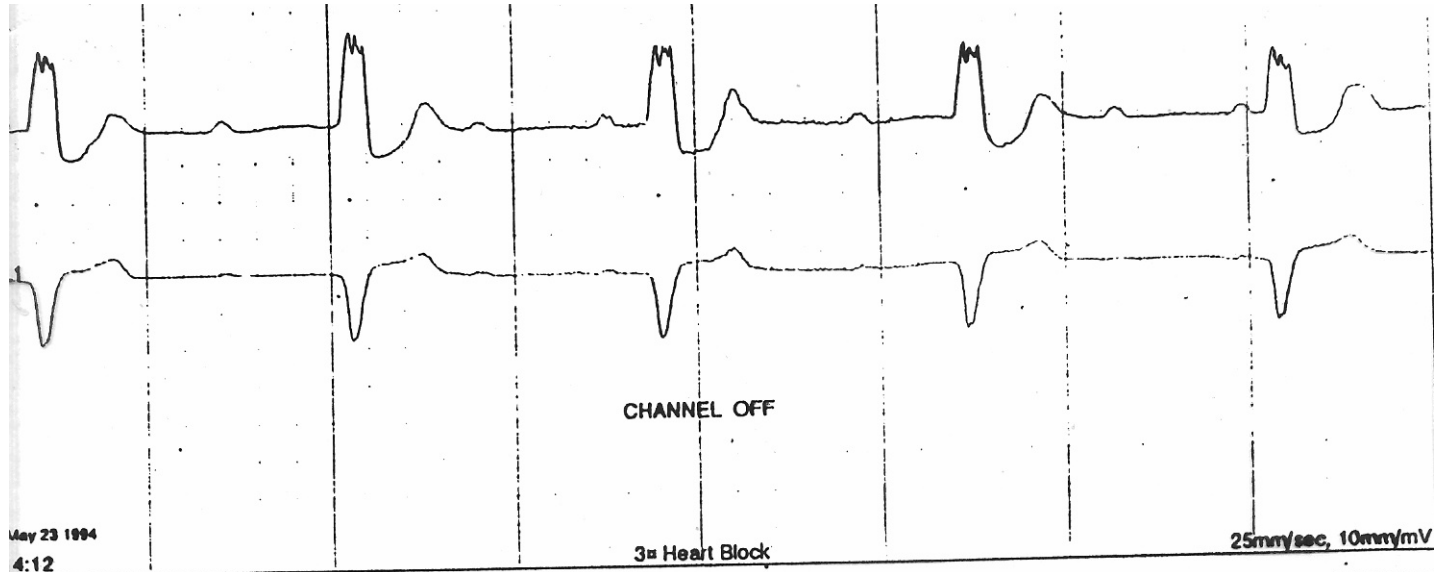
# Bradycardia

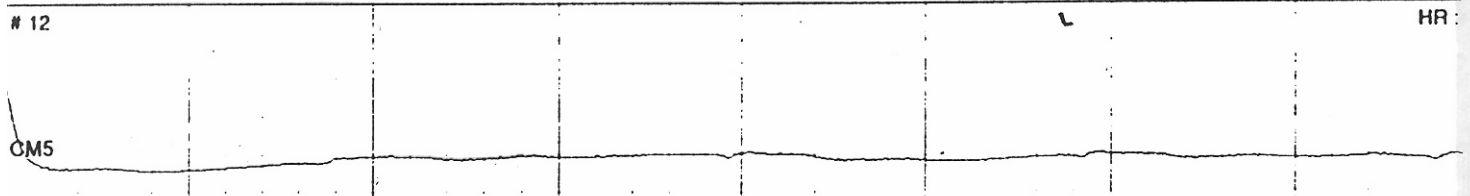
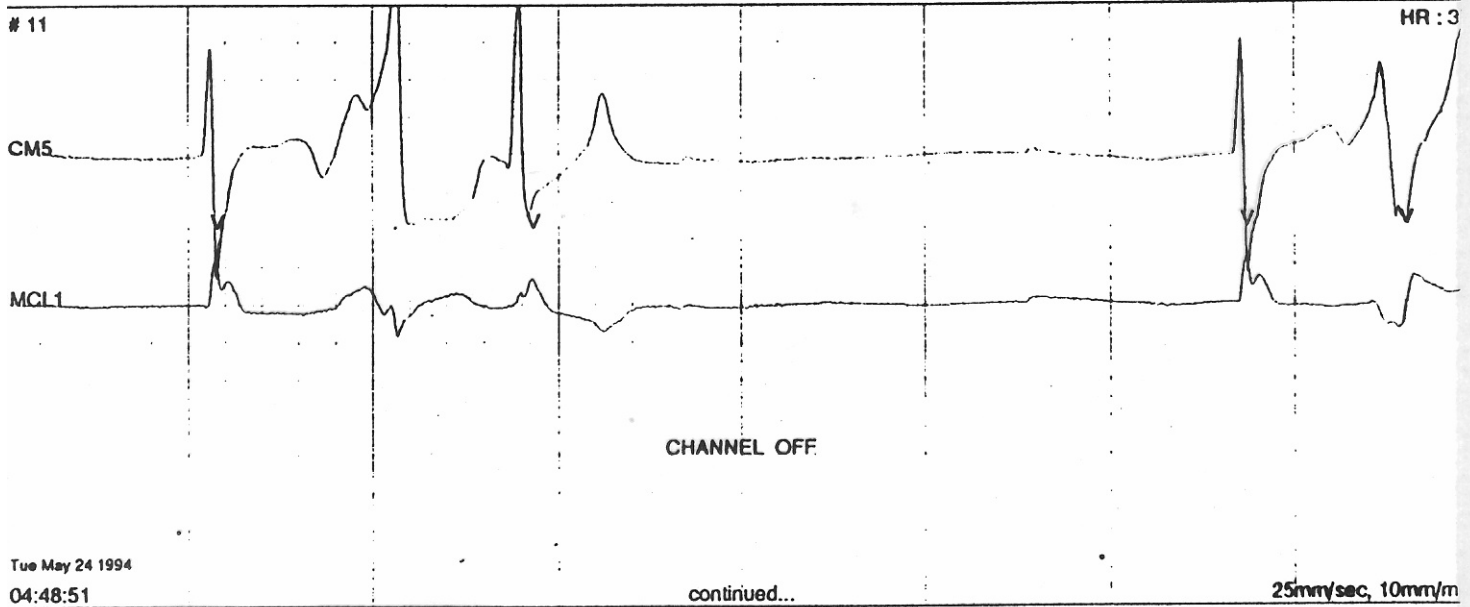
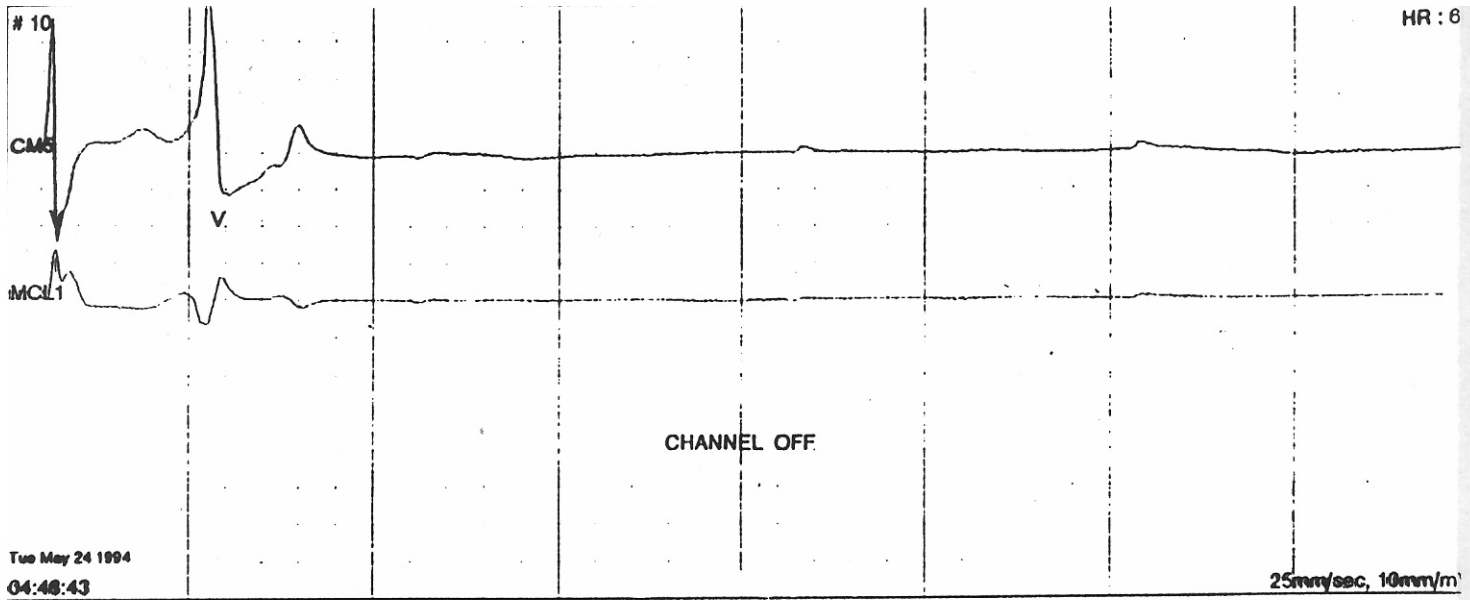
- Sinus bradycardia
- Heart Block

