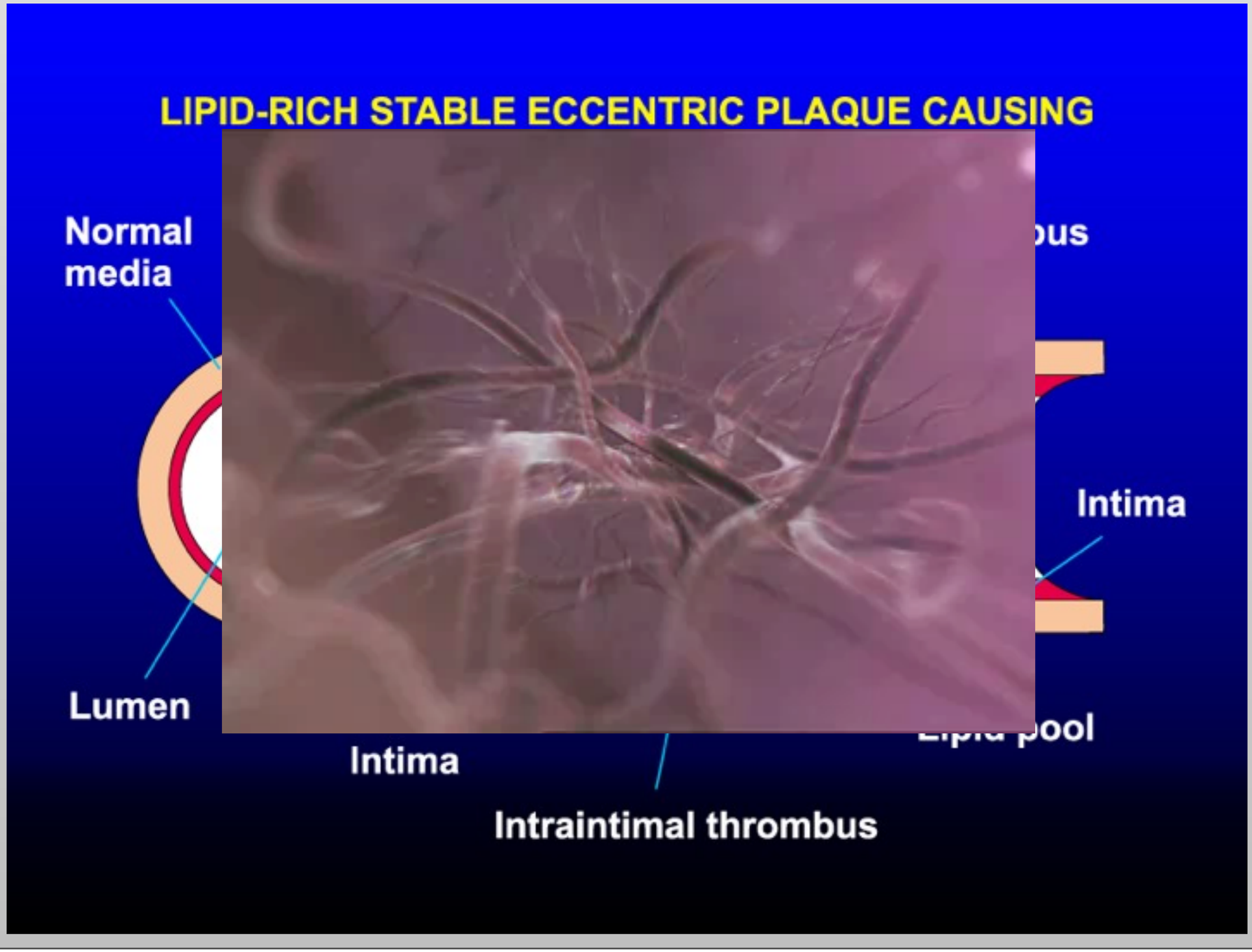
Management of ACS

NMGH

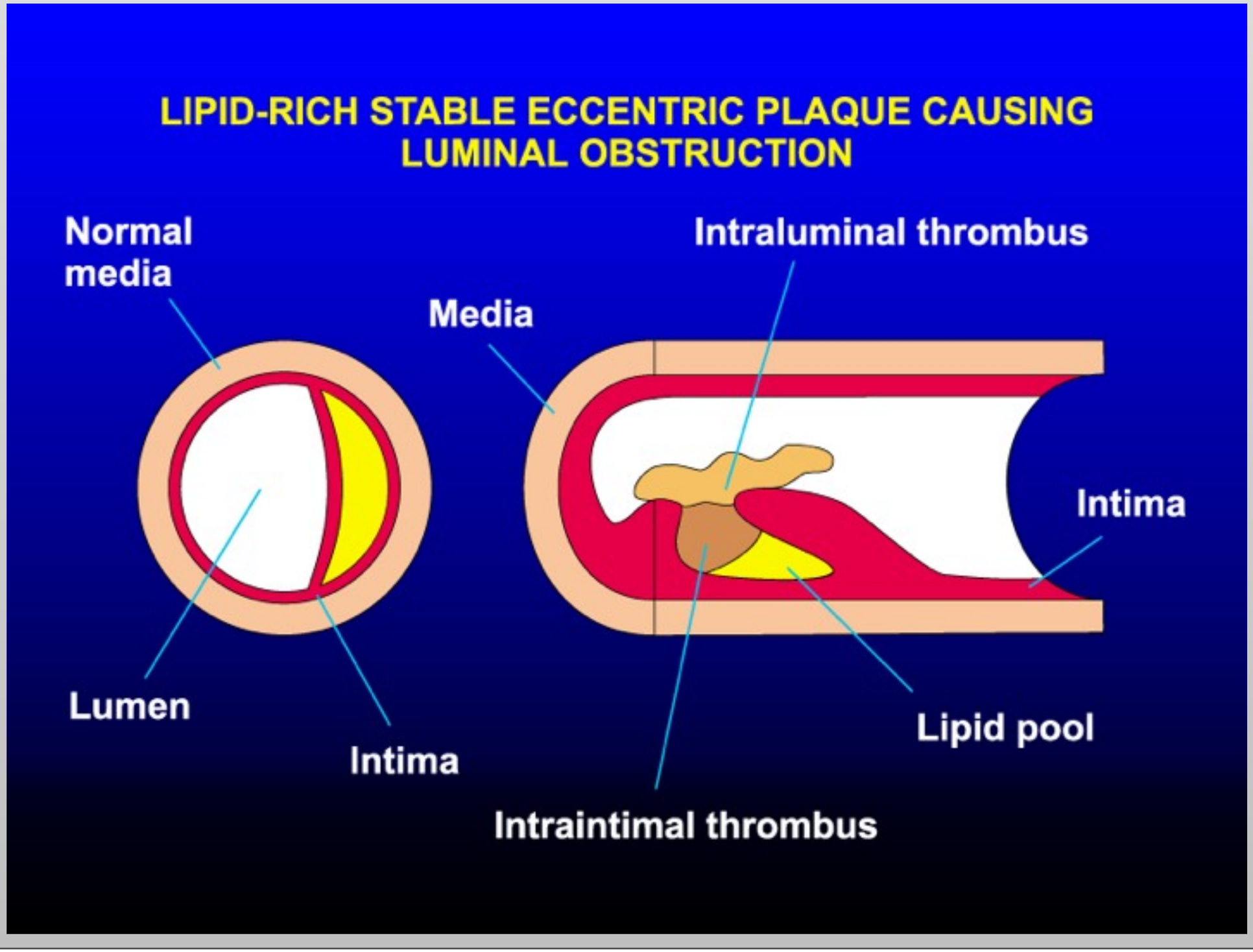
Objectives

- Who is having an ACS?
- How do manage them?
- Who do we refer for PCI?
- How do we diagnose NSTEMI/unstable angina?

