Unlocking the Asian Mystery : Preventing Hemodynamic Collapse During Complex PCI without Direct Left Ventricular Assist Devices

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mayo

CP992924-2

How did the Asian cardiologists do PCI for LM or MVD since 1995? No LVAD and No Surgical Back-up

Dopamine IV
Norepinephrine IV

From: QRS Changes During Percutaneous Transluminal Coronary Angioplasty and Their Possible Mechanisms

J Am Coll Cardiol. 1997;30(2):452-458. doi:10.1016/S0735-1097(97)00165-4

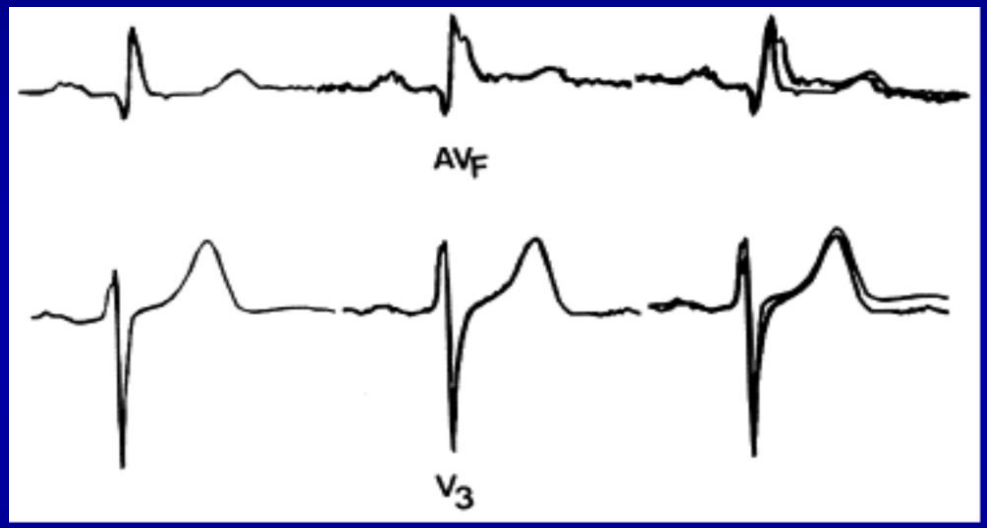


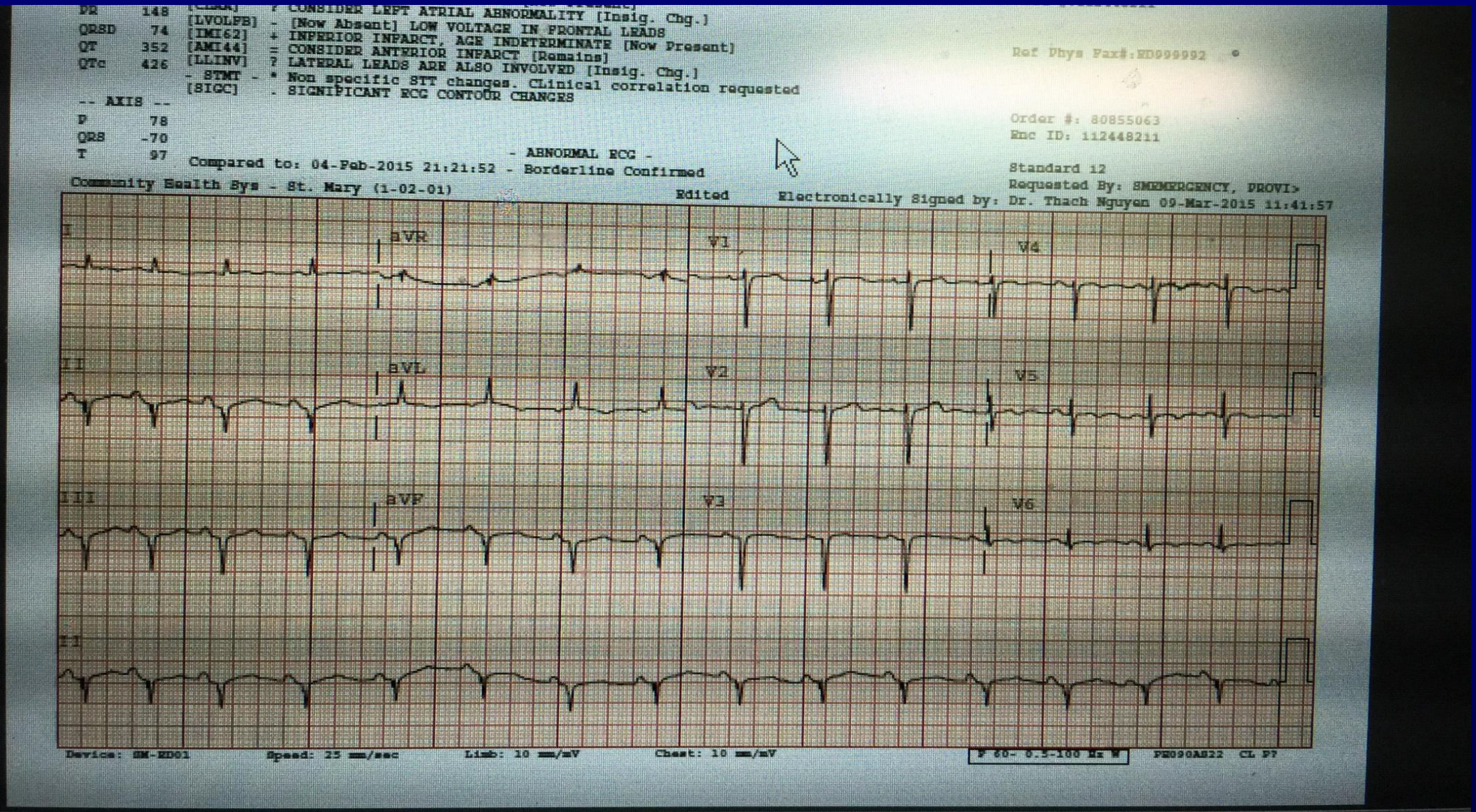
Figure Legend:

Superposition of the ECG before and during RCA occlusion in leads aVF and V_3 in a patient whose QRS duration was increased by 32 ms in lead aVF and by 10 ms in lead V_3. (See text.)