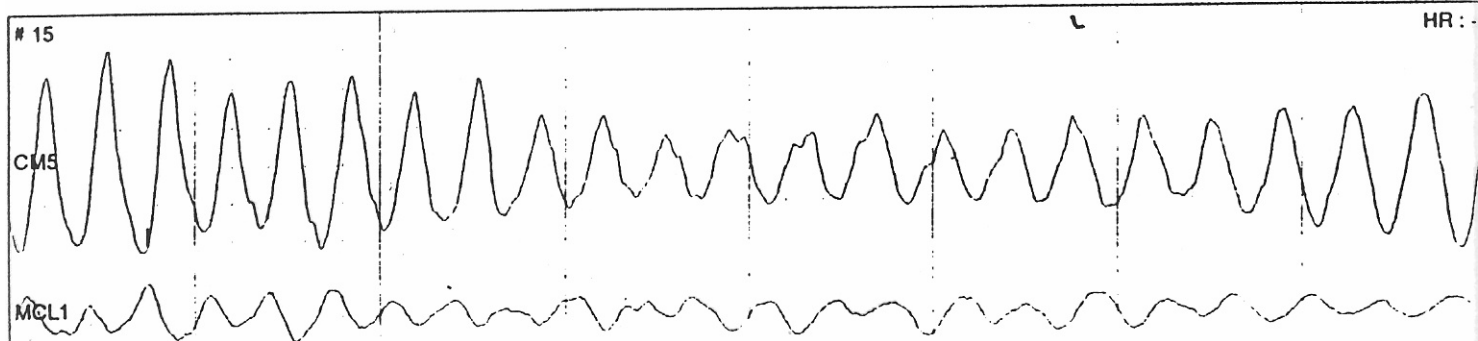
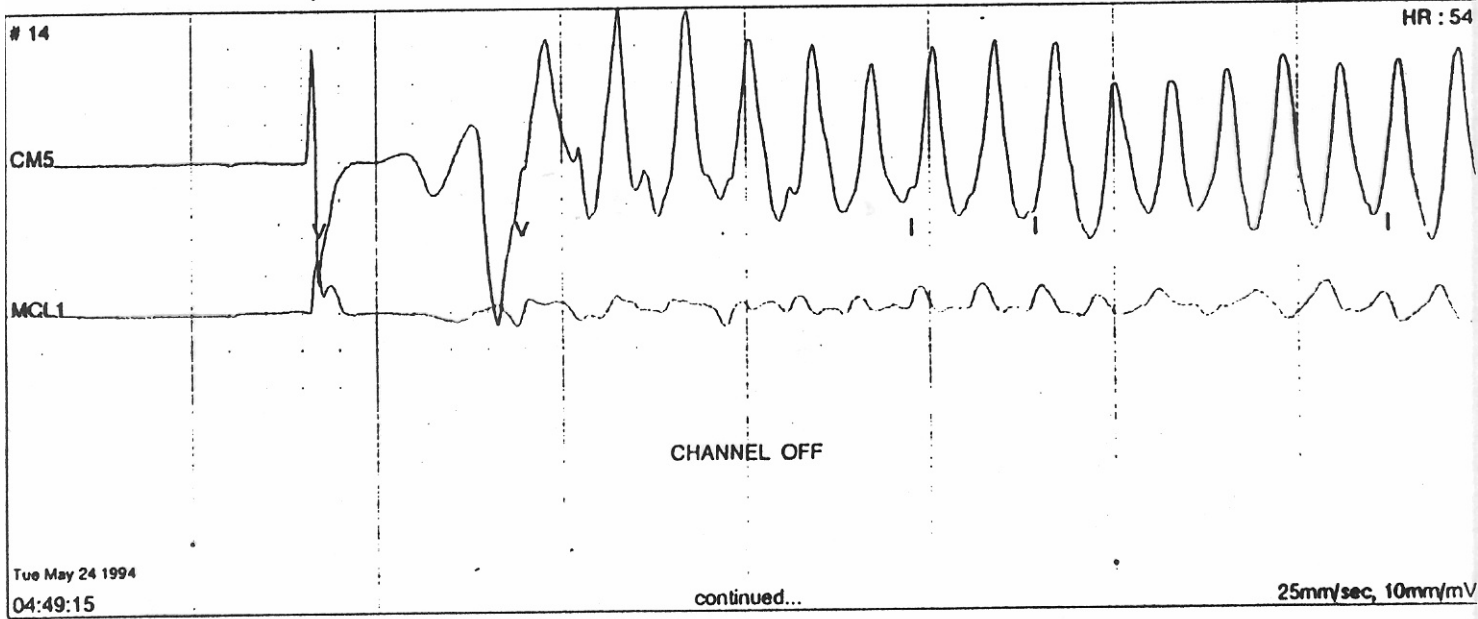
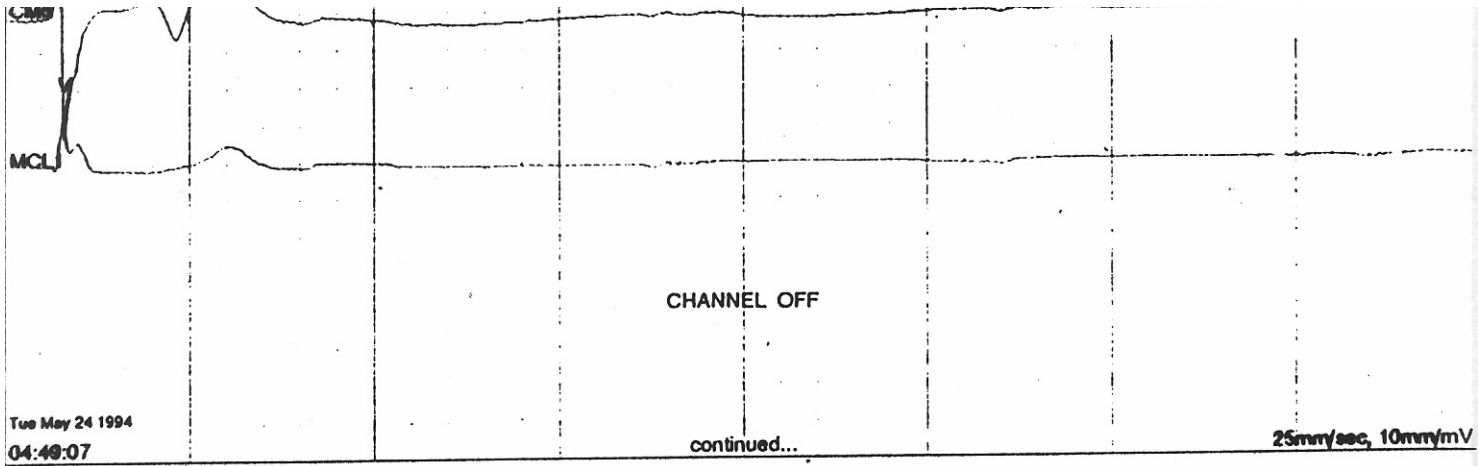
# 2<sup>nd</sup> Degree Heart Block



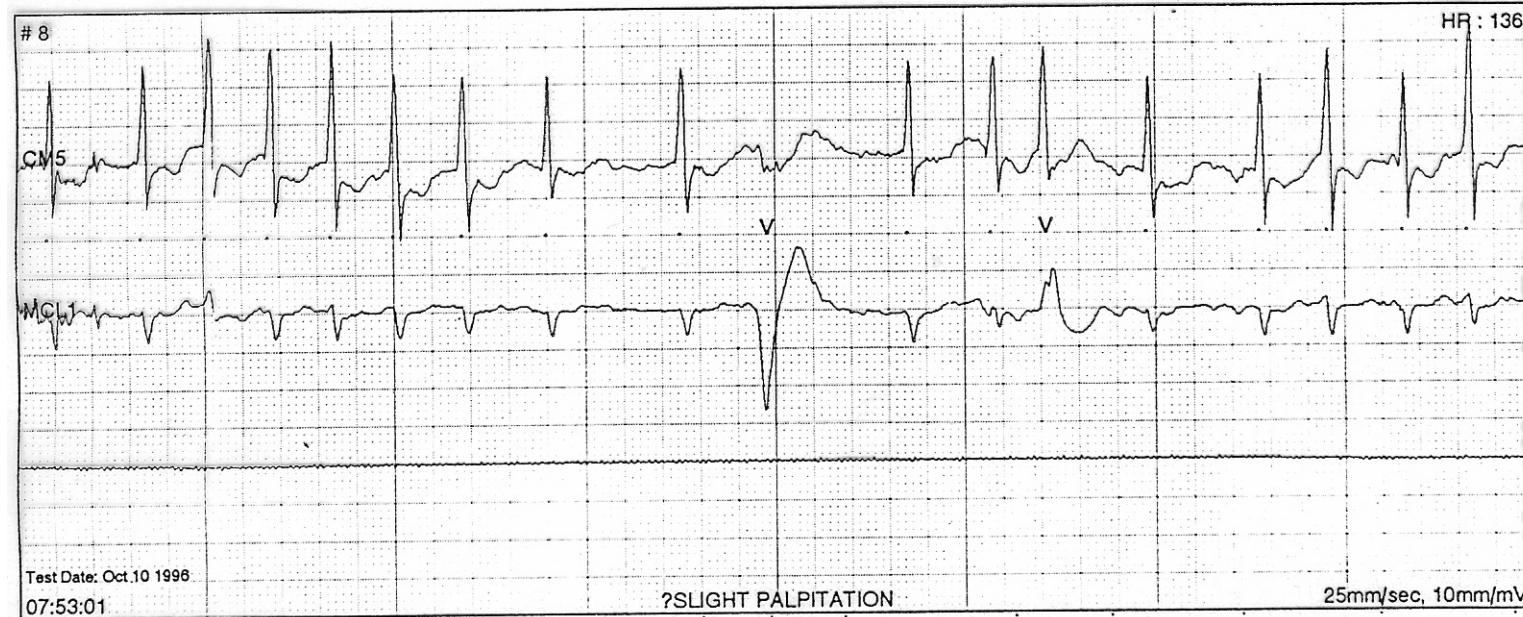
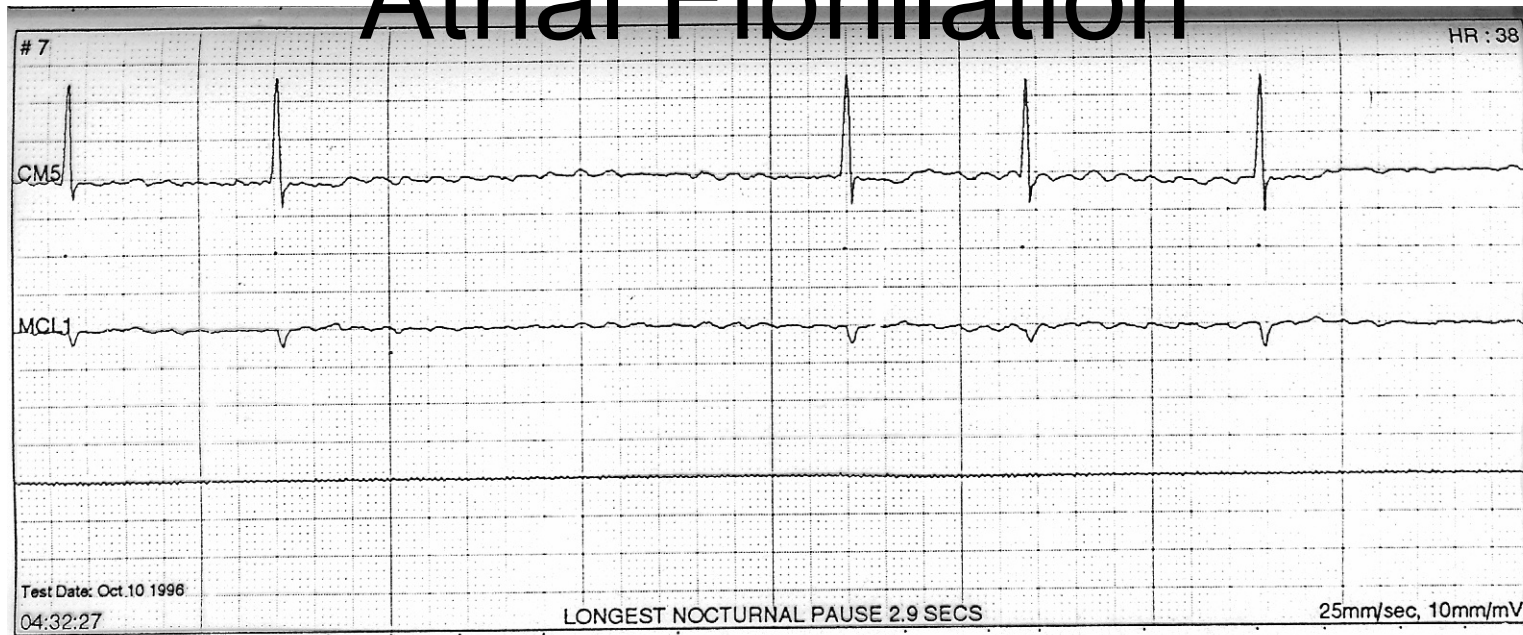
# Complete Heart Block