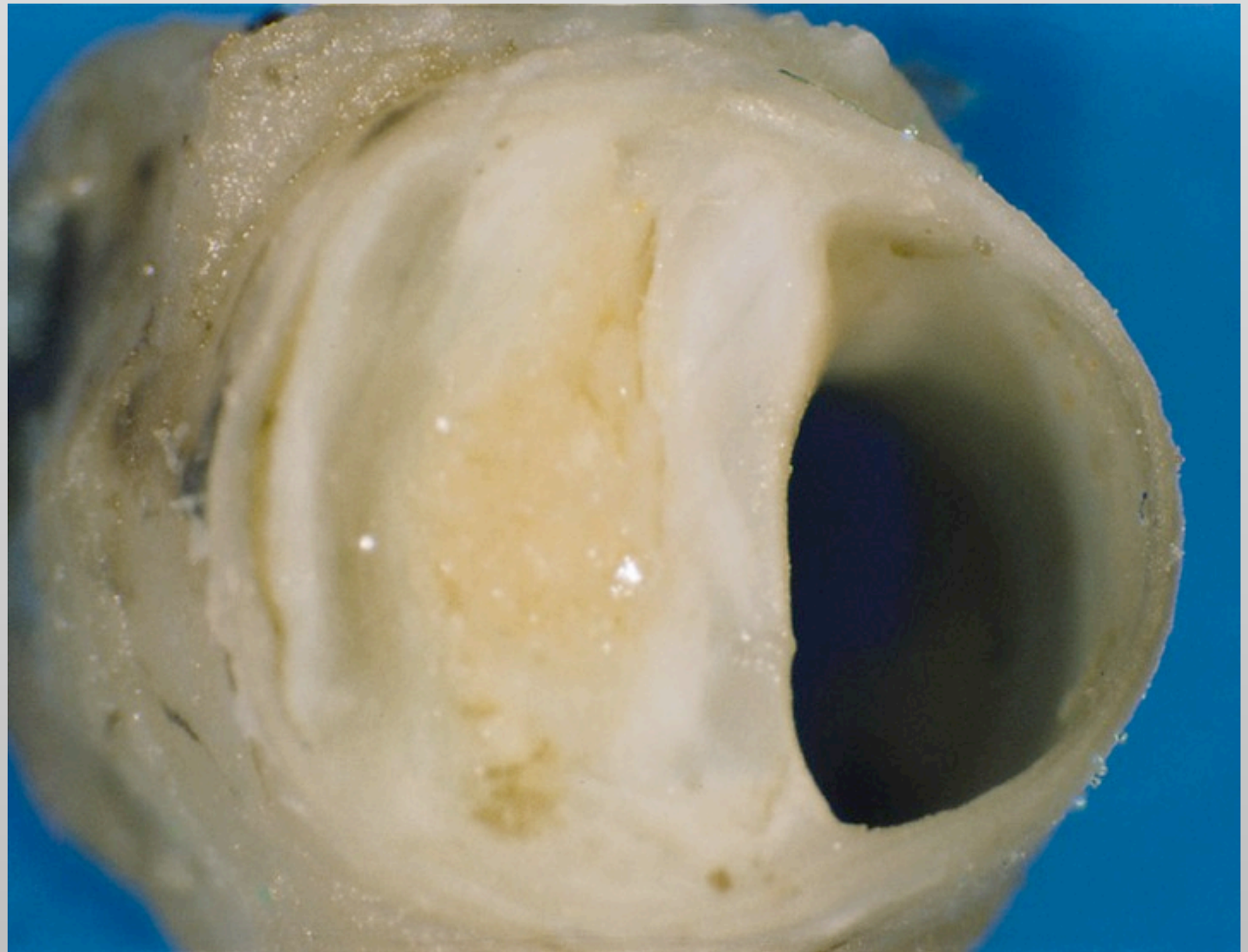
Fissured plaque



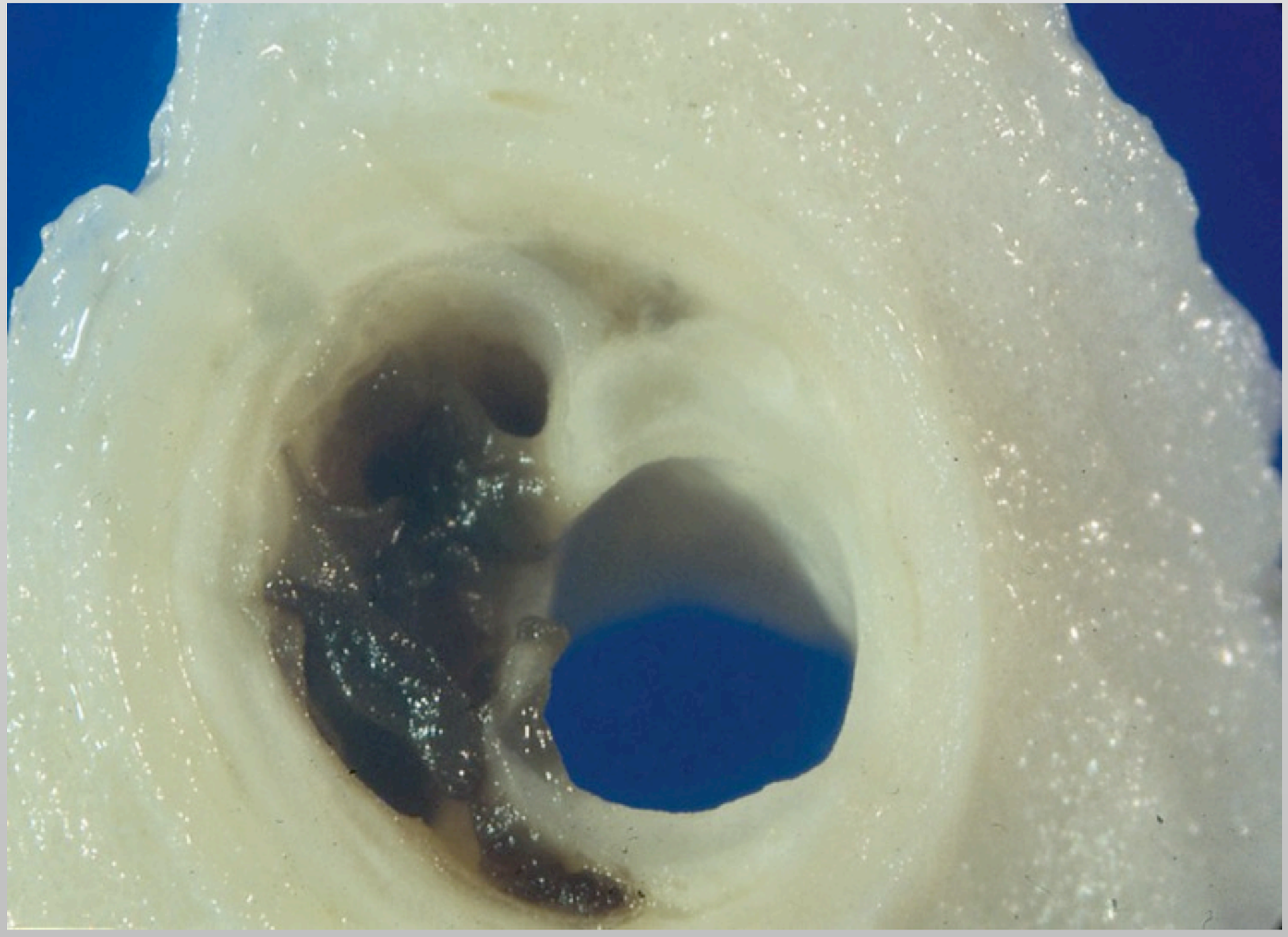
Fissured plaque



Fissured plaque



Fissured plaque



Clinical

- Retrosternal chest pain or heaviness radiating to the jaw, back and arms, especially left arm
- Nausea, sweating, pallor, angor animi
- Unresponsive to GTN
- Usually lasts longer than 20 minutes

ECG criteria for STEMI (Transmural-AMI)

ECG criteria for STEMI (Transmural-AMI)

At least 1mm ST-segment elevation in 2 or more contiguous (same territory) limb leads.

At least 2mm ST-segment elevation in 2 continuous chest leads.

New (or presumed new) LBBB.

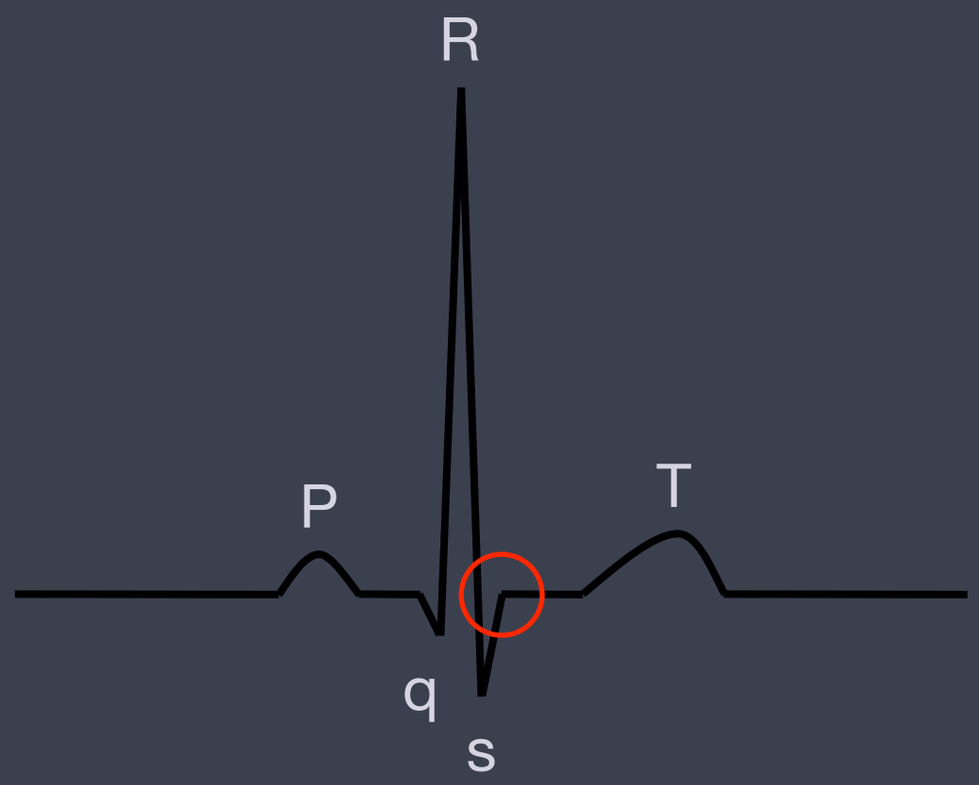
True Posterior MI.

If symptoms persist or there is a high clinical suspicion of an AMI, request serial ECG's.