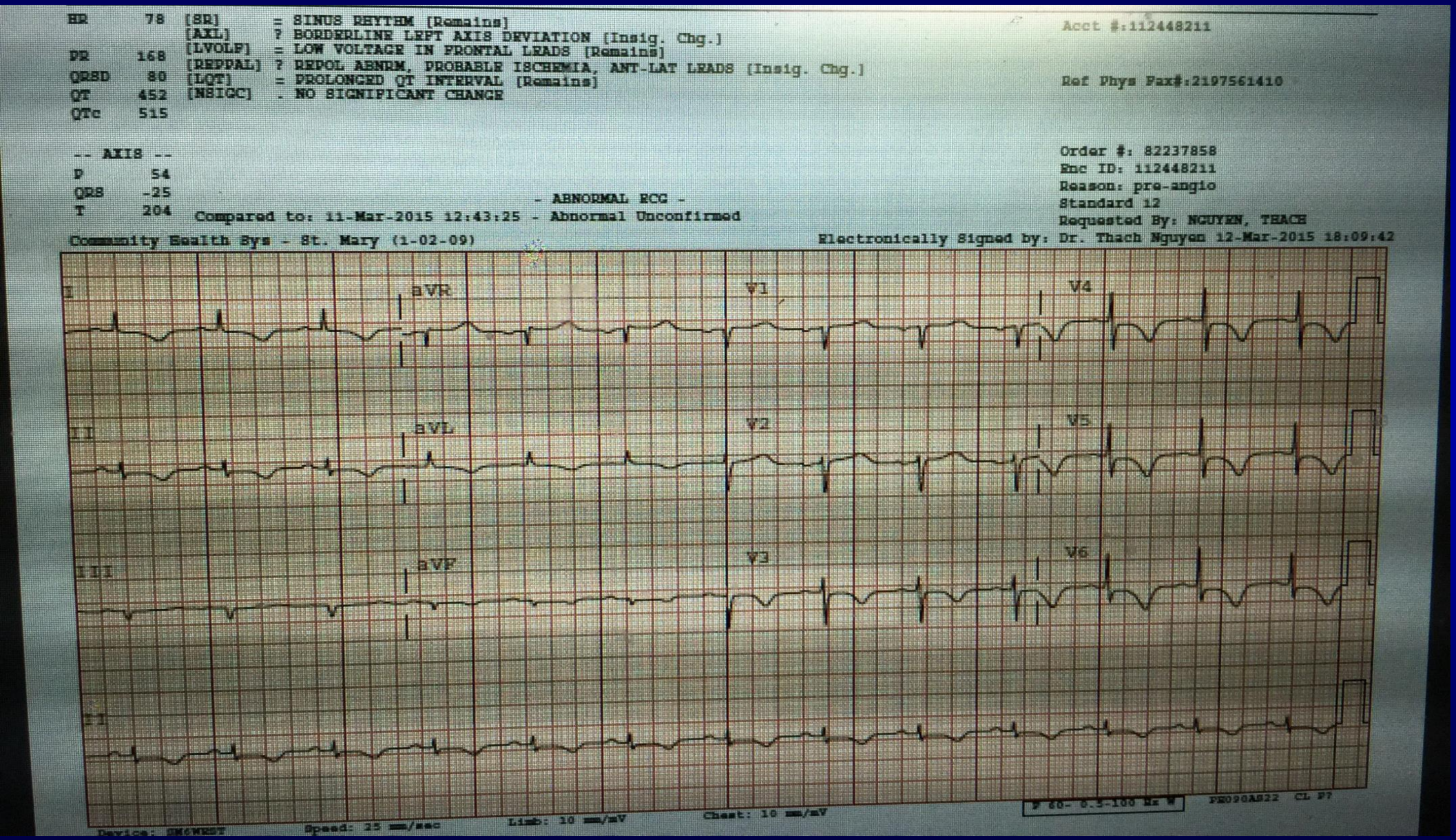
During PCI, which blood pressure do you need to monitor closely?

1. *AOS*
2. *AOD*
3. *AOM*
4. *PP*

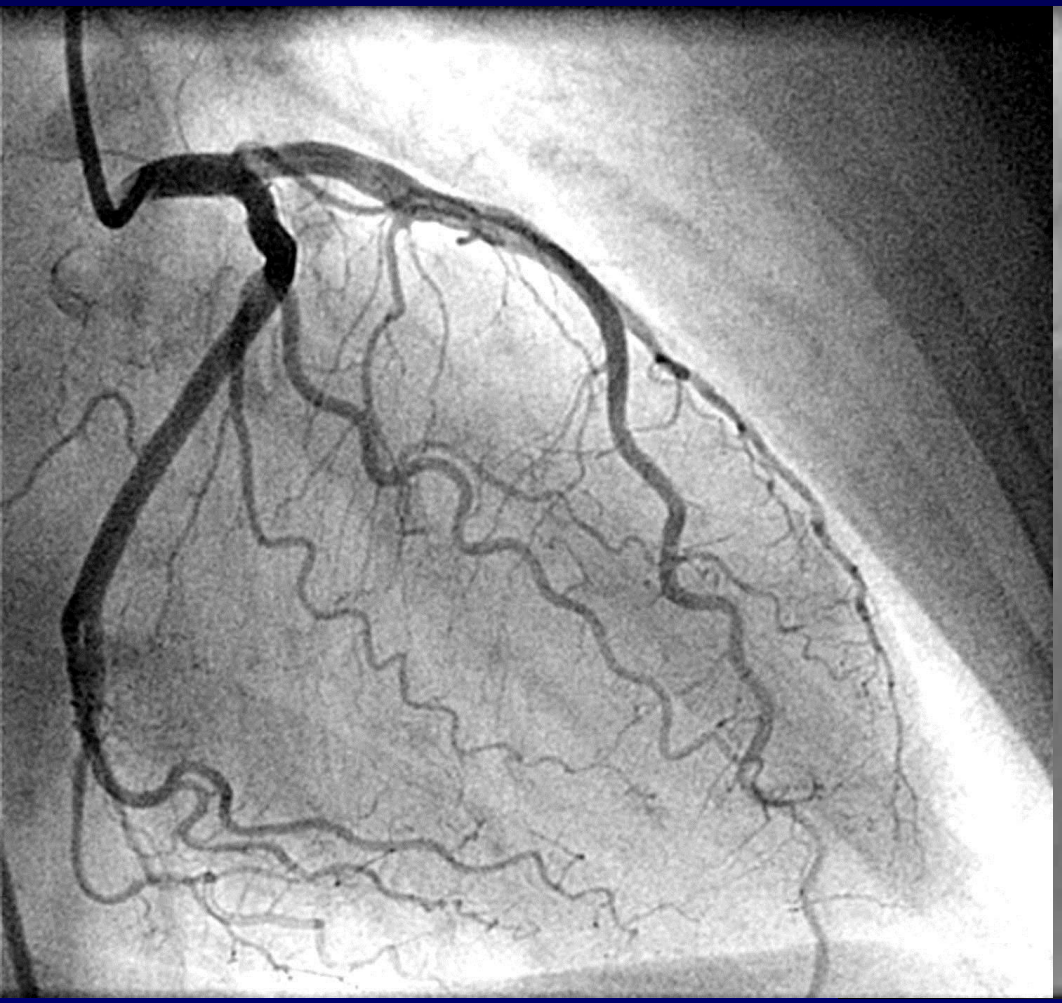
Kathy F 3/9/2015
EKG: Non specific STT changes