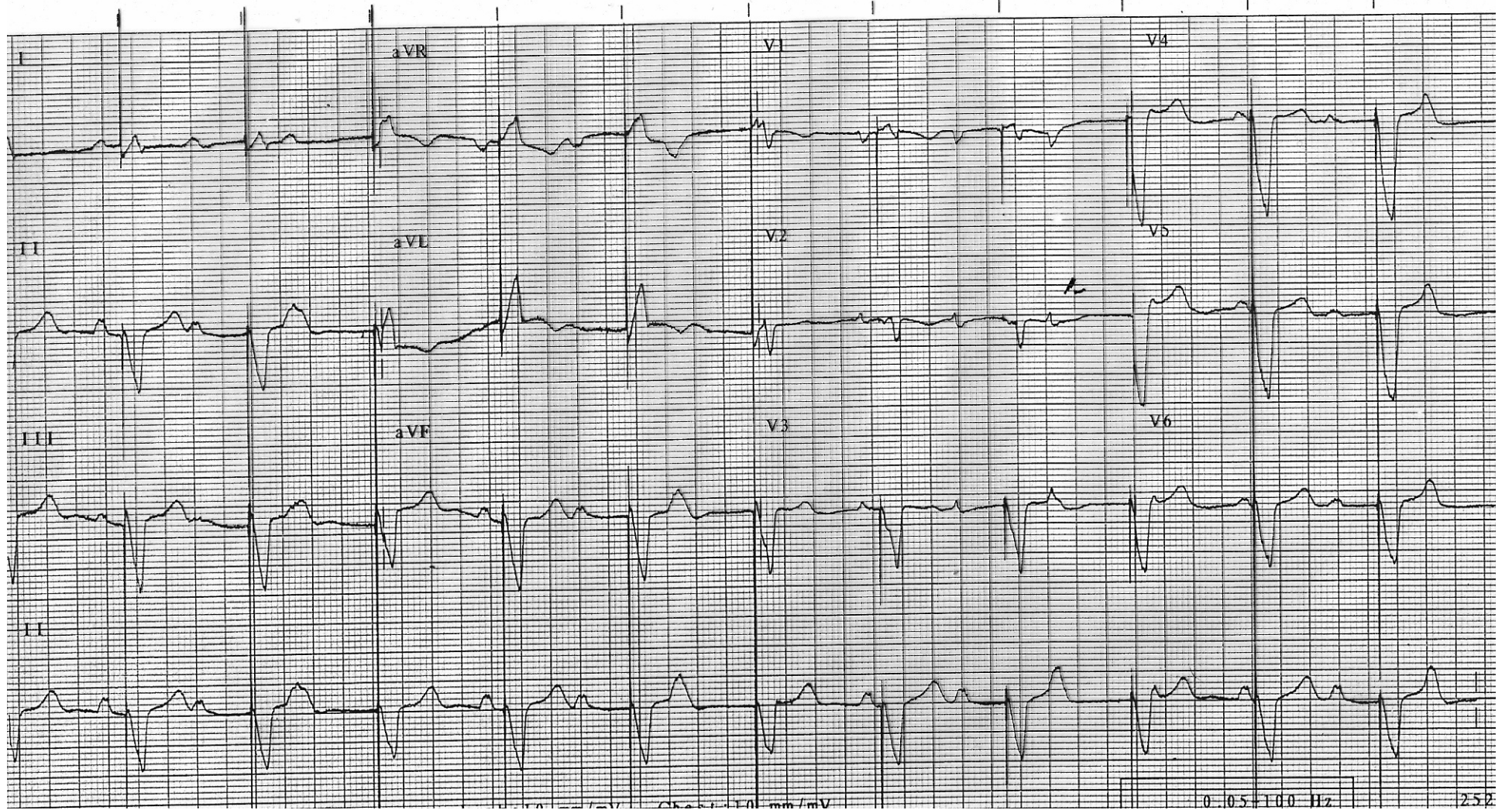




# Atrial Fibrillation



# Ventricular Pacemaker



# ECGs - Fast Rate Narrow Complex

## Regular

Sinus tachycardia (appropriate or inappropriate)

Ectopic atrial tachycardia

SVT (re-entrant tachycardia)

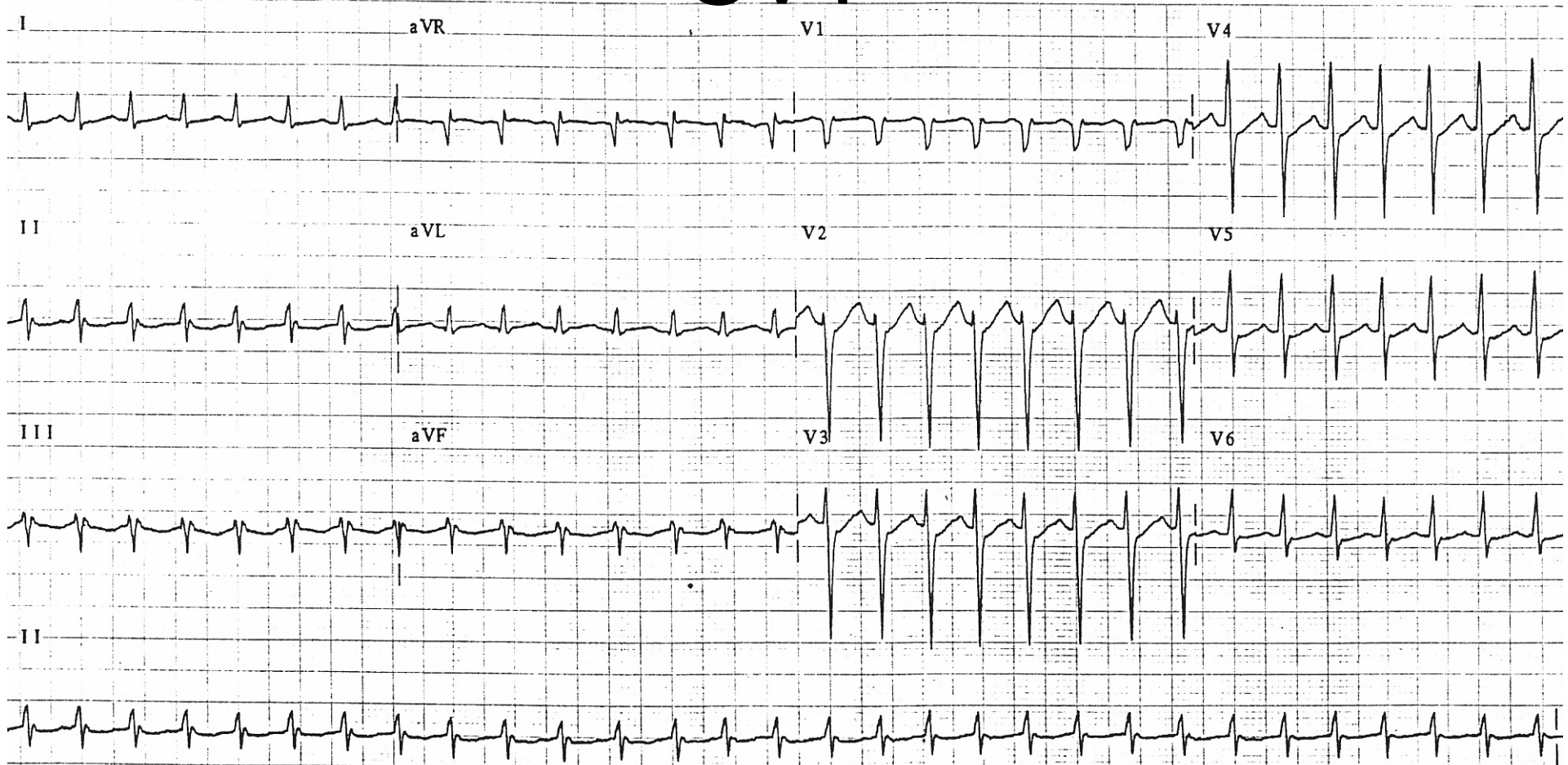
Atrial flutter

## Irregular

Atrial fibrillation

Atrial flutter with variable block

# SVT

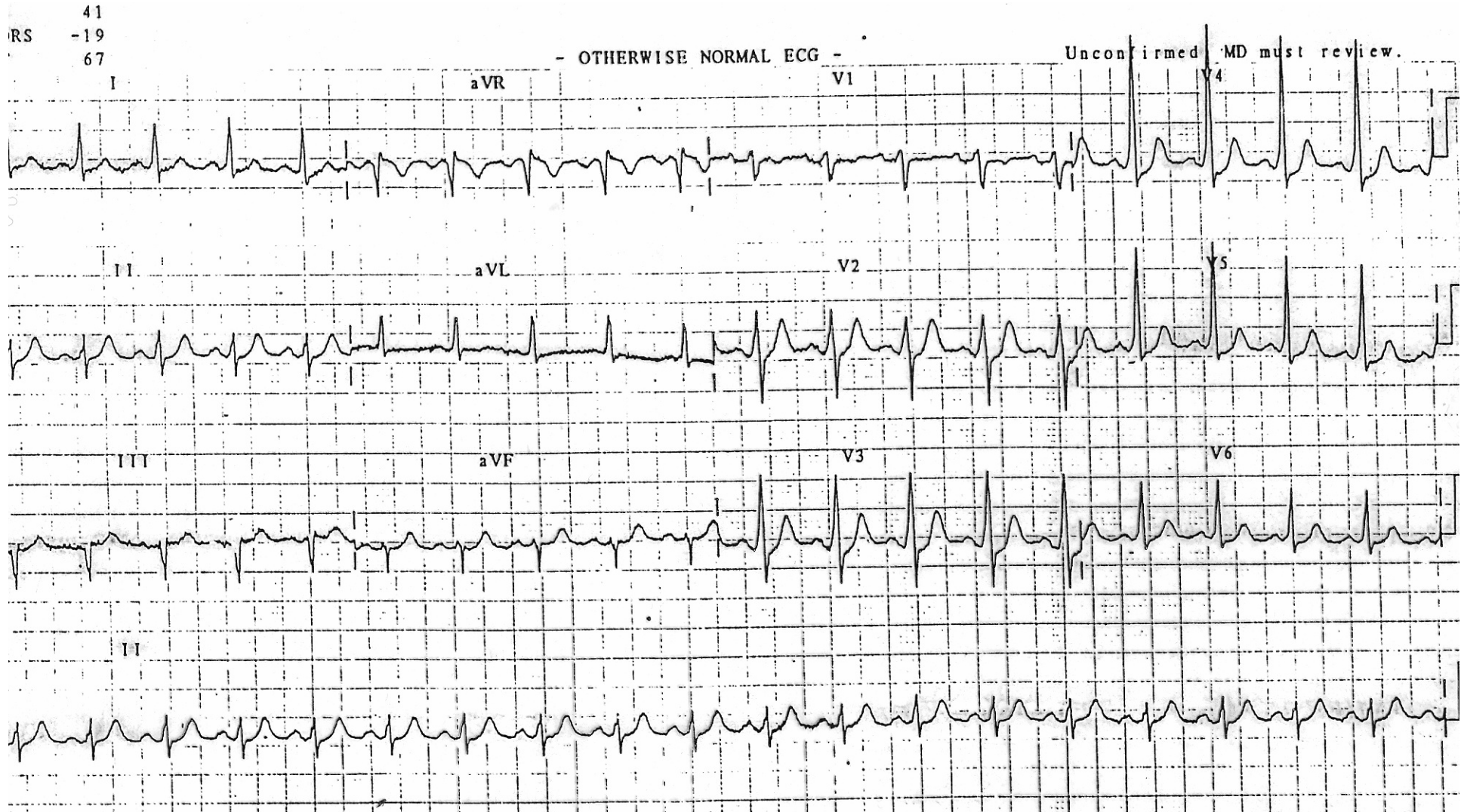


LOC 00000-0000    Speed: 25 mm/sec    Limb: 10 mm/mV    Chest: 10 mm/mV    50 $\mu$  0.05-100 Hz    09