ST elevation measured at the Junction point

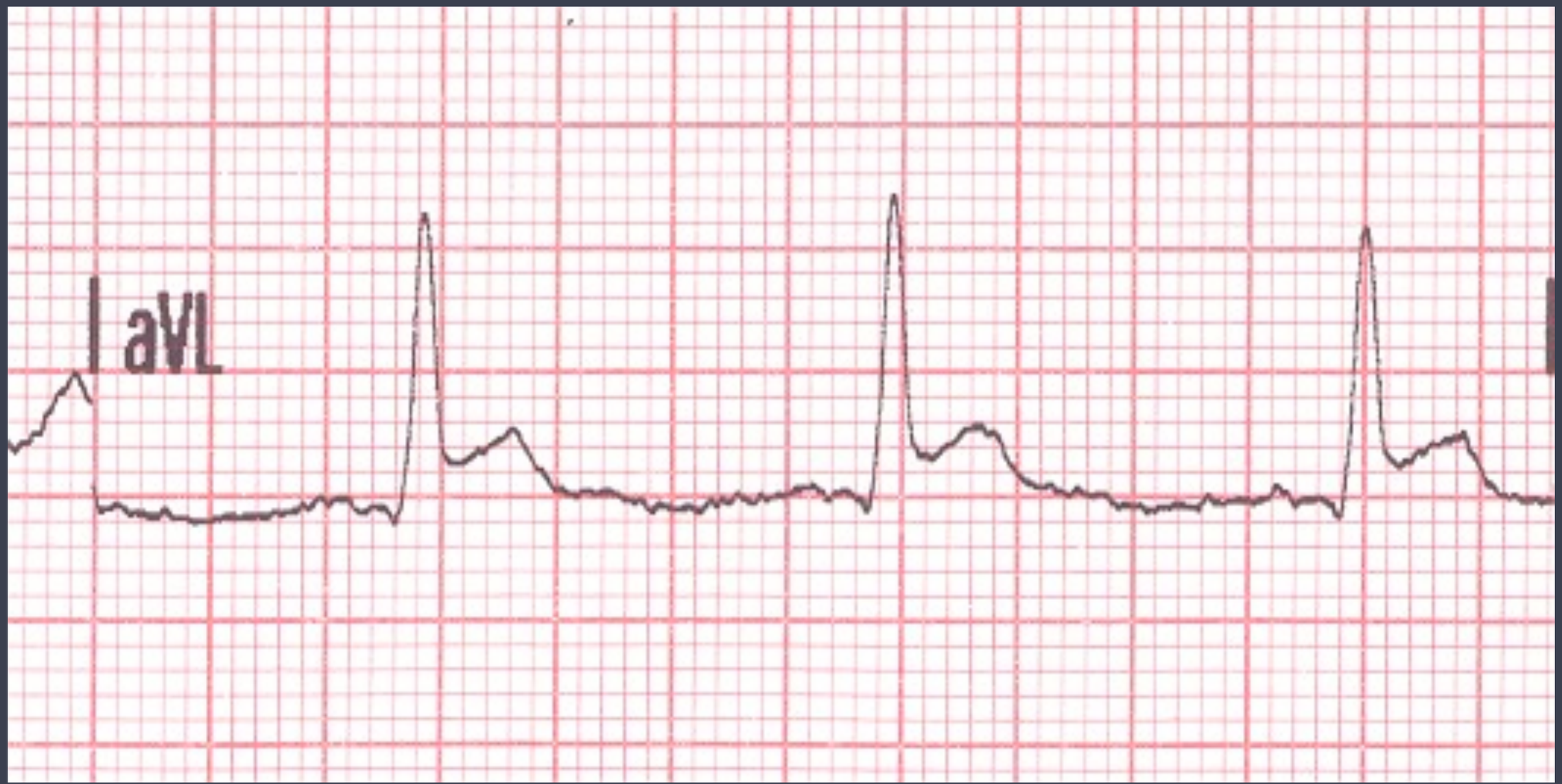
Junction where the S-wave terminates and the ST-segments begins