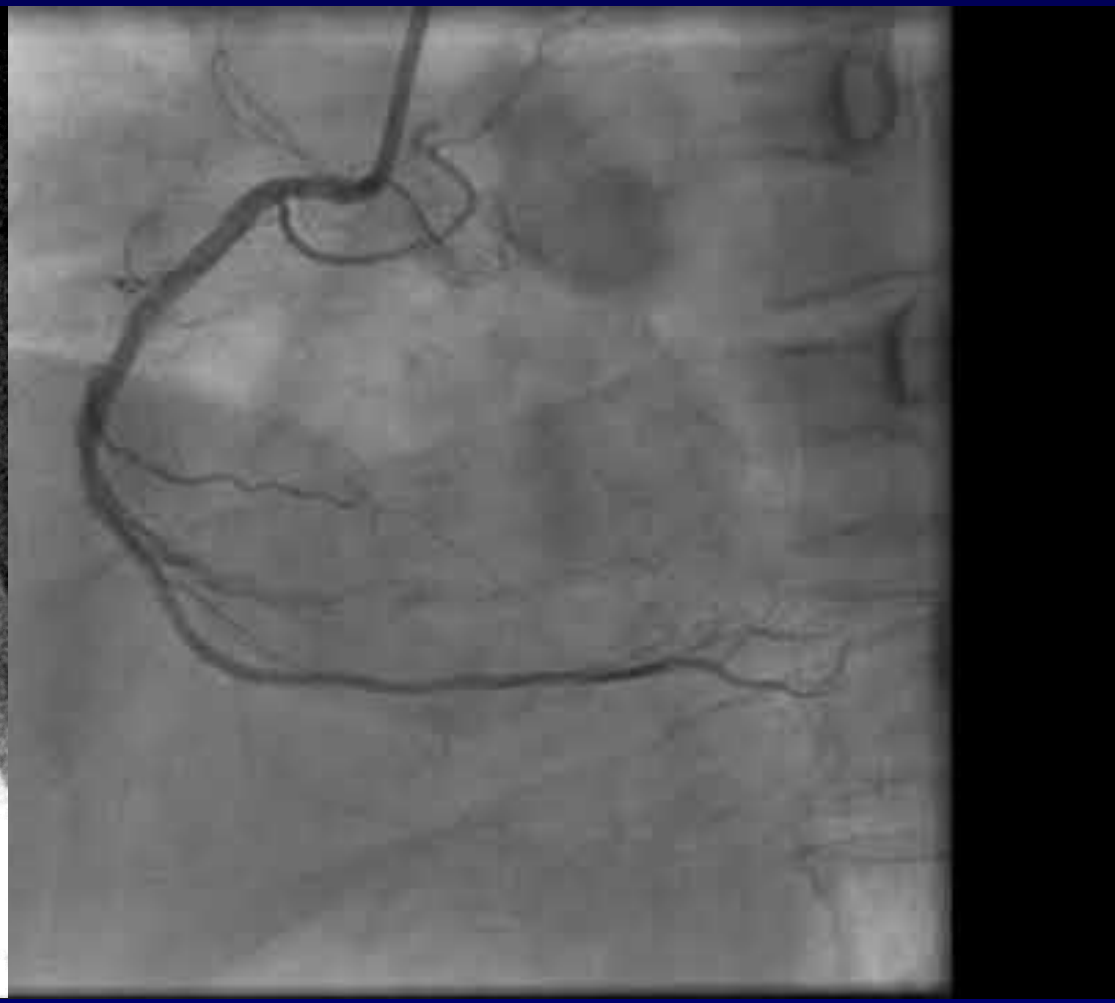


Kathy F 3/12/2015

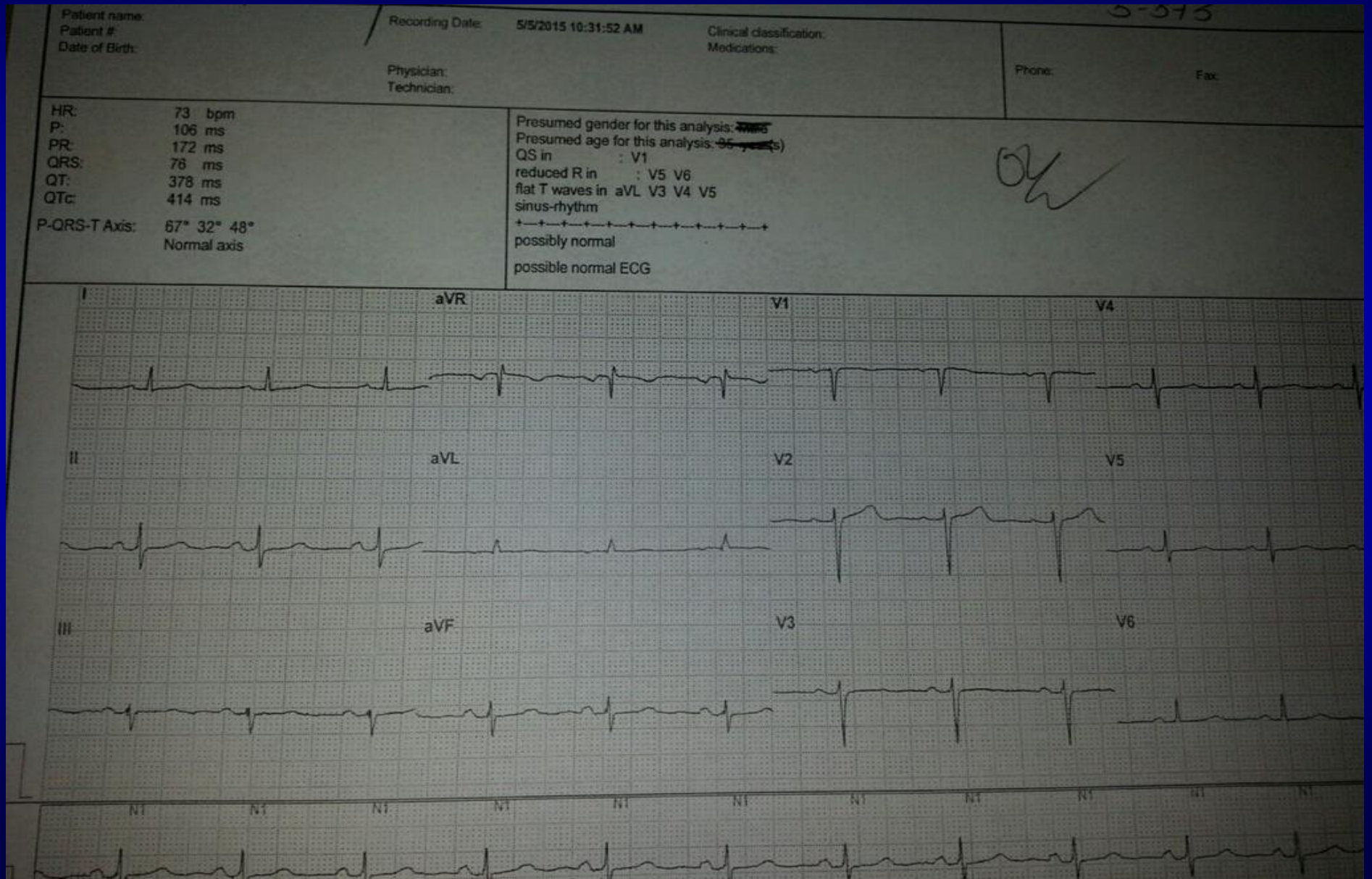


BP 77/52mmHg
AOM= 60 mmHg