HEWLETT

REORDER HP M2483A

# Post Adenosine



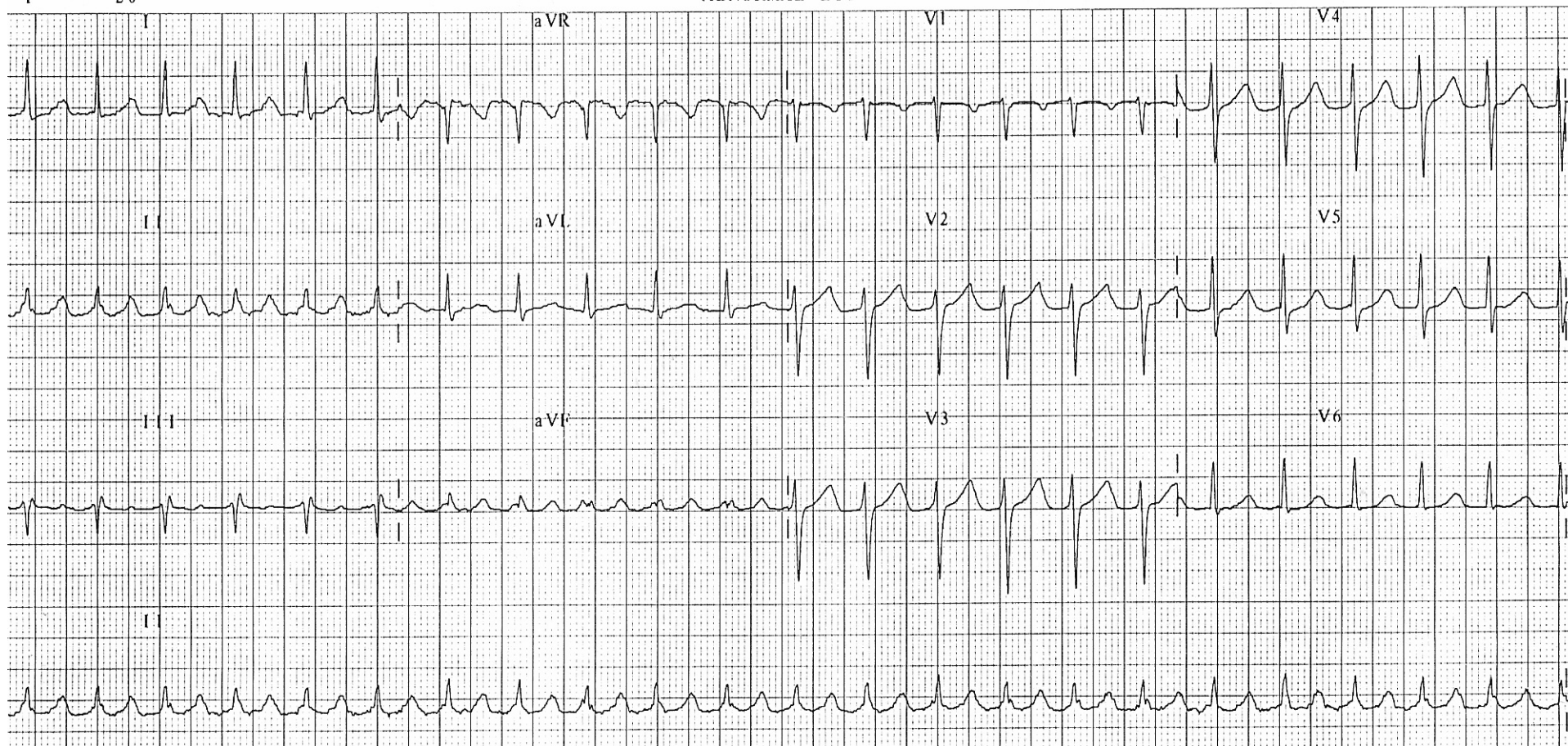
Rate 134 . Junctional tachycardia, rate 134.....Absent P waves, rate >= 100  
PR 0 . Nonspecific inferior ST depression.....ST -.10 mV II,III,aVF  
QRSD 89  
QT 313  
QTc 467

--Axis--

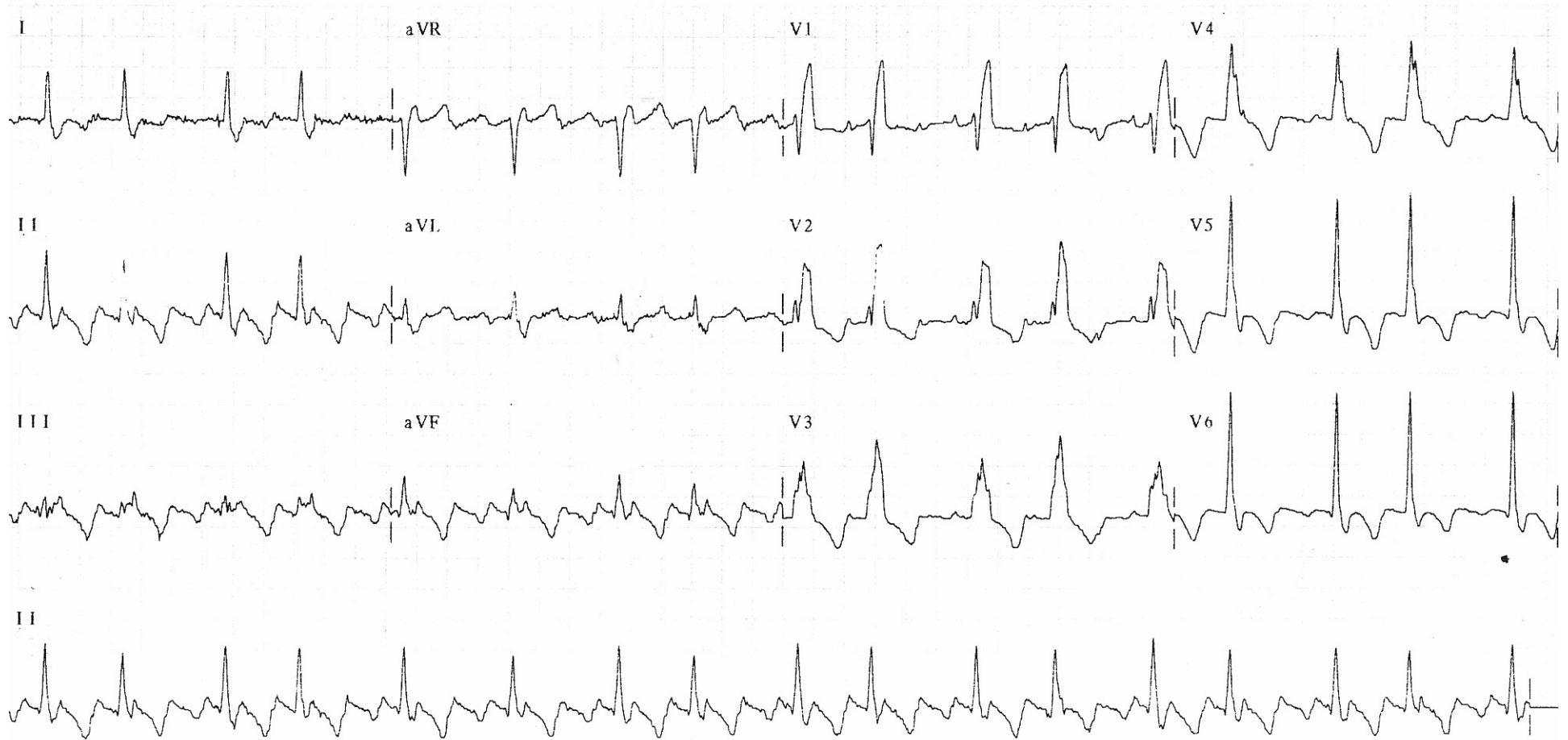
P  
QRS 14  
T 20

- ABNORMAL ECG -

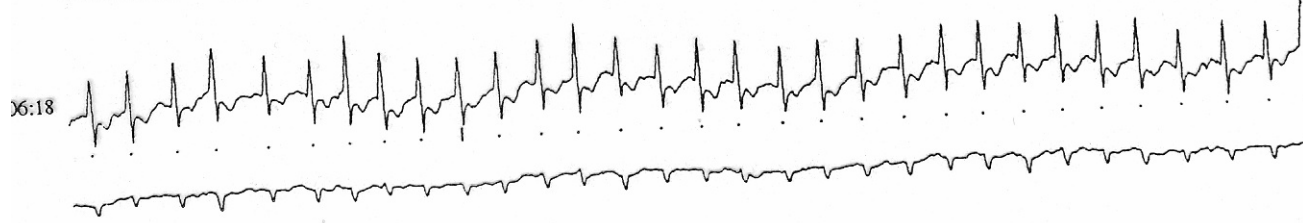
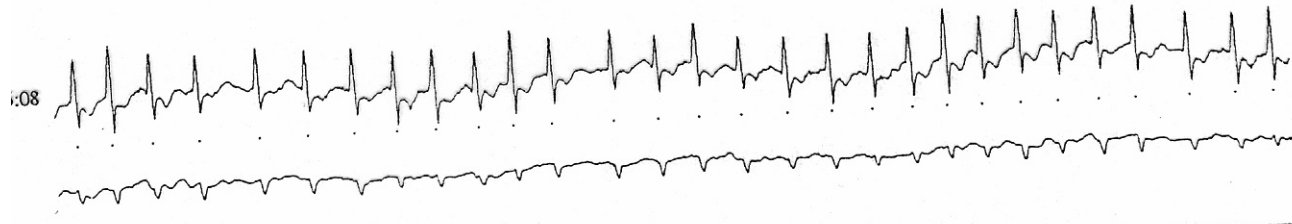
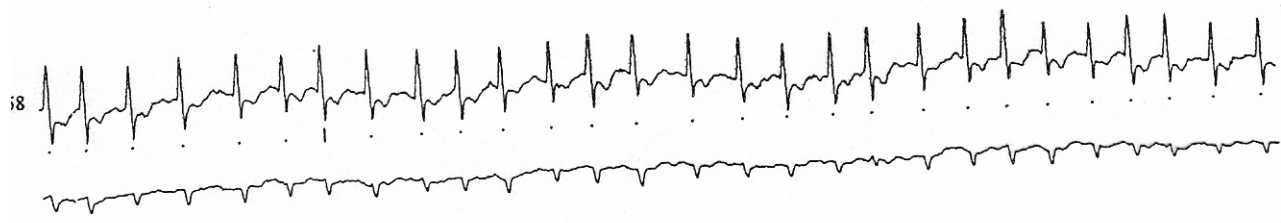
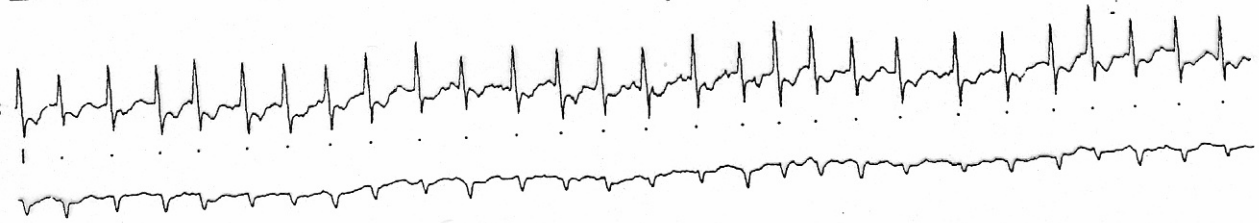
Unconfirmed. MD must review.