ST elevation measured at the Junction point

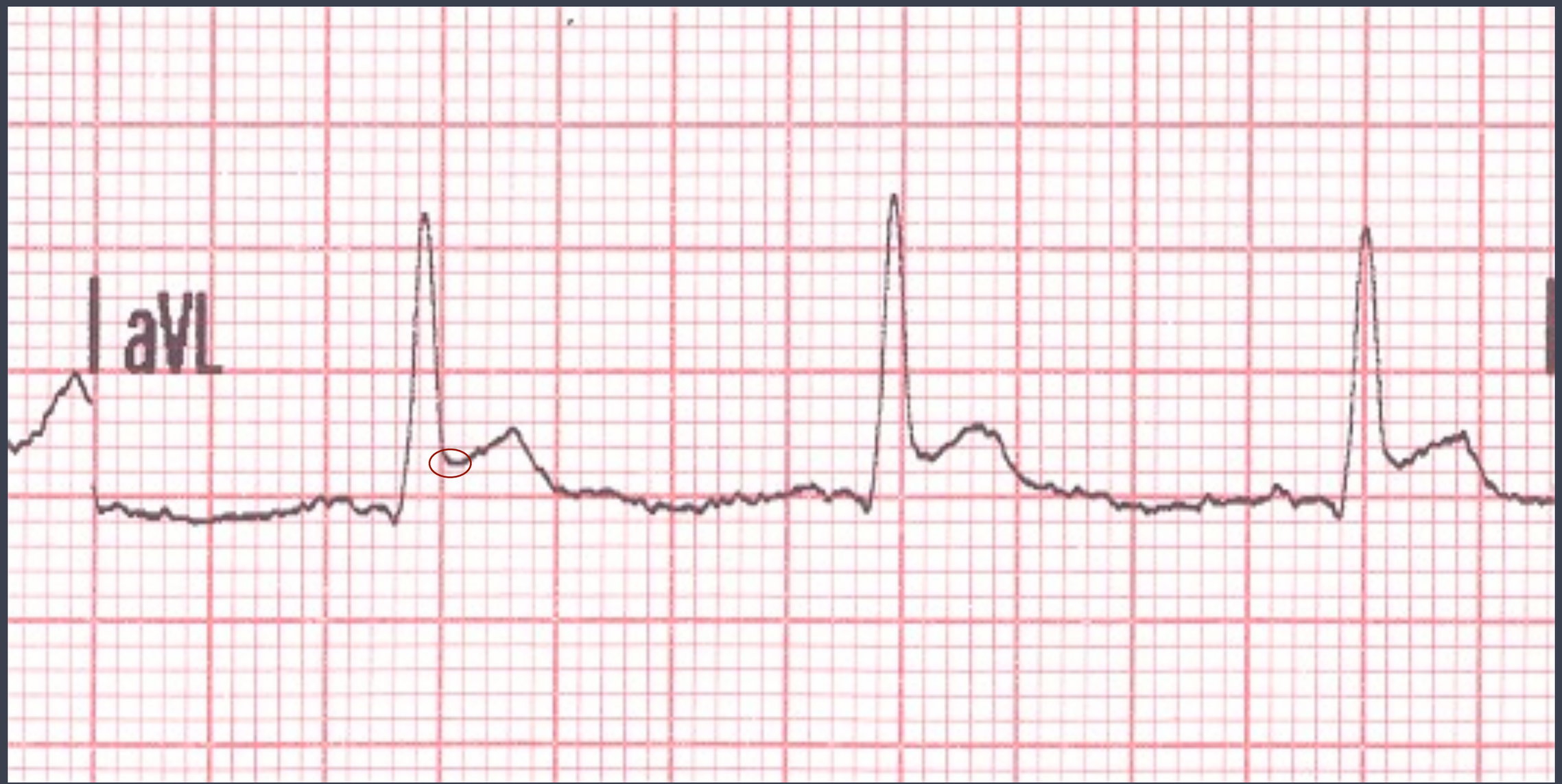


Junction where the S-wave terminates and the ST-segments begins

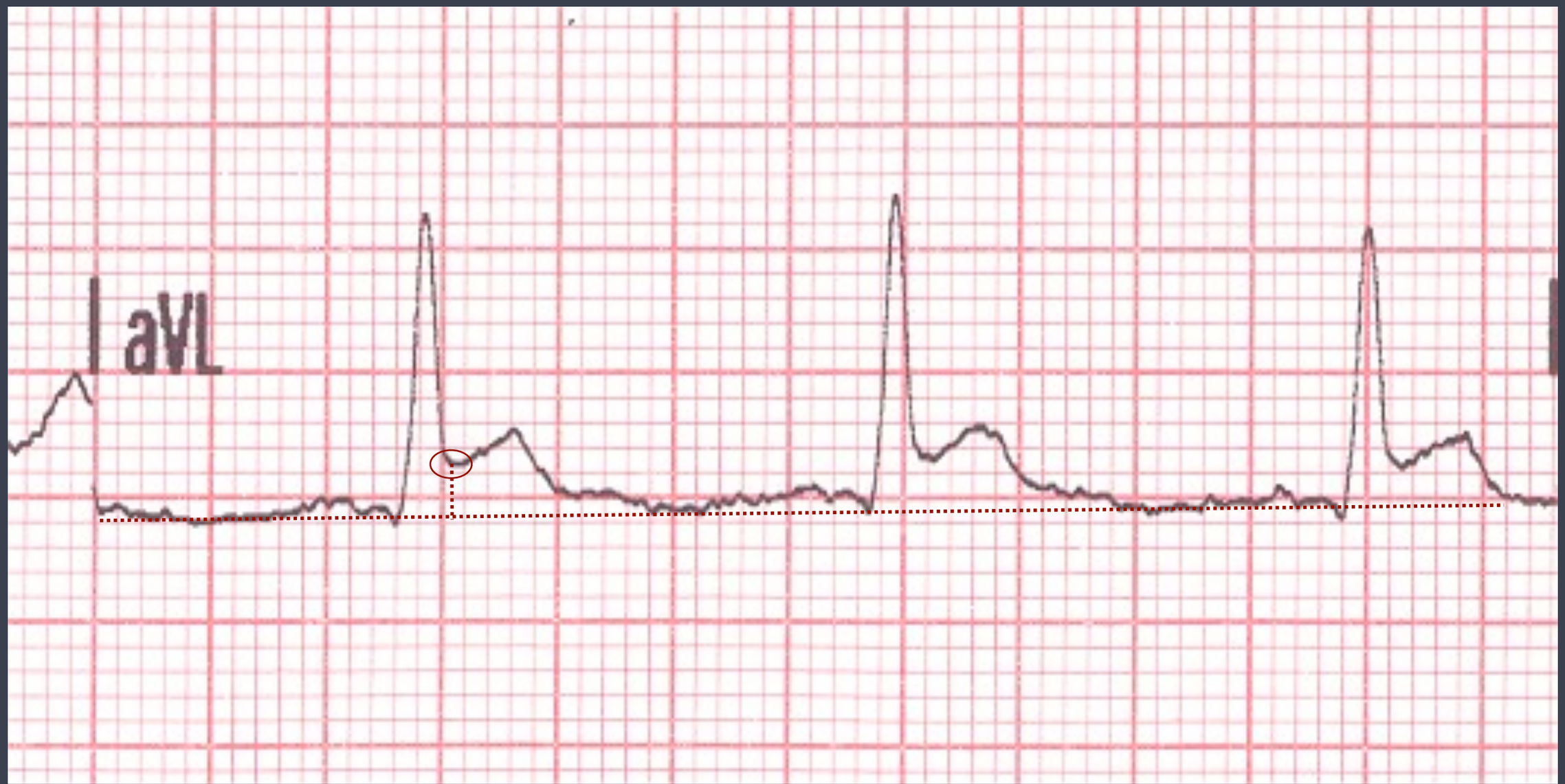
ST elevation measured at the J point



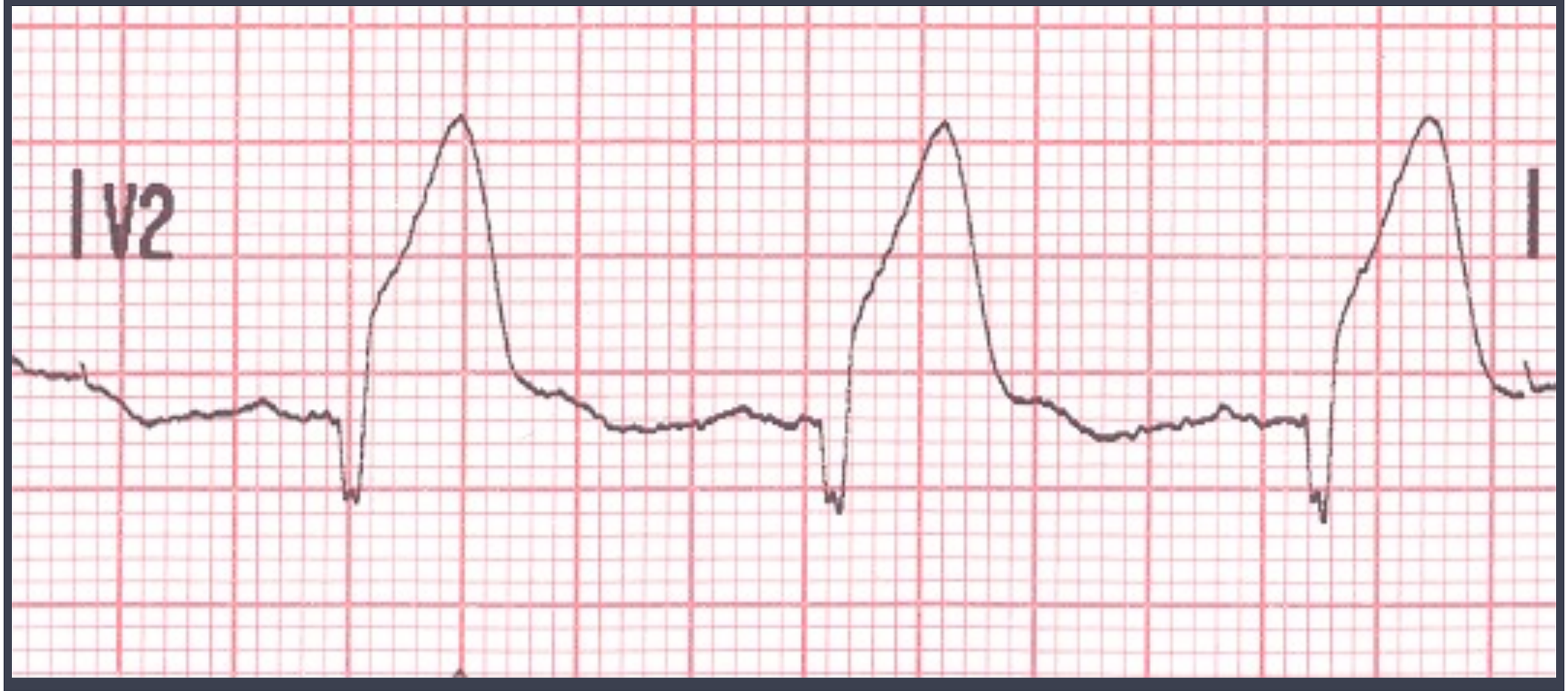
ST elevation measured at the J point



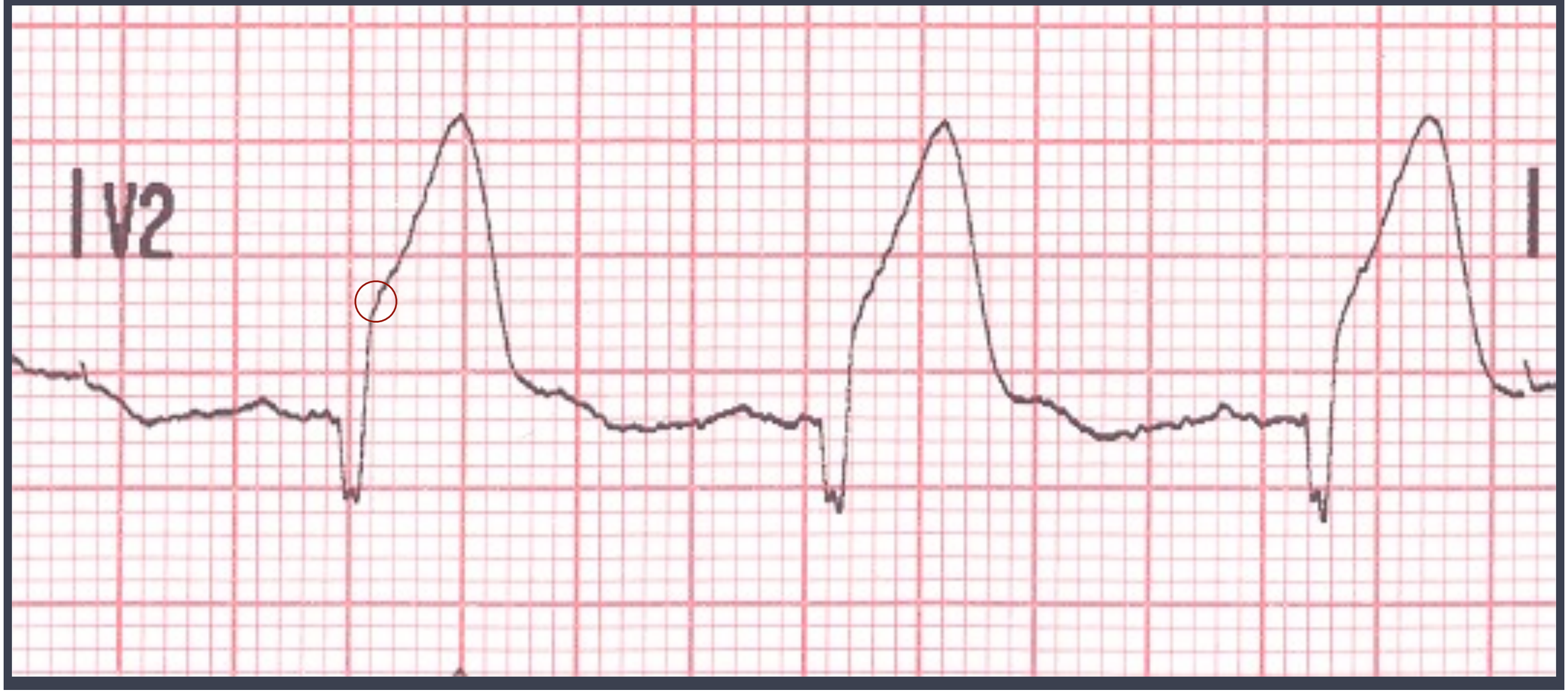
ST elevation measured at the J point



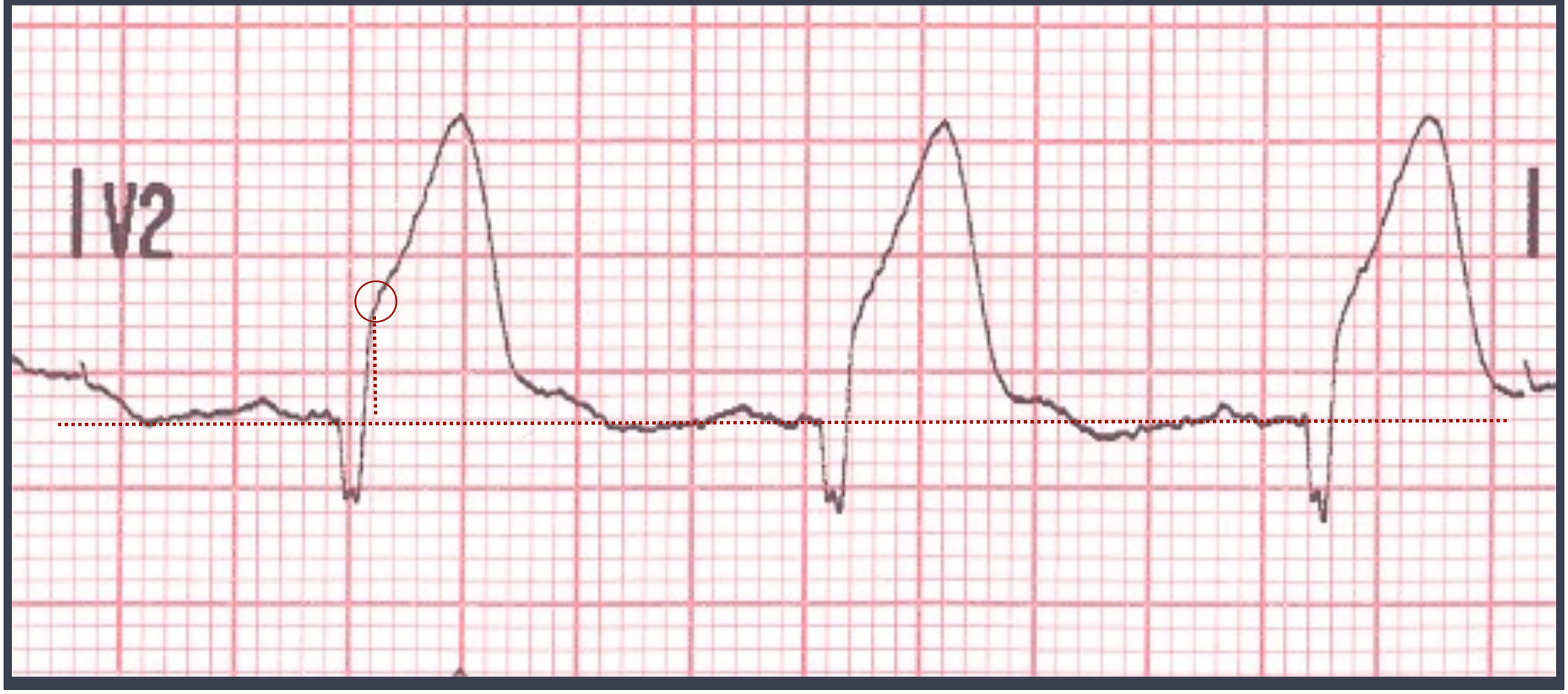