LVEDP=38



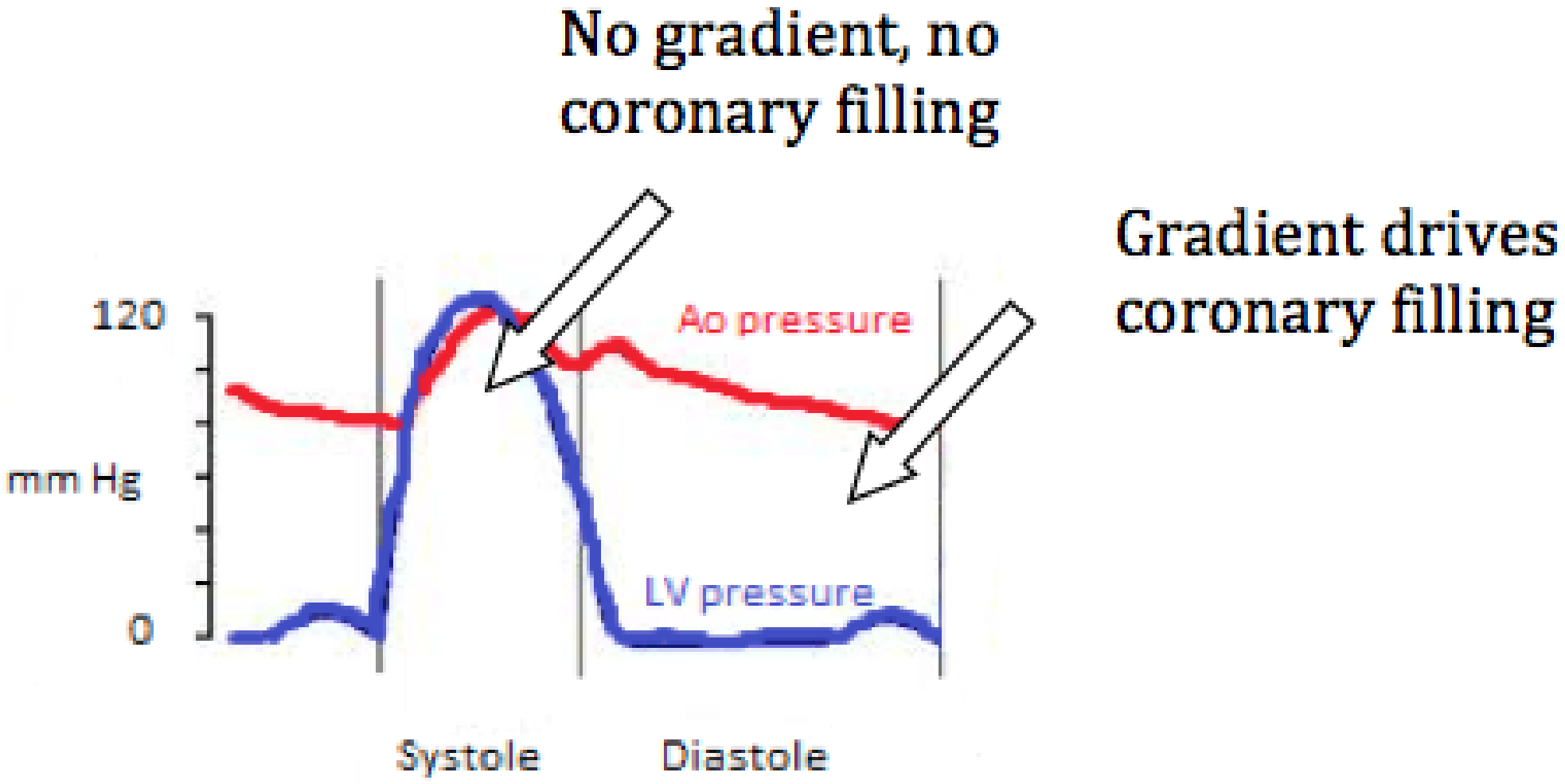


Kathy F 5/5/2015 (normal EKG)



How could we explain the ischemia and chest pain?