# Atrial Flutter – Variable Block



# Atrial Fibrillation



av HR ~ 174 bpm.

# ECGs – Tachycardia Broad Complex

Regular

Bundle Branch Block

Irregular

Ventricular Tachycardia

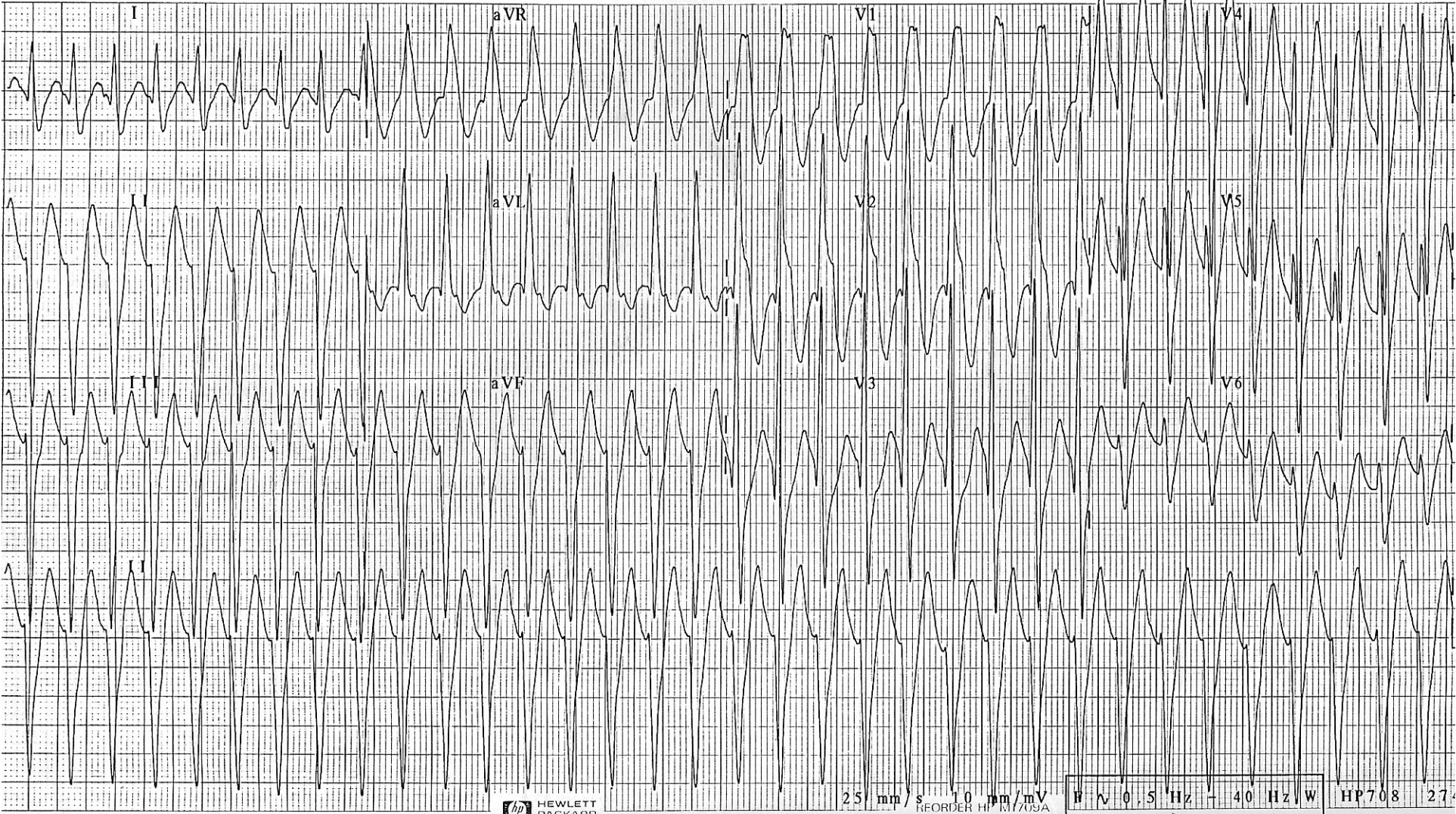
Atrial fibrillation with aberrancy

# Ventricular Tachycardia

QRS 268  
T 76

- ABNORMAL ECG -

Unconfirmed MD must review.