ST-segment elevation measured at the J point



ST-segment elevation measured at the J point

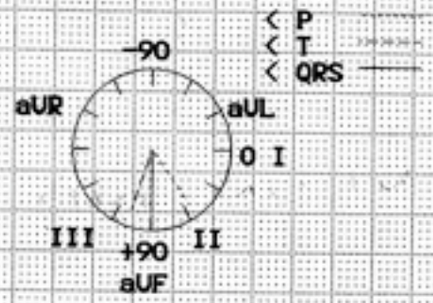


ST-segment elevation measured at the J point

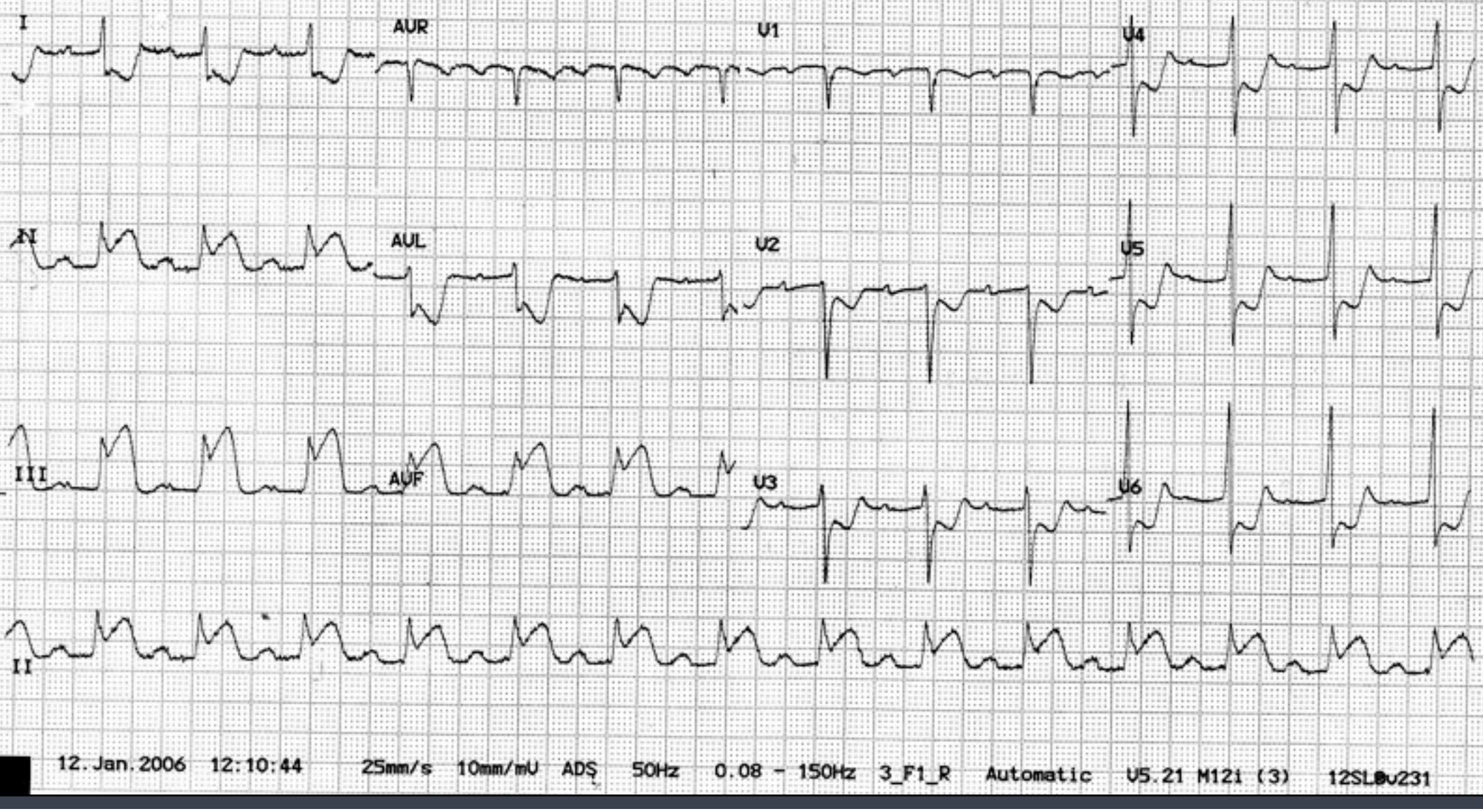


Measurement Results:

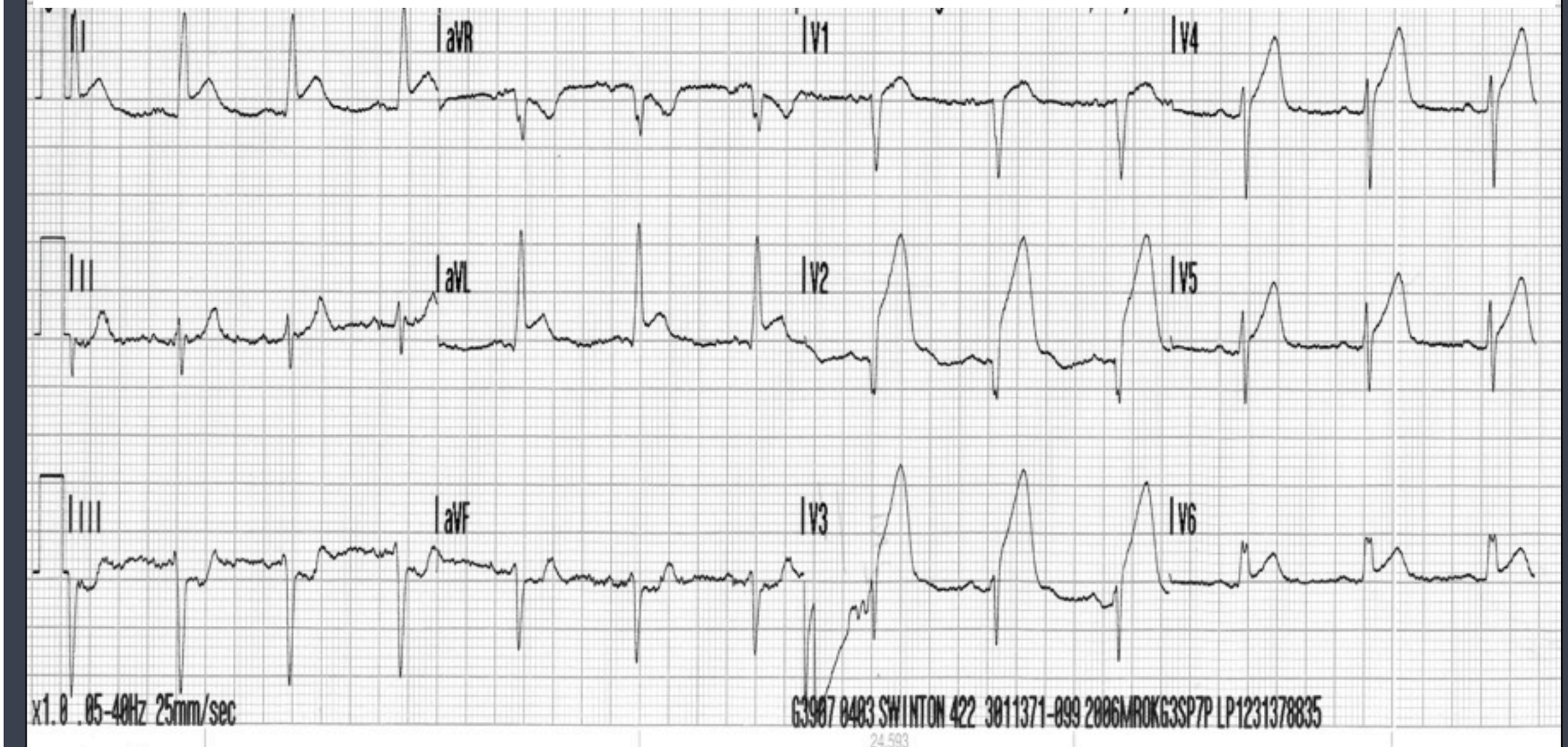
QRS	:		94 ms
QT/QTcB	:	340 /	404 ms
PR	:		278 ms
P	:		124 ms
RR/PP	:	698 /	705 ms
P/QRS/T	:	54/ 91/ 110	degrees



Unconfirmed report.