Coronary Perfusion Pressure (CPP)= AOD-LVEDP



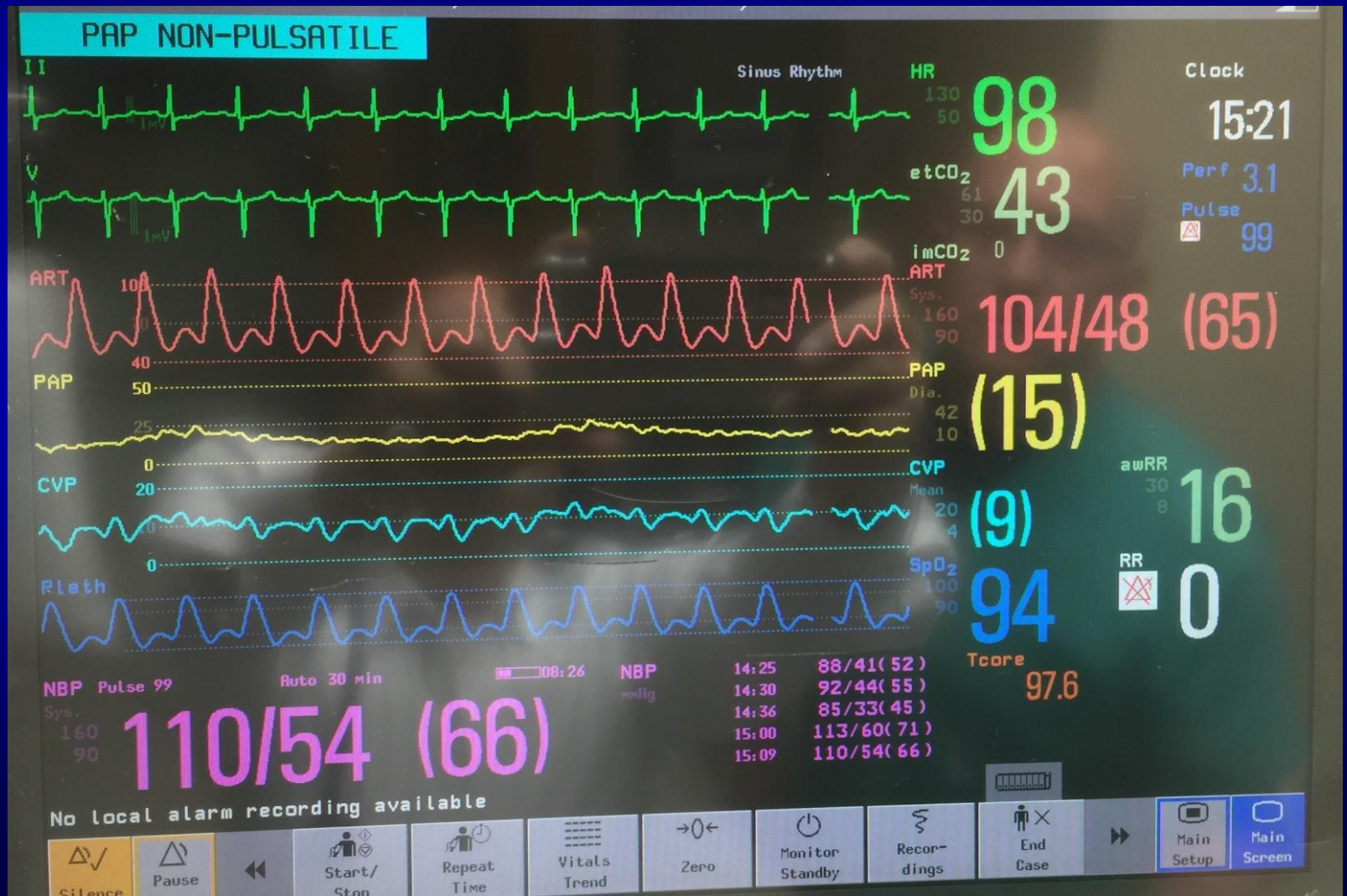
BP 77/52mmHg

LVEDP=38

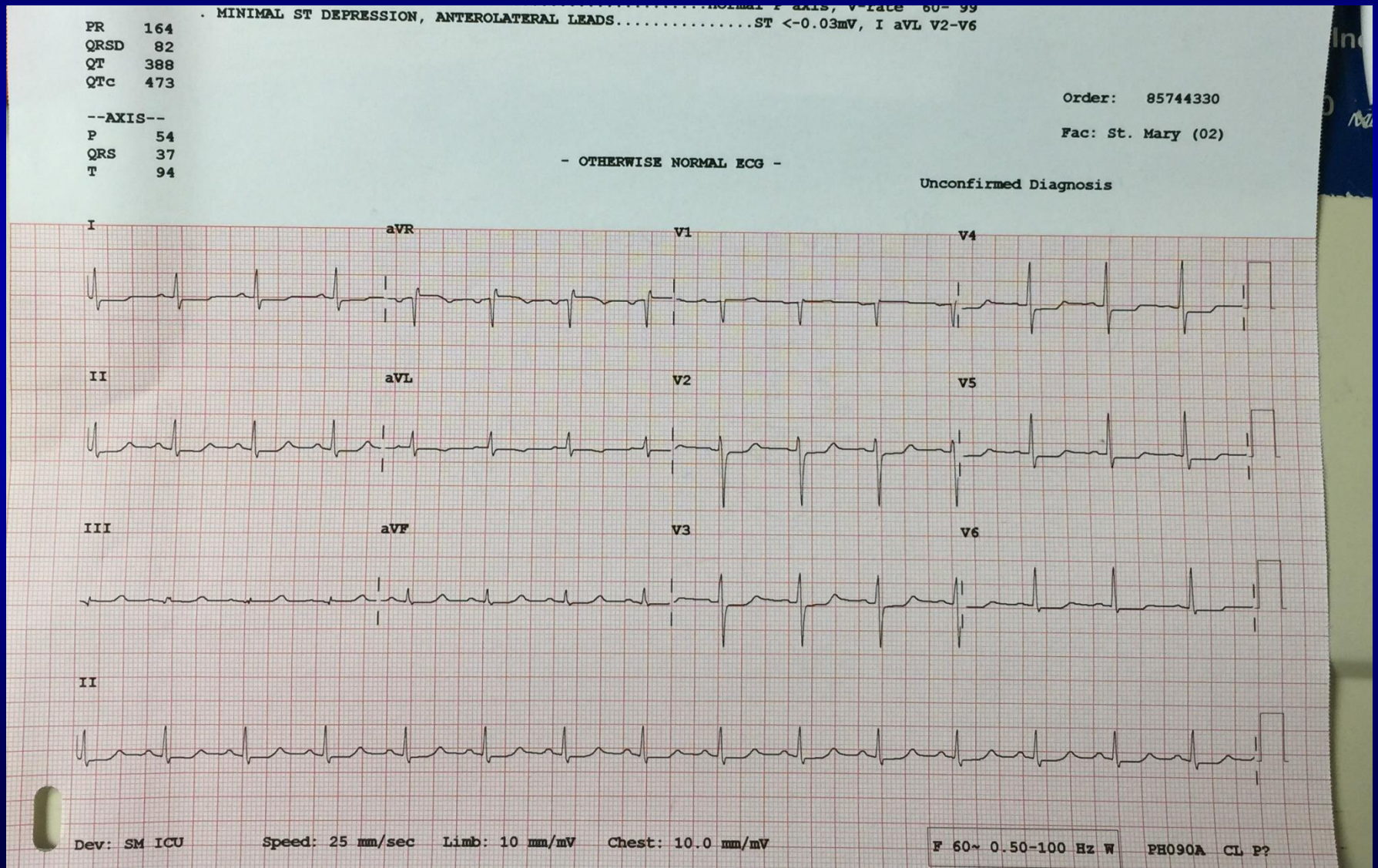
Coronary Perfusion pressure= 52-38=14mmHg