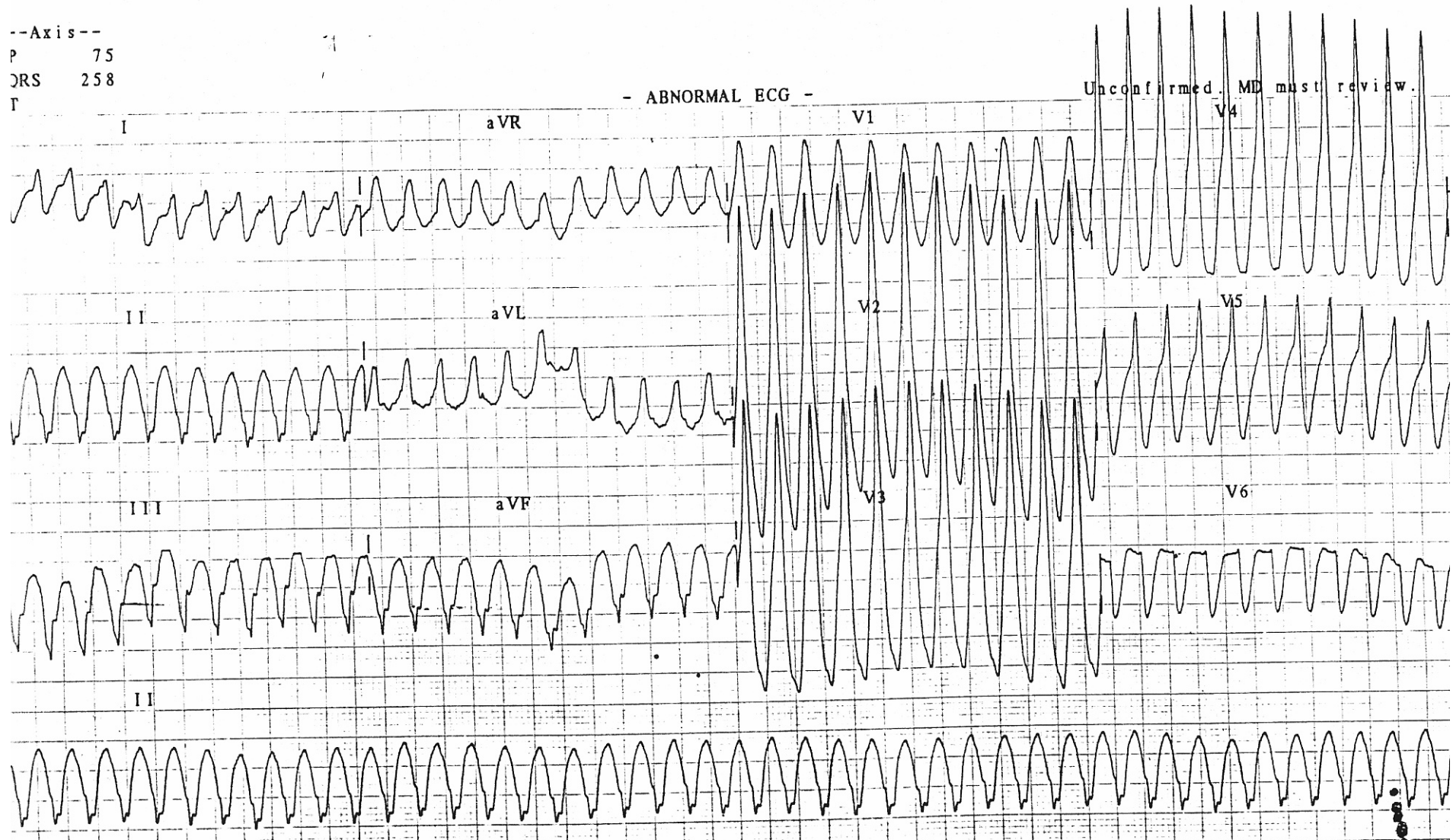
hp HEWLETT  
PACKARD

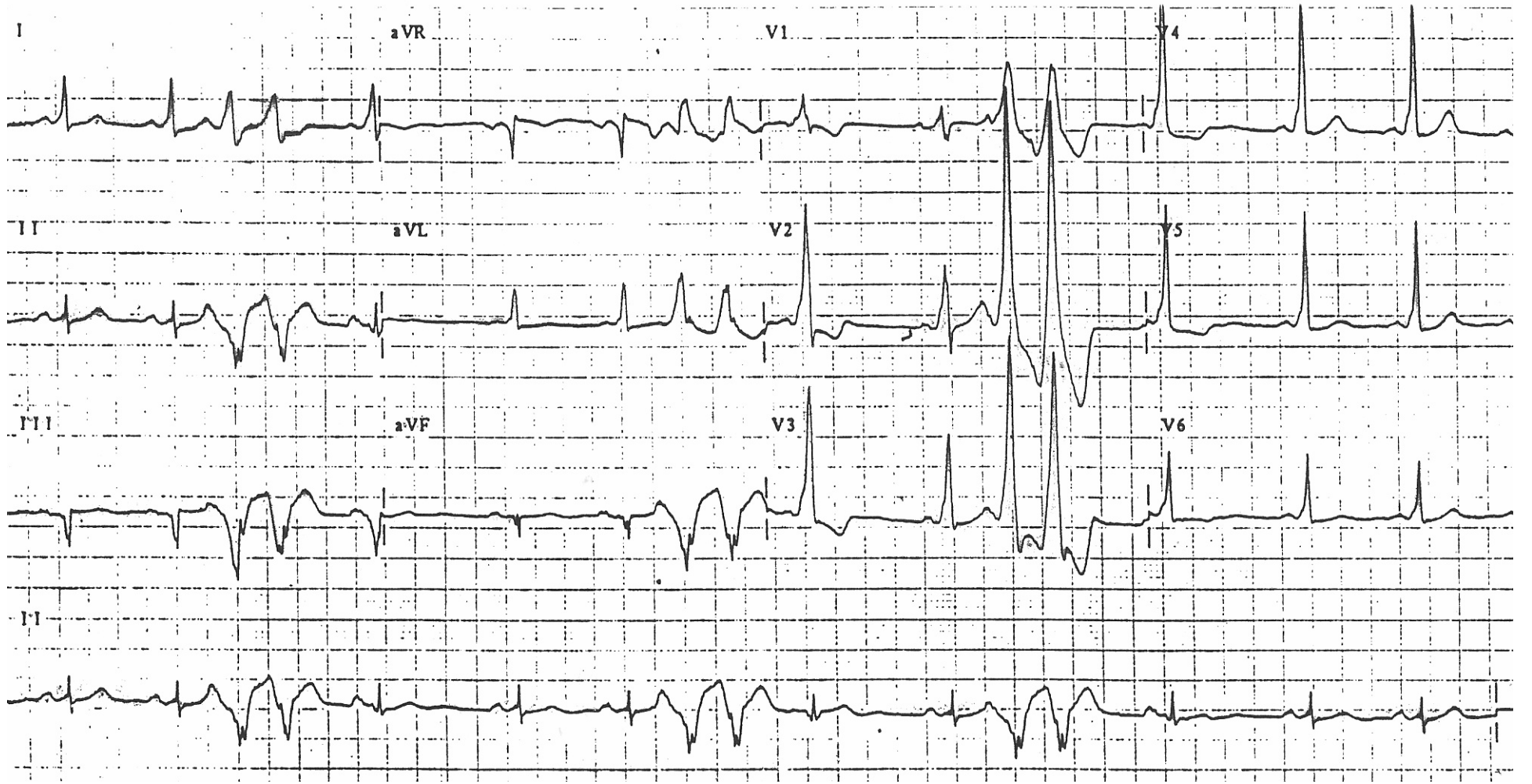
25 mm/s 10 mm/mV  
REORDER HP M708 USA

HP 0.5 Hz - 40 Hz W

HP708 27

# Atrial flutter with aberrant conduction

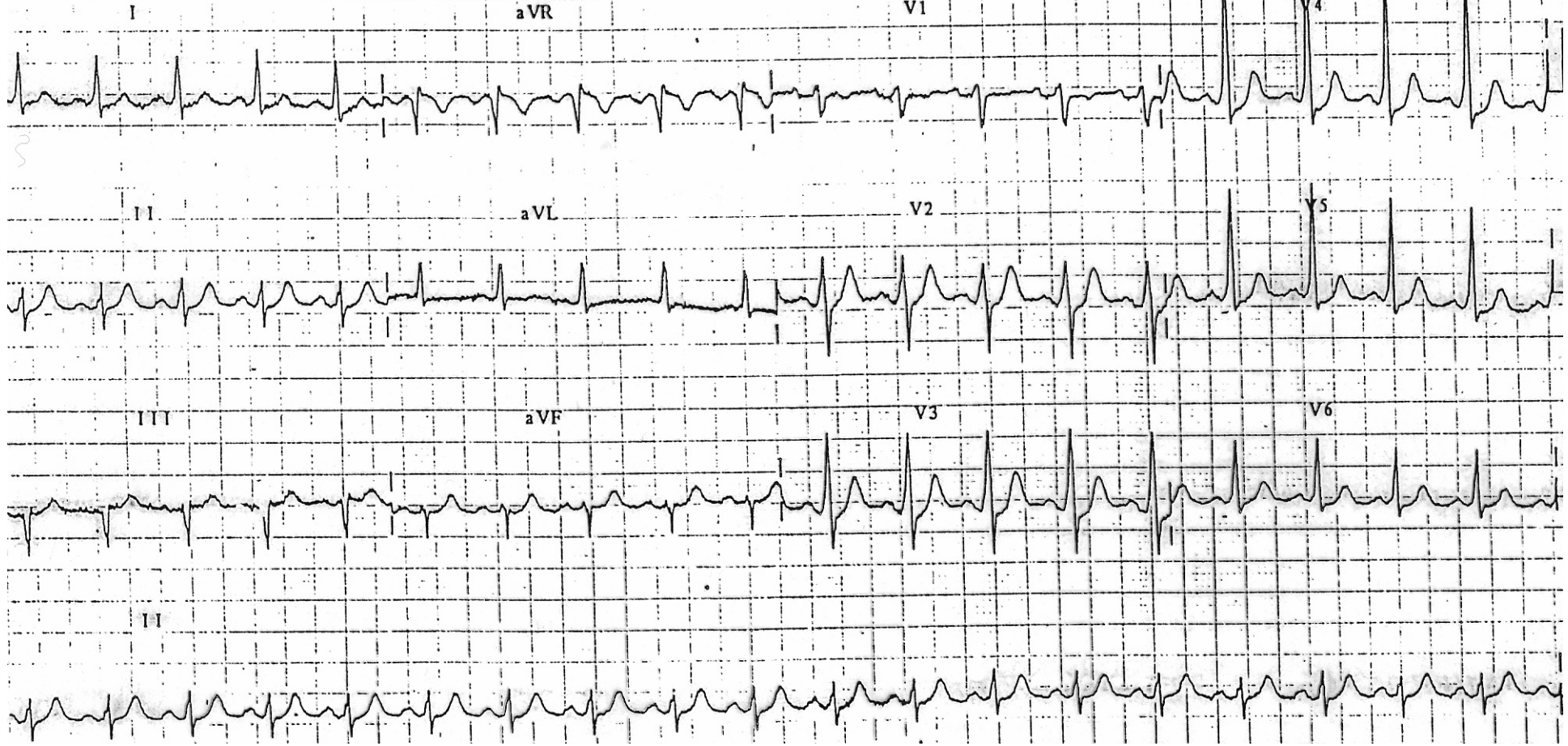




P 41  
QRS -19  
T 67

- OTHERWISE NORMAL ECG -

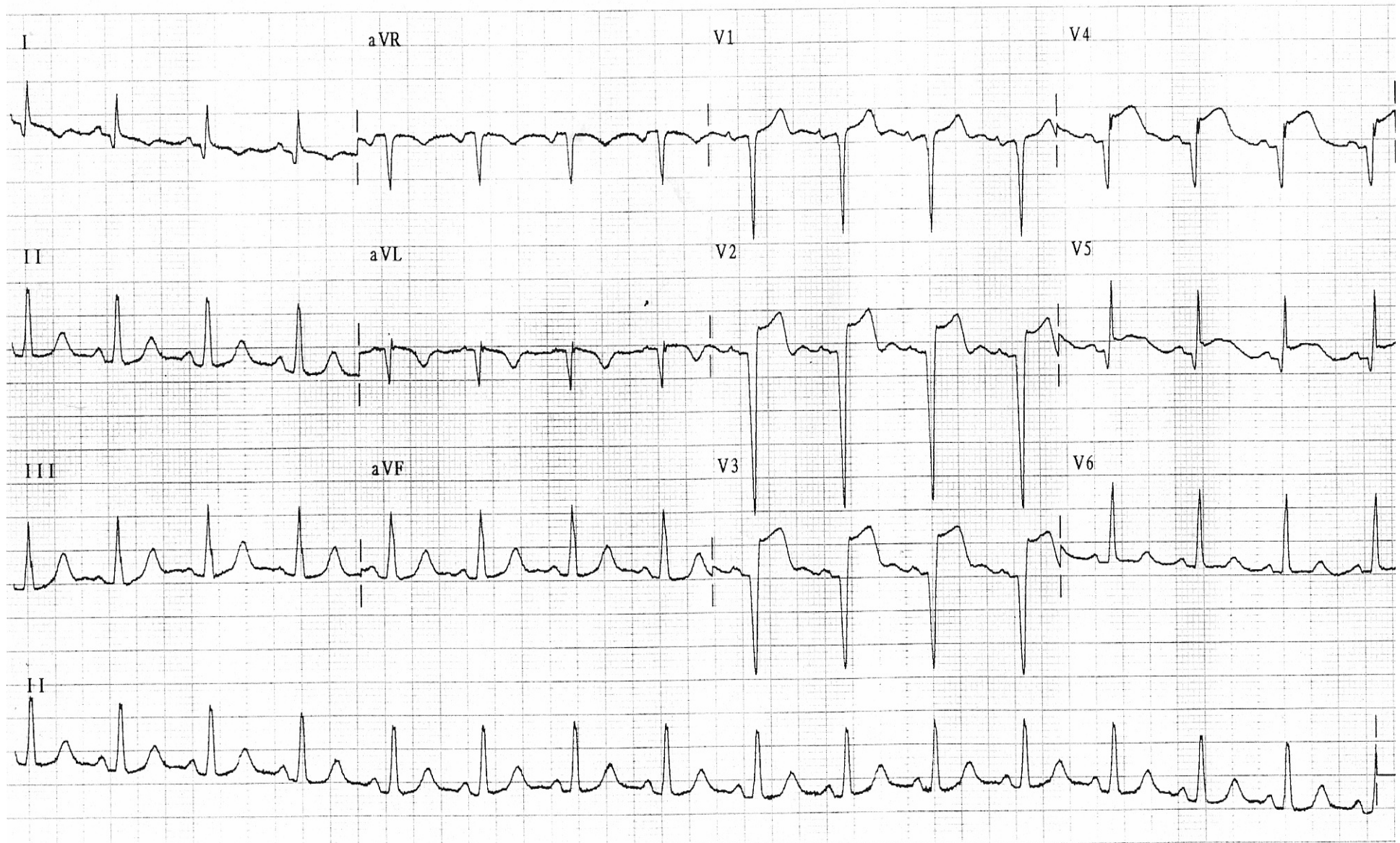
Unconfirmed MD must review.