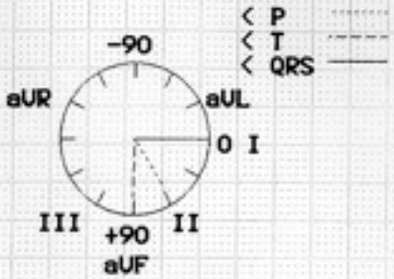
12.Jan.2006 12:10:44 25mm/s 10mm/mV ADS 50Hz 0.08 - 150Hz 3_F1_R Automatic V5.21 M12i (3) 12SLEv231


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
x1.0 .05-40Hz 25mm/sec
G3967 8403 SWINTON 422 3811371-099 2006MR0KG3SP7P LP1231378835

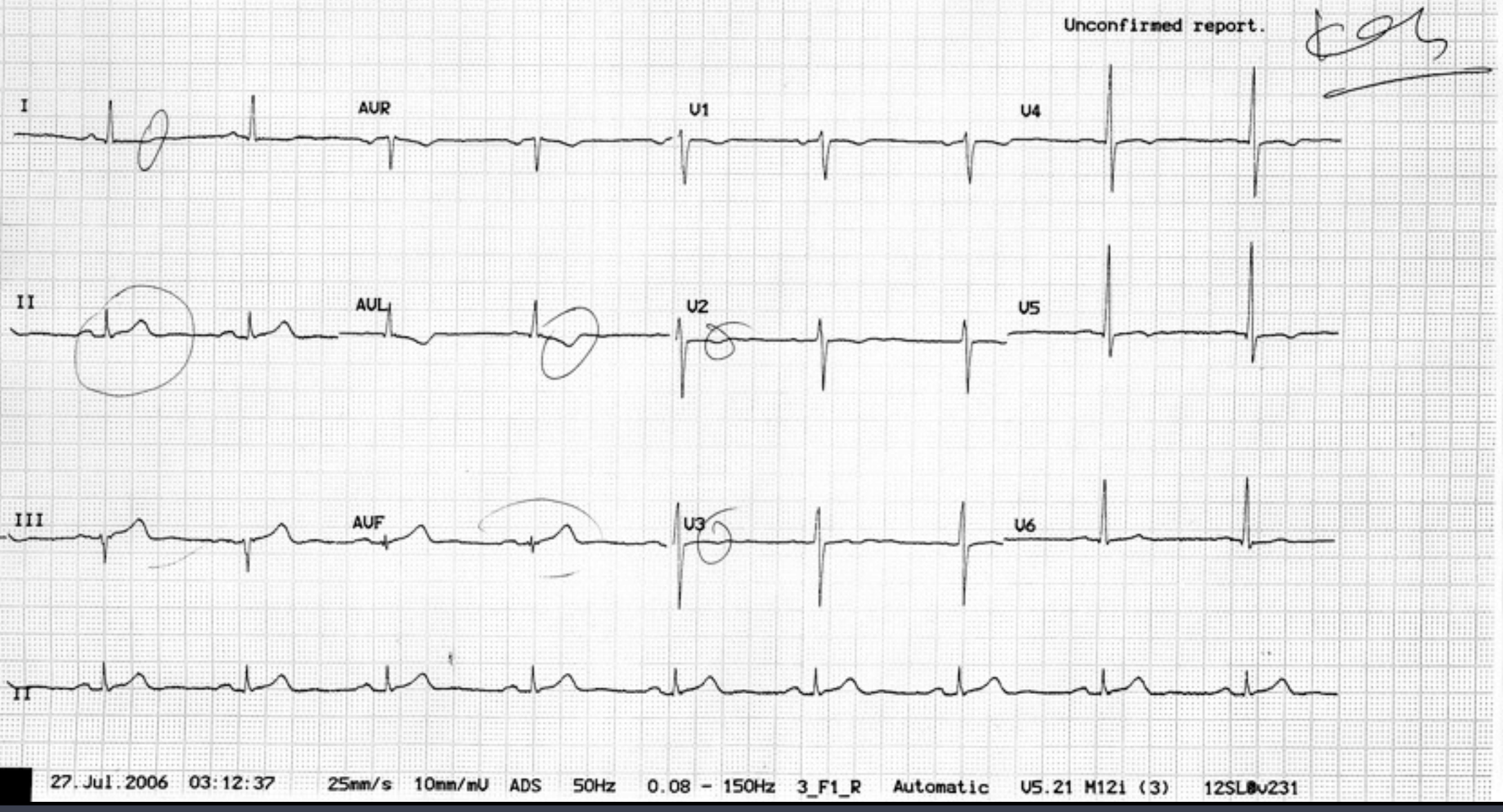
HR 55bpm

Measurement Results:

QRS	:		90 ms
QT/QTcB	:	412 /	394 ms
PR	:		188 ms
P	:		122 ms
RR/PP	:	1074 /	1090 ms
P/QRS/T	:	57/ 1/	92 degrees



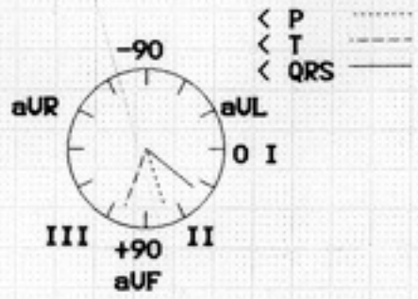
Unconfirmed report.



27.Jul.2006 03:12:37 25mm/s 10mm/mV ADS 50Hz 0.08 - 150Hz 3_F1_R Automatic V5.21 M121 (3) 12SL8v231

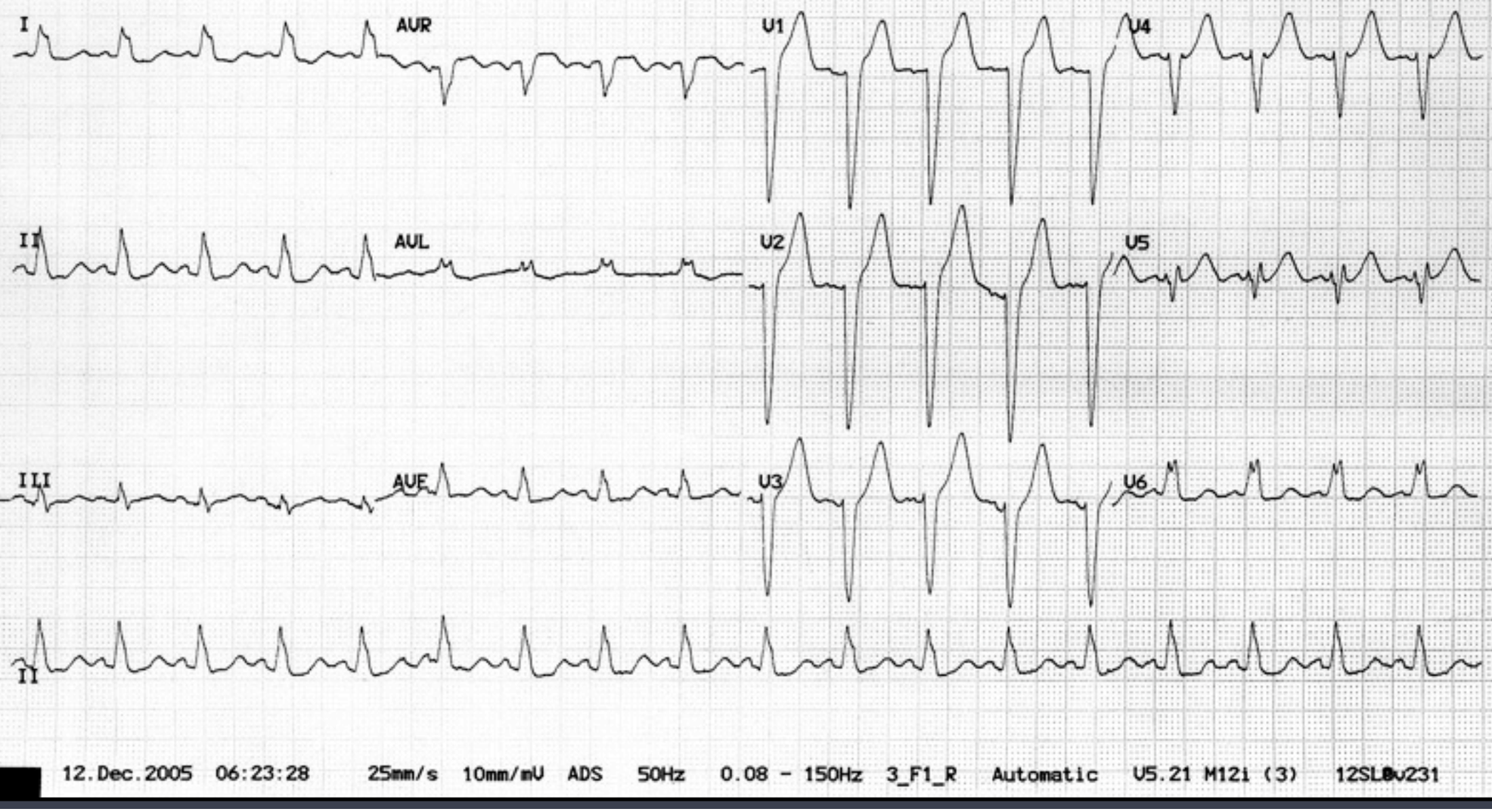
Measurement Results:

QRS	:		124 ms
QT/QTcB	:	388 /	519 ms
PR	:		132 ms
P	:		104 ms
RR/PP	:	552 /	555 ms
P/QRS/T	:	71/ 39/	111 degrees

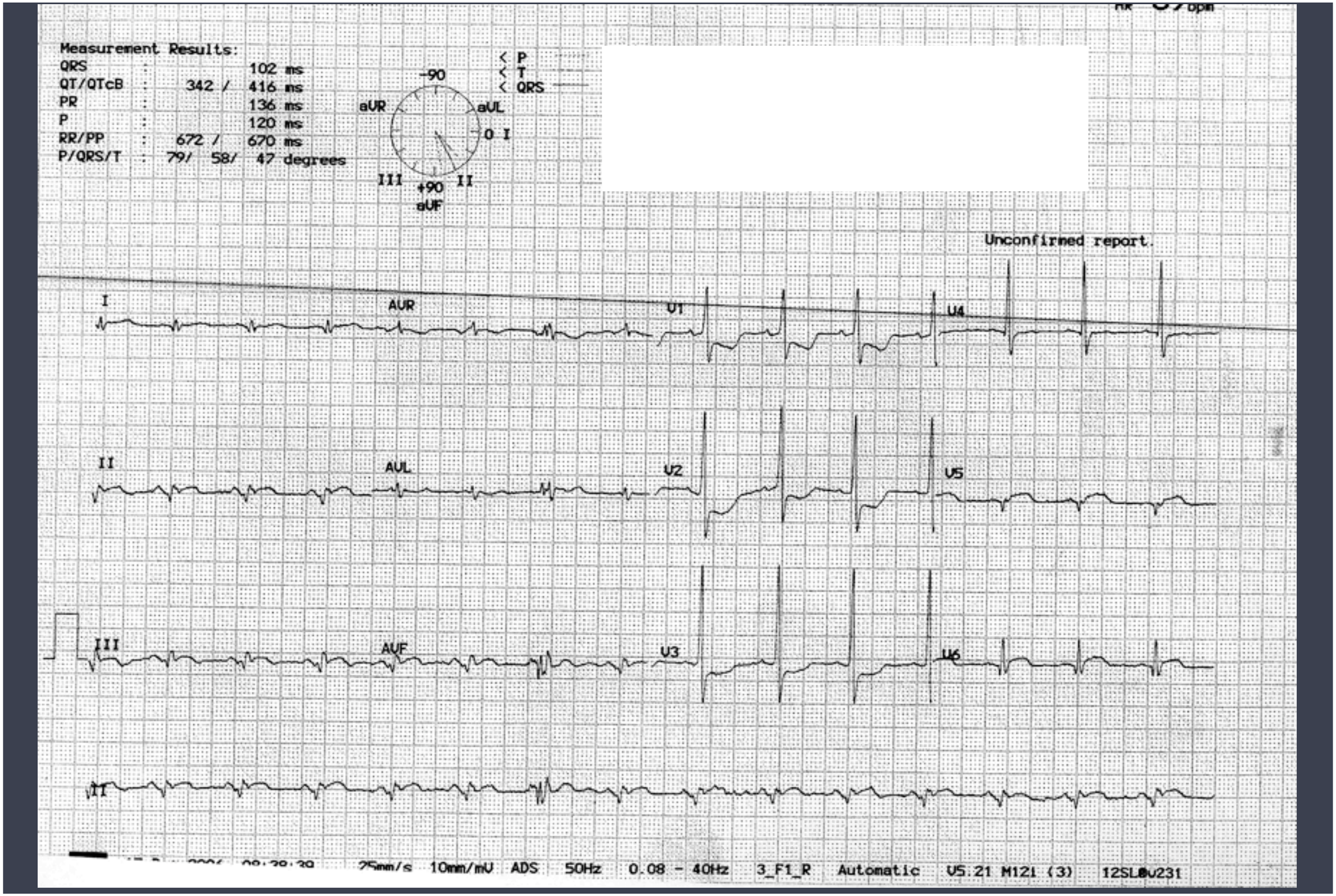


< P
< T
< QRS

Unconfirmed report.



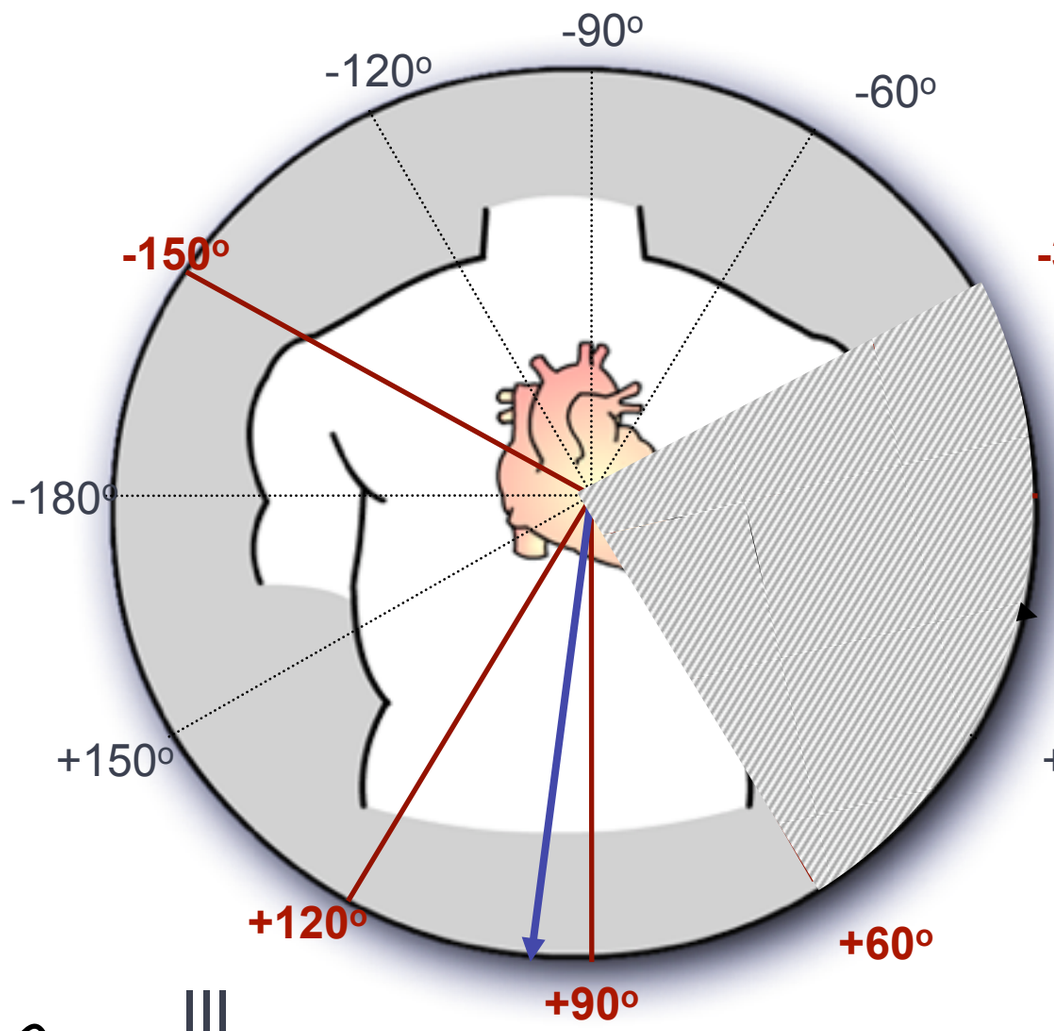
12.Dec.2005 06:23:28 25mm/s 10mm/mV ADS 50Hz 0.08 - 150Hz 3_F1_R Automatic V5.21 M12i (3) 12SL0v231

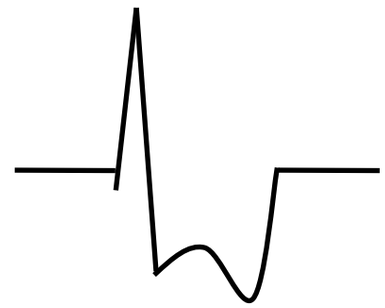

Measurement Results:
QRS : 102 ms
QT/QTcB : 342 / 416 ms
PR : 136 ms
P : 120 ms
RR/PP : 672 / 670 ms
P/QRS/T : 79/ 58/ 47 degrees
P
T
QRS
-90
aVR
aVL
0 I
III
+90
aVF
II
Unconfirmed report.
I
AVR
V1
V4
II
AVL
V2
V5
III
AVF
V3
V6
II
25mm/s 10mm/mV ADS 50Hz 0.08 - 40Hz 3_F1_R Automatic V5.21 M121 (3) 12SL

Reciprocal Changes

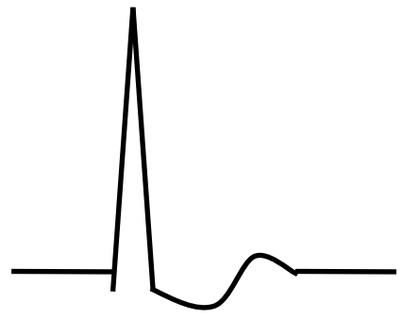
QRS

T



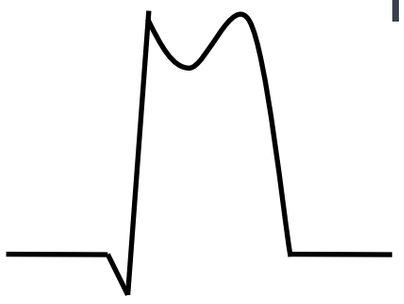


aVL

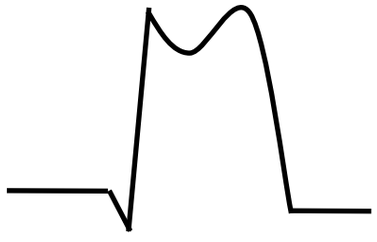


I

III



aVF



Criteria for p-PCI

Do the presenting symptoms indicate an AMI?