We are used to look at the systolic BP to be >90mmHg or the AOM>60mmHg

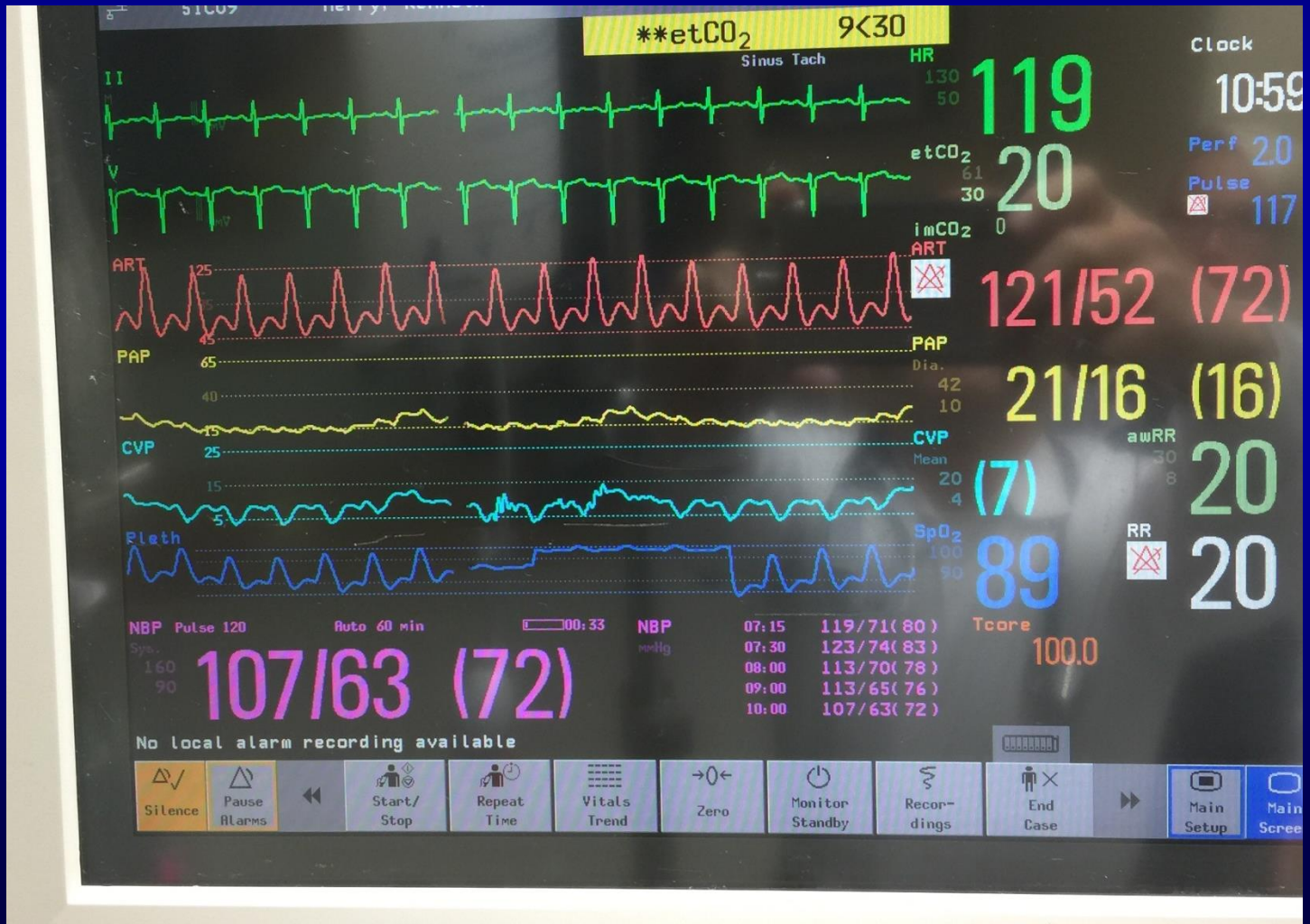
KM CPP= AOD-PCWP= 48-15= 27



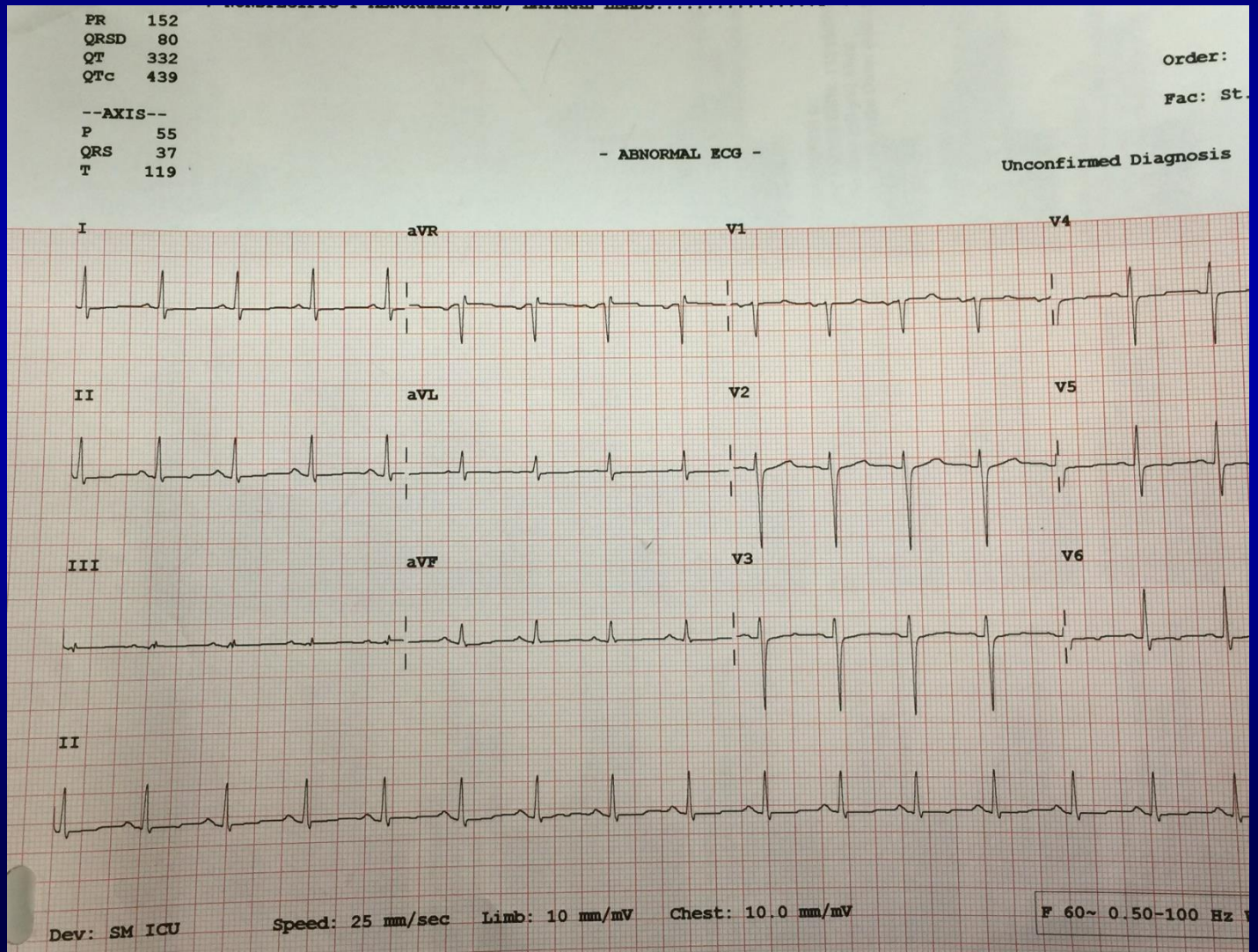
KM CPP= 27


. MINIMAL ST DEPRESSION, ANTEROLATERAL LEADS.....ST <-0.03mV, I aVL V2-V6
PR 164
QRSD 82
QT 388
QTc 473
--AXIS--
P 54
QRS 37
T 94
Order: 85744330
Fac: St. Mary (02)
- OTHERWISE NORMAL ECG -
Unconfirmed Diagnosis
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Dev: SM ICU
Speed: 25 mm/sec
Limb: 10 mm/mV
Chest: 10.0 mm/mV
F 60~ 0.50-100 Hz W
PH090A CL P?