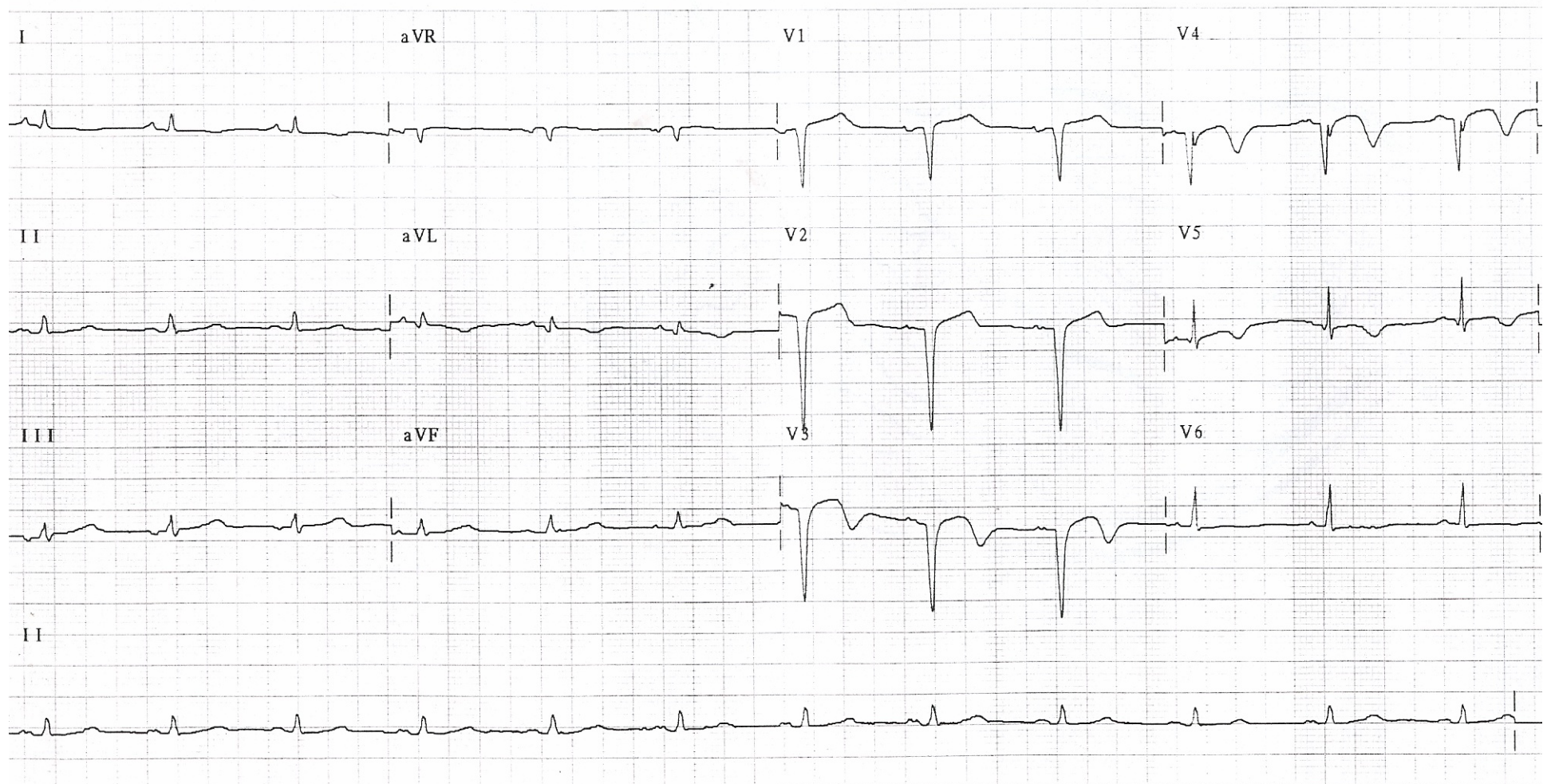
# Ischaemia

- STEMI
- NSTEMI
- Ischaemia

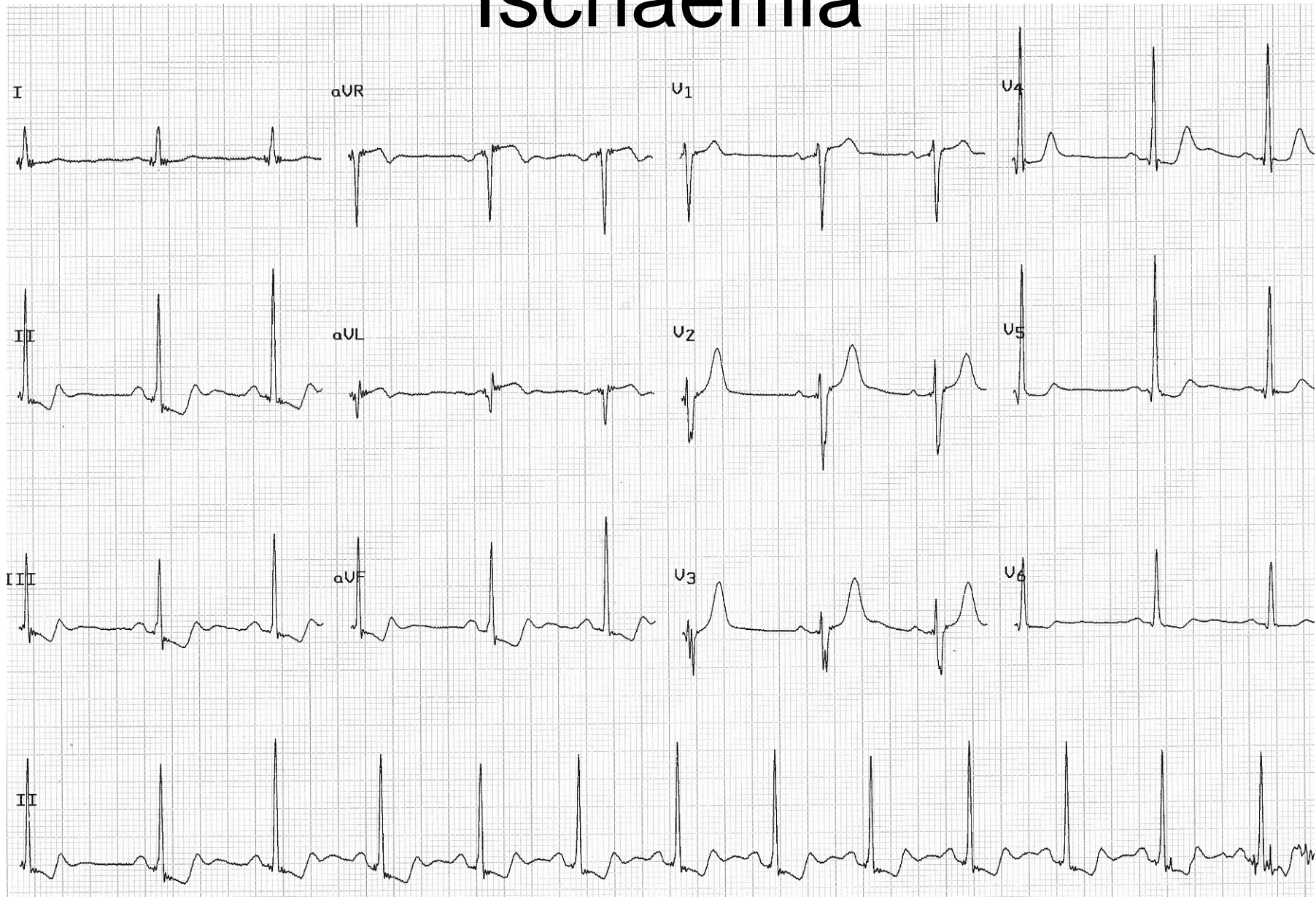
# Ant STEMI



# Ant STEMI



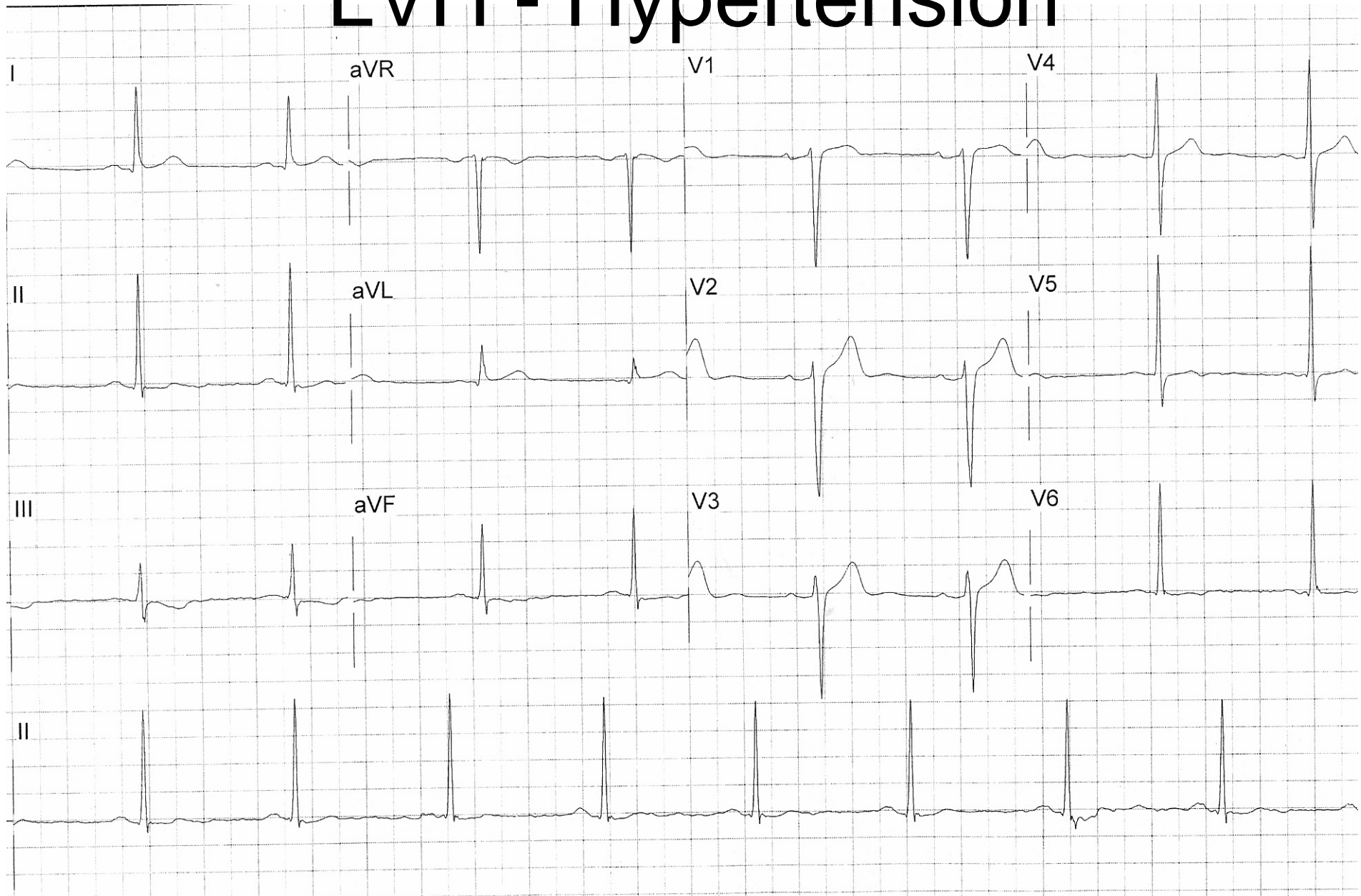
# Ischaemia



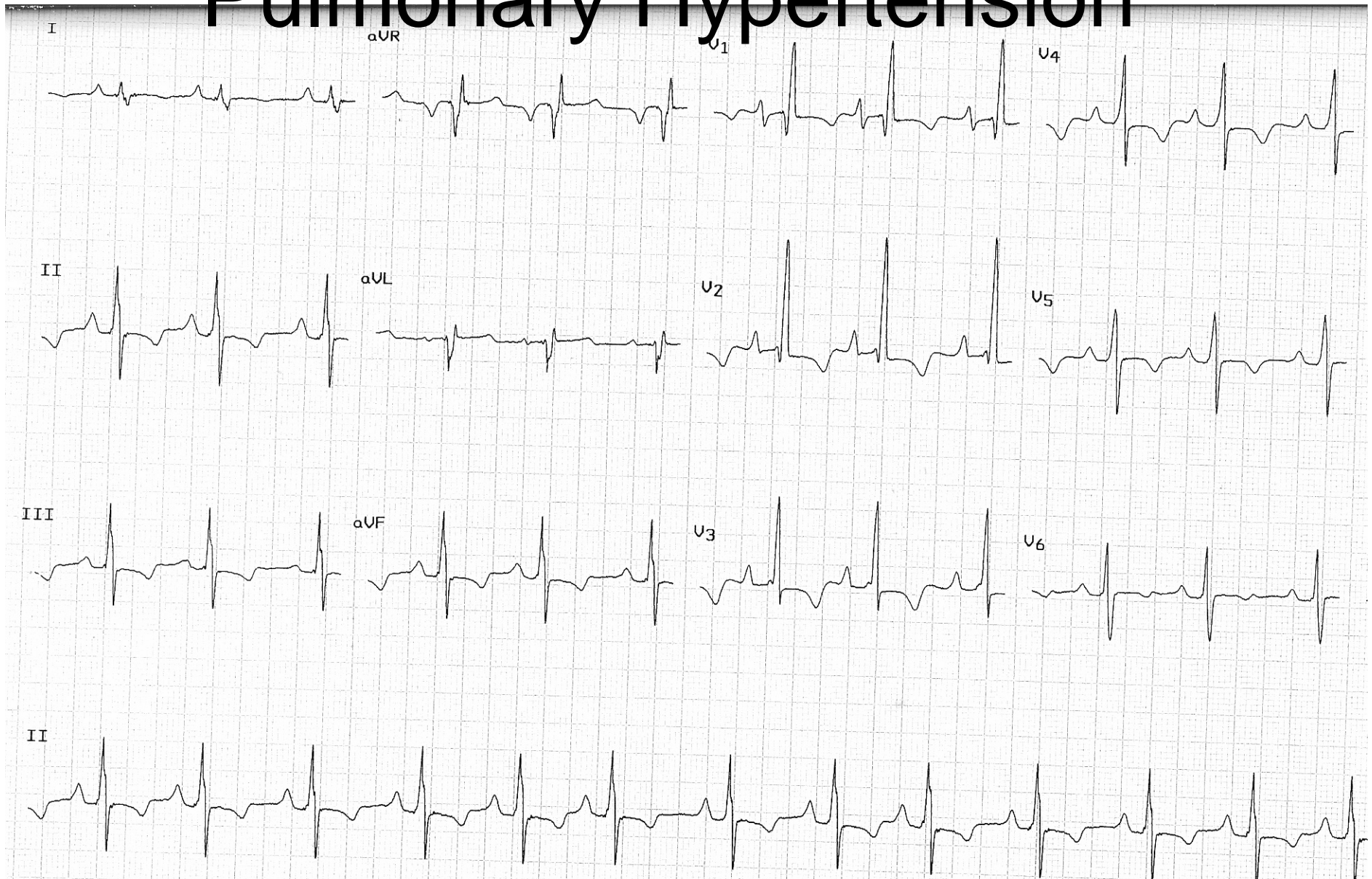
# Other ECG abnormalities

- Hypertrophy