Does the patient have cardiac pain in last 12 hours?

Symptoms suggestive of an AMI within the preceding 12 hours

If yes, are there ECG changes to support the diagnosis?

Initial Management for all ACS

- Aspirin 300mg
- Clopidogrel 300mg (600mg if for PCI)
- Oxygen 15L
- Nitrates sublingual/spray or IV infusion
- Morphine or diamorphine IV titrated for pain and metoclopramide

Then assess for eligibility for pci

Chest Pain Protocol

PROTOCOL FOR ASSESSMENT OF PATIENTS PRESENTING WITH SUSPECTED CARDIAC CHEST PAIN

Date of admission.....Time of admission.....Courtesy call Y N

Please affix patient label here

SUSPECTED CARDIAC CHEST PAIN

1. Oxygen 60%
2. Analgesia
3. Aspirin 300mg or Clopidogrel 300mg

PERFORM ECG

ECG INDICATIONS FOR THROMBOLYSIS
Tick box if present

ST-segment elevation of at least 1mm in at least 2 contiguous limb leads ☐

Or

ST-segment elevation of at least 2mm in at least 2 continuous chest leads ☐

Or

New (or presumed new) LBBB ☐

Or

True posterior MI (must include ST depression at least 2mm in V1-3) ☐

Other ECG findings on admission
Free text

Are ECG indications for thrombolysis present? → NO → Does the pain sound cardiac or other signs of ACS present? Chest pain at rest > 15 mins, 1mm ST ↓ or T ↓ in 2 leads or transient ST elevation

YES → Consider thrombolysis

Does the pain sound cardiac or other signs of ACS present? → YES → Treat as suspected ACS Go to page 3

Does the pain sound cardiac or other signs of ACS present? → NO → Consider other causes of chest pain and exit this pathway

Worst cardiac chest pain for less than 6 hours and more than 30 minutes.
(Patients presenting between 6-12 hours may be treated given appropriate clinical circumstances, ie large infarct, hypotension or haemodynamic disturbance – at the Clinicians discretion).

NO → Discuss with senior

YES → **DELIVER THROMBOLYTIC AGENT**

ABSOLUTE CONTRAINDICATIONS (if any present **do not** thrombolyse but consider urgent referral for primary angioplasty)

- ☐ Previous haemorrhagic stroke
- ☐ Documented Subarachnoid haemorrhage
- ☐ Pregnancy
- ☐ ANY IMMEDIATE MAJOR BLEEDING RISK

RELATIVE CONTRAINDICATIONS (if present discuss immediately with senior)

- ☐ Non-haemorrhagic stroke within 6 months
- ☐ GI bleed within 6 months, or oesophageal varices
- ☐ Persistent hypertension BP>200mmHg and/or 110mmHg diastolic
- ☐ Trauma/Surgery within previous month (including head trauma)
- ☐ Prolonged or traumatic CPR
- ☐ Bleeding disorder or coagulation defect
- ☐ Reasonable suspicion of Aortic Dissection/Aortic Aneuysm/Pericarditis/Pancreatitis
- ☐ Menstruation (very low risk)
- ☐ Oral anticoagulation with INR outside therapeutic range (>5)

Thrombolytic used.....
Time of administration.....
Prescriber's Name.....
Prescriber's Signature.....

Time of onset of symptoms.....Time of hospital arrival.....
Time of first ECG.....Time of diagnostic ECG (if different).....

- **If symptoms suggest acute myocardial infarction, but the ECG does not support the diagnosis, the ECG should be repeated once or twice at 15 minute intervals**
- **Consider thrombolysis if pain > 12 hours, but has suddenly increased in severity, suggesting only recent on set of actual MI**

Clinical criteria for patients presenting via 999

Ambulance inclusion criteria

- Alert and able to give verbal consent to transfer to MRI/ Wythenshawe
- Symptoms compatible with an acute MI within the last 12hrs AND with the following ECG criteria:
  - ST elevation (at the J-point) in two contiguous(adjacent) leads: 2mm in men or 1.5mm in women in leads V2–V3 and/or 1mm in other leads
  - LBBB if associated with typical MI symptoms
- Aged 80 years or less
- Patients resuscitated from cardiac arrest not requiring intubation/ventilation with ECG criteria as above

Ambulance exclusion criteria

- Evidence of significant, active bleeding
- Paced rhythm on ECG
- Cardiac arrest on-scene resulting in patient being intubated or unconscious (however, patients who are successfully resuscitated and able to give verbal consent can still be transferred directly to MRI (CMMC) or Wythenshawe (UHSM)

Primary PCI Pathway Ambulance

The A+E stage

Patient kept on ambulance trolley

↓

If not already – 12 lead ECG, obtain iv access, 300mg of aspirin, iv analgesia, anti-emetic (always with iv opiate analgesia), buccal nitrates

↓

Provisional diagnosis of an STEMI made

↓

Patient informed of transfer and consented

↓

Maximum of 600mg of clopidogrel

↓

p-PCI proforma completed

↓

Patient returned to the ambulance

PCI Proforma

Primary PCI Proforma (NMGH/SRHT to MRI)

1. Clinical criteria: *(tick as appropriate)*

- ☐ **Symptoms suggestive of Acute Myocardial Infarction within preceding 12 hours?**
- ☐ **Diagnostic ECG: ST elevation or LBBB?**

If "yes", to both questions, please immediately arrange **emergency transfer** to tertiary centre for assessment for primary angioplasty:

Manchester Royal Infirmary PCI Coordinator - **07920 548128.** (Back-up number is 0161 276 4257)

- Sicker patients tend to derive greater benefit from primary PCI. However if there are any particular concerns regarding transfer, contact PCI cardiologist immediately (usually via PCI Co-ordinator)
- If patient over 80 years, consider risks and benefits of Primary PCI, if in doubt contact PCI cardiologist via PCI Co-ordinator

2. Patient information

Name ……..... **Date of Birth** ……/……/……..

NHS number *(if known)*…….... **Ambulance incident number** ……..…….

Name of next of kin…….. **Relationship to patient?** ……..

Phone number …….. **Contacted: Yes / No** *(circle)*

3. Drug information

THIS IS REQUIRED FOR HANDOVER TO TERTIARY CENTRE & AUDIT PURPOSES.
PLEASE USE LOCAL PRESCRIPTION DOCUMENTATION AS WELL.

Known Allergies?:

*a. If patients are on maintenance doses of aspirin & Clopidogrel they should nevertheless normally receive loading doses prior to transfer.
*b. If patient on **WARFARIN**, **INFORM PCI COORDINATOR.** It would normally still be appropriate to give loading doses of aspirin & Clopidogrel (if no other CI). Check INR but do not delay transfer – forward results to PCI centre.
*c. In-patients – If had 300mg Clopidogrel < 24 hours ago, give further 300mg. If > 24 hours (& had maintenance dose) no added loading dose req.

Drug	Dosage Given	Time Given (24 hour clock)	Date	Given by:
Aspirin 300mg*				
Clopidogrel 600mg*				
Opiate *specify:*				
Anti-emetic *specify:*				
Other:				

4. Patient presentation and timings

A) Arrival at local hospital:
- ☐ Via ambulance
- ☐ Self presentation
- ☐ Already an inpatient

B) Decision to transfer:
- ☐ Initial ECG diagnostic – *immediate transfer*
- ☐ Initial ECG non-diagnostic – *transferred later*

Referring hospital:_____

Primary PCI "script" read to patient?
☐ Yes ☐ No

Sign: _____

Print name:_____

Please complete all fields
(Data used to monitor, audit and improve project processes)

To be completed by AMBULANCE and/or LOCAL HOSPITAL STAFF		Date	Time
Symptoms and patient action	Chest pain onset		
	1st contact with professional help (i.e. local GP, nurse etc.)		
	Call for help		
Ambulance – initial assistance from scene of incident (if appropriate)	Arrival of emergency services		
	Left scene		
	ECG done in ambulance (Diagnostic for STEMI: ☐ Yes ☐ No)		
	Reached A+E		
Local hospital – assessment or inpatient transfer	1st Diagnostic ECG for STEMI or LBBB		
	Decision to transfer for primary PCI		
	Returned to ambulance (if original ambulance remained on site)		
	Ambulance called (if new ambulance called for transfer)		
	Ambulance arrived (if new ambulance called for transfer)		
Ambulance – transfer to PCI centre	Leaving DGH site		
	Arrived PCI centre		

Version 8, RG/LC Greater Manchester & Cheshire Cardiac Network, June 2006

?Unstable Angina

- Patients with less than 20 minutes of chest pain/atypical pain, pain free in department, single episode & no risk factors (smoking, DM, hypertension, family history etc) and a normal ECG, ACS is extremely unlikely. Need CXR but not routine blood tests usually. Consider letter to GP for referral to the chest pain clinic. Use clinical judgement as the pain duration/risk factors increase

- Episodes of typical sounding angina at rest/more often than their usual angina need to be referred as ?ACS (unstable angina). Anybody with pain and new ECG changes (ST depression, T-wave inversions etc) need aspirin 300mg, clopidogrel 300mg and clexane 1mg/kg) and refer to RMO to see in department and patient goes to CCU bed

- Episodes of typical sounding angina pain for >20 minutes with normal ECG and pain free on presentation,need to be referred to RMO for 12 hour Troponin. Can go to MAU, no need for aspirin/clopidogrel etc.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