CPP= 52-16= 32mmHg

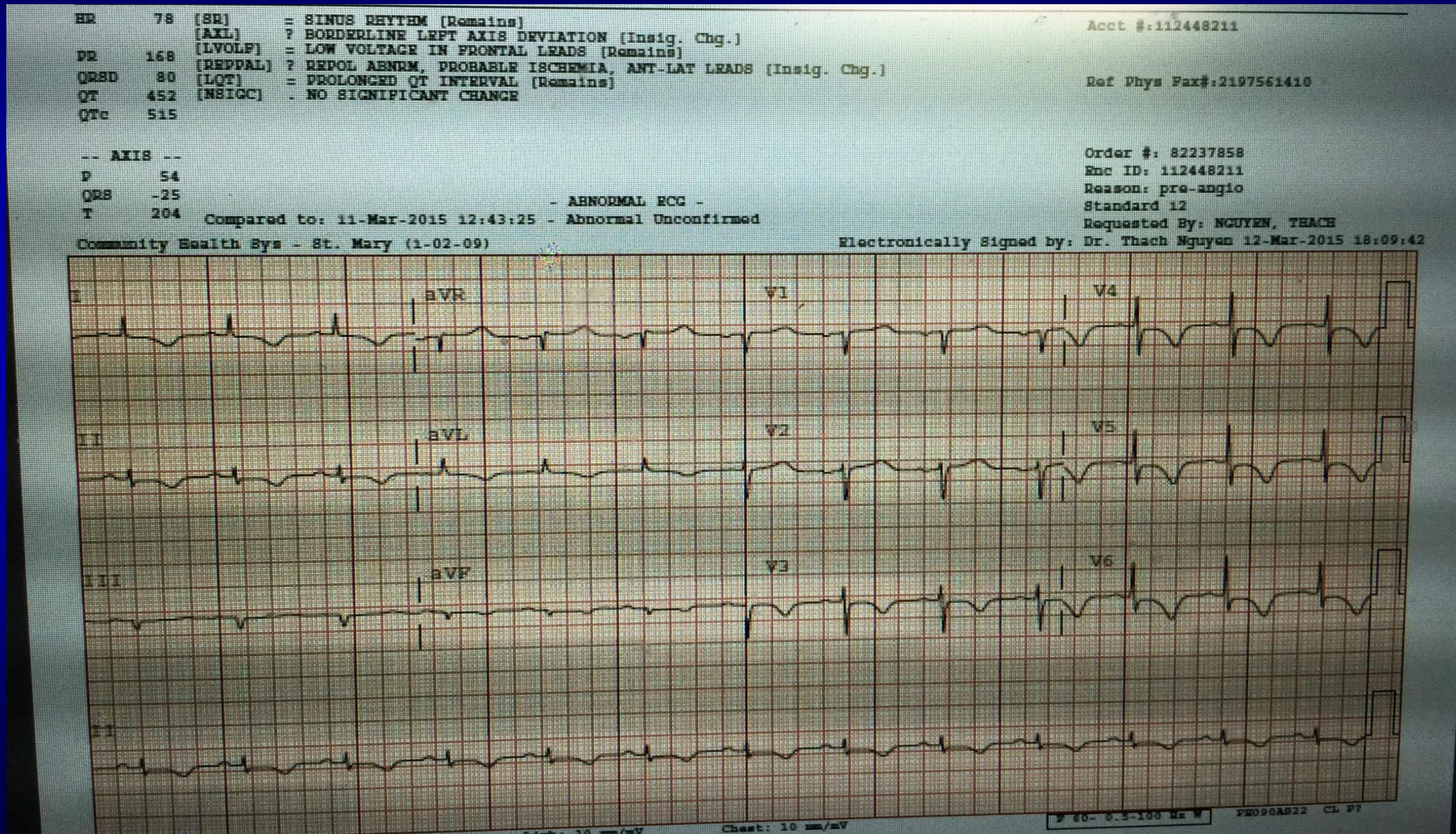


KM CPP: 32mmHg

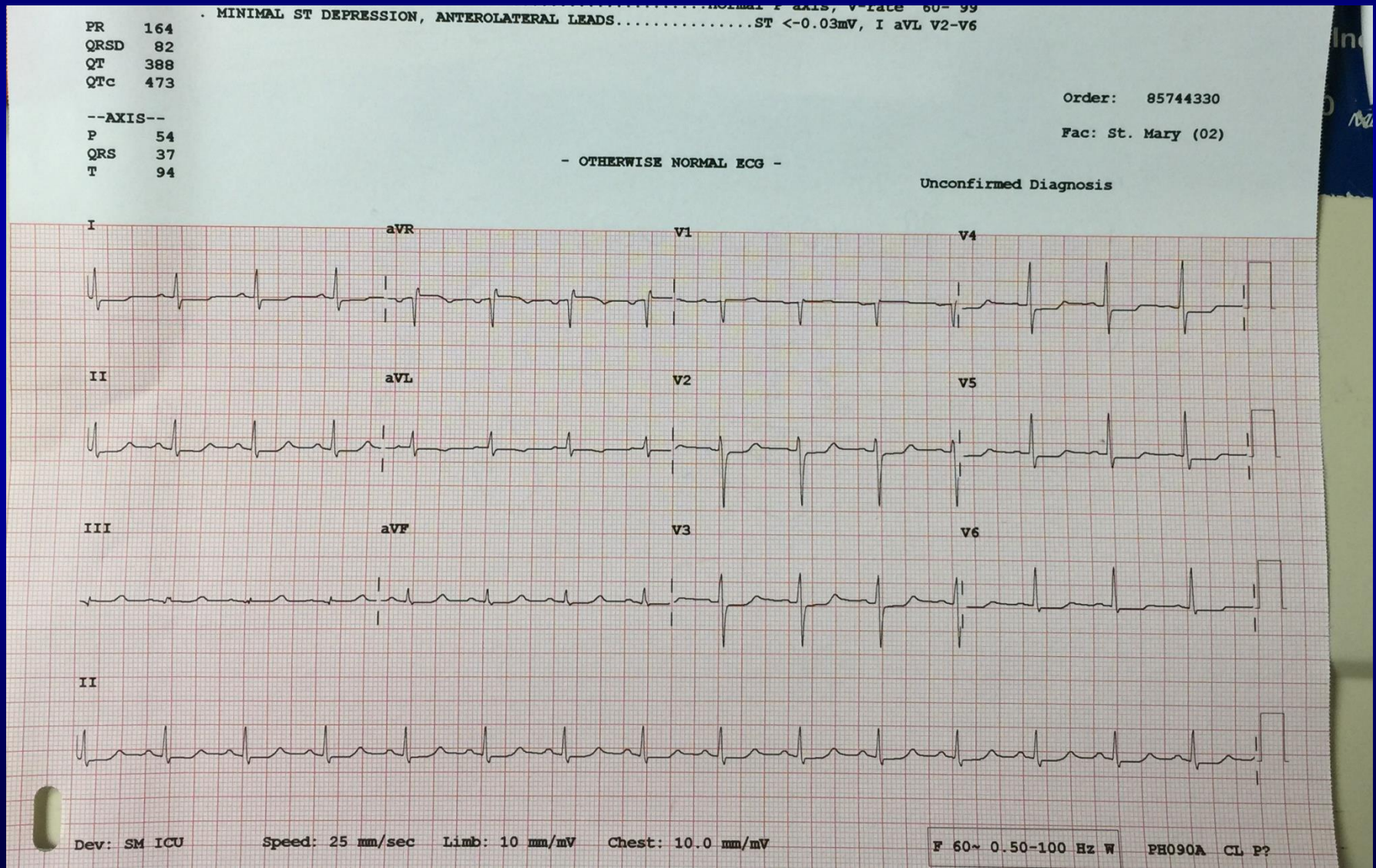


How do you know that it is global ischemia, and not due to a significant focal lesion?

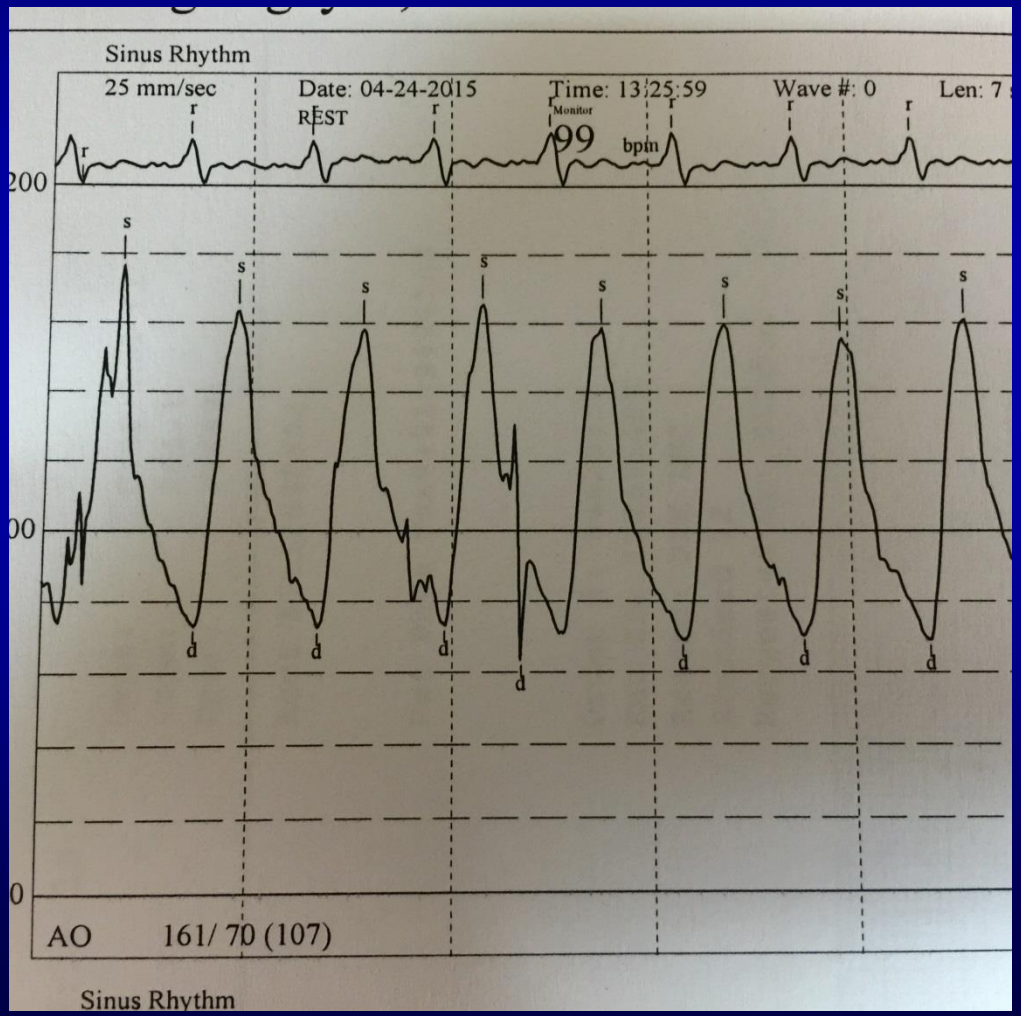
Kathy F 3.12.2015
T wave inversion in I, L, 2 F, V3-V4