- Pericarditis
- Electrolyte abnormalities
- Drug toxicity
- Thyroid abnormalities

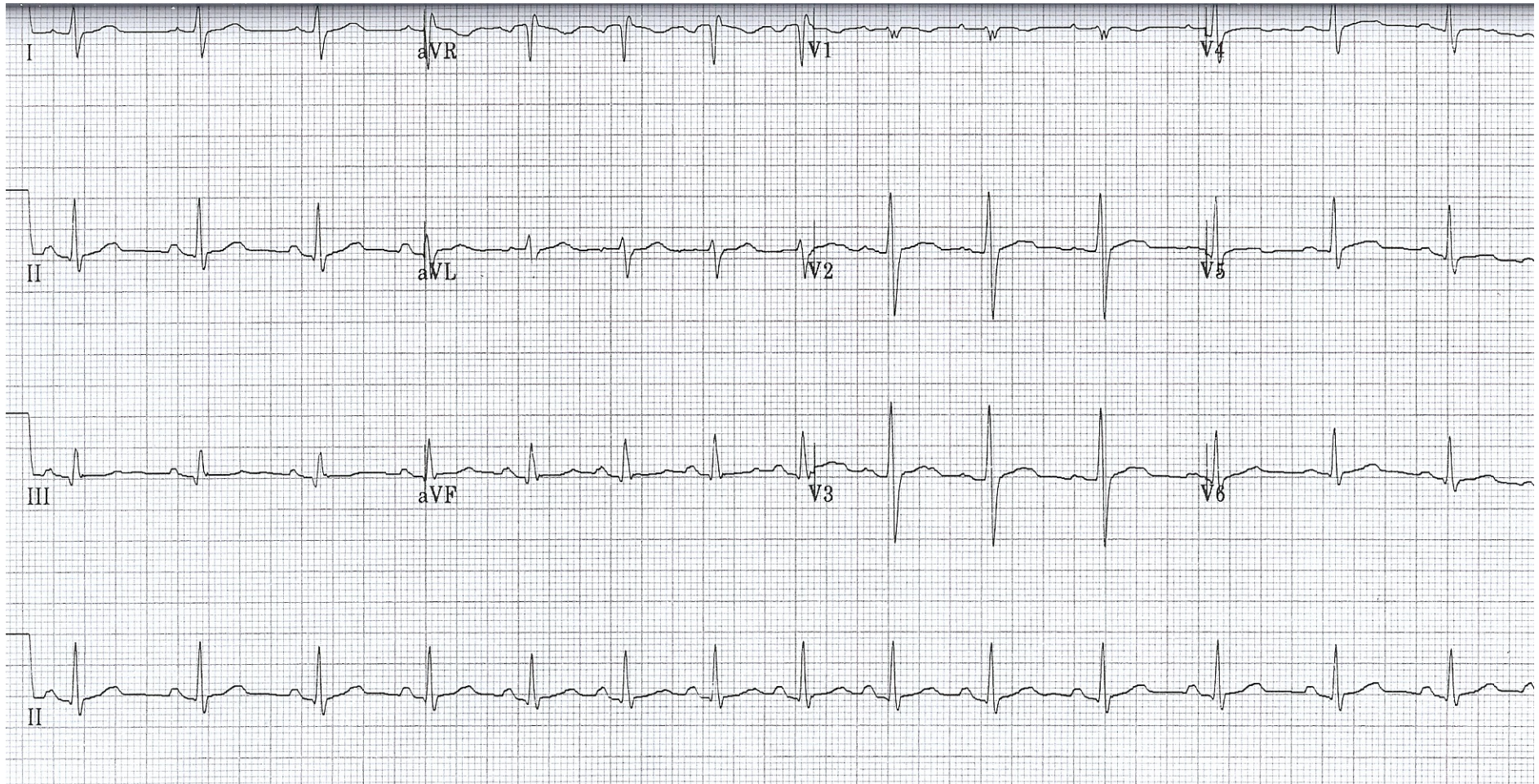
# LVH - Hypertension



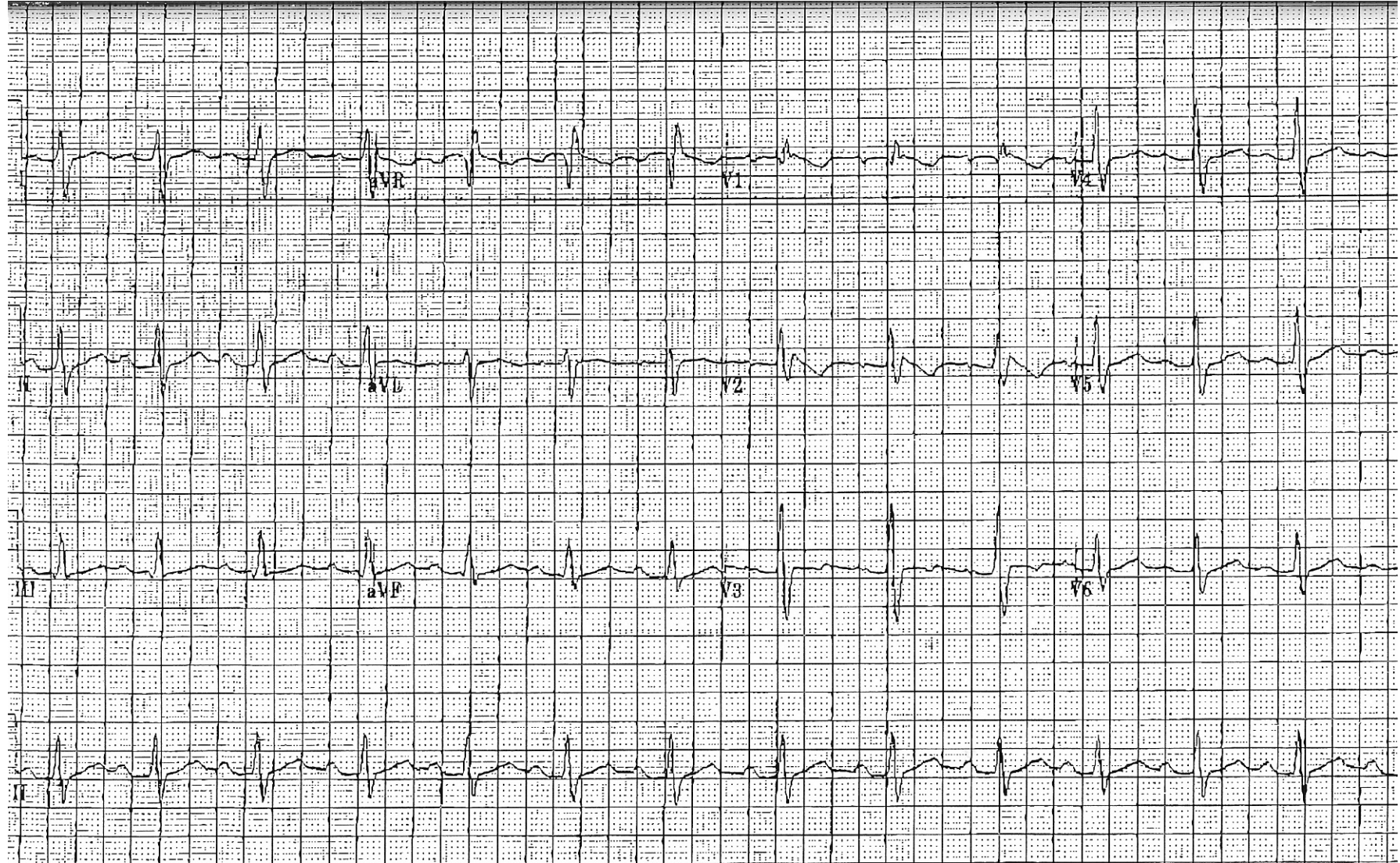
# Pulmonary Hypertension



# Flecainide 100mg/d



# Flecainide 300mg/d



# Flecainide 300mg/d