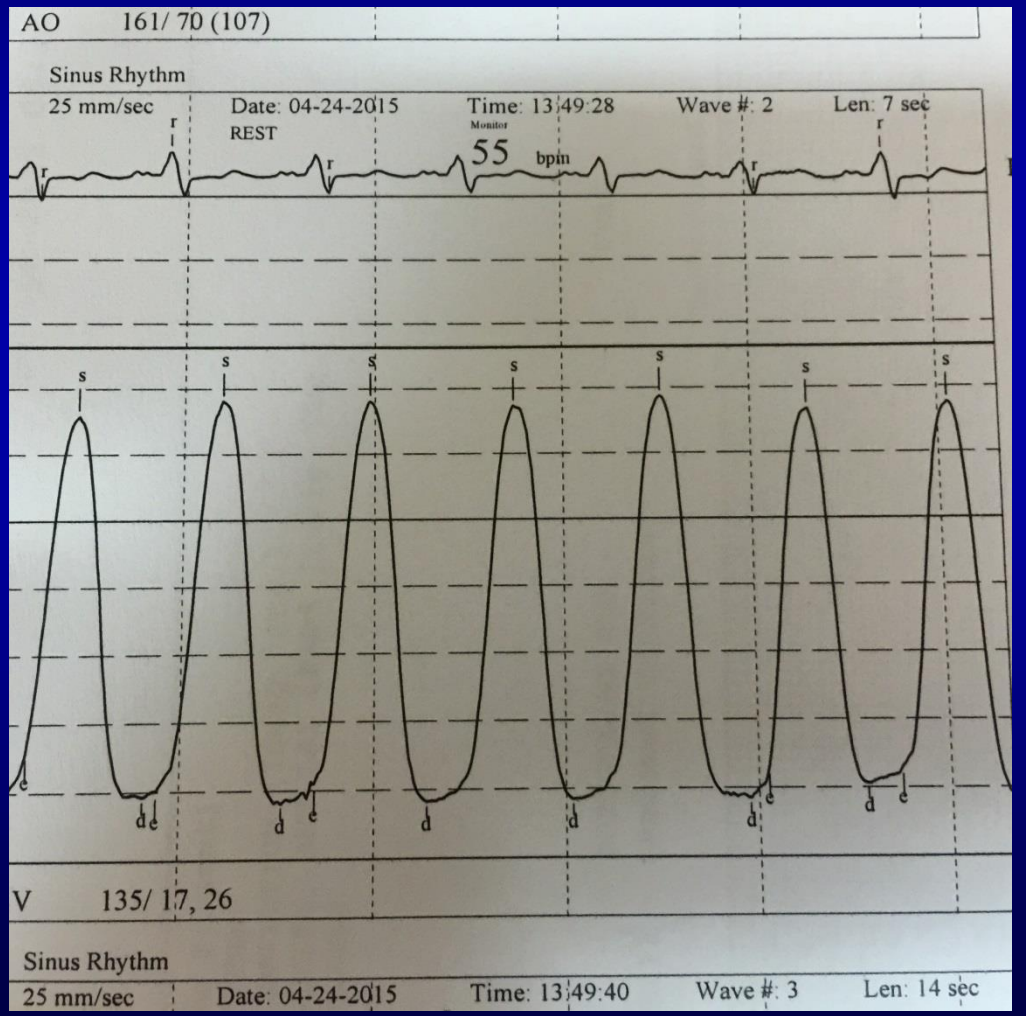


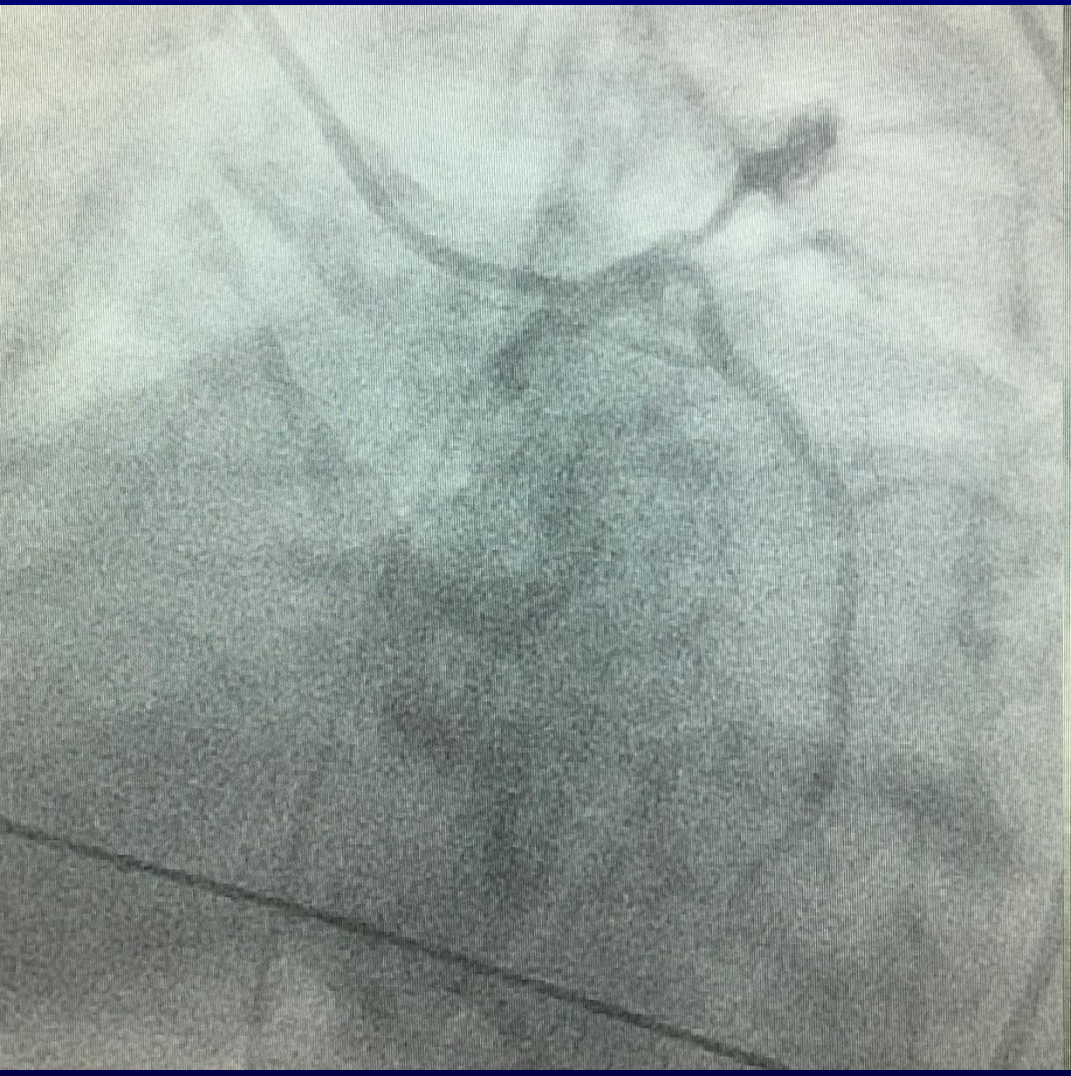
KM ST depression in I, L V3-V6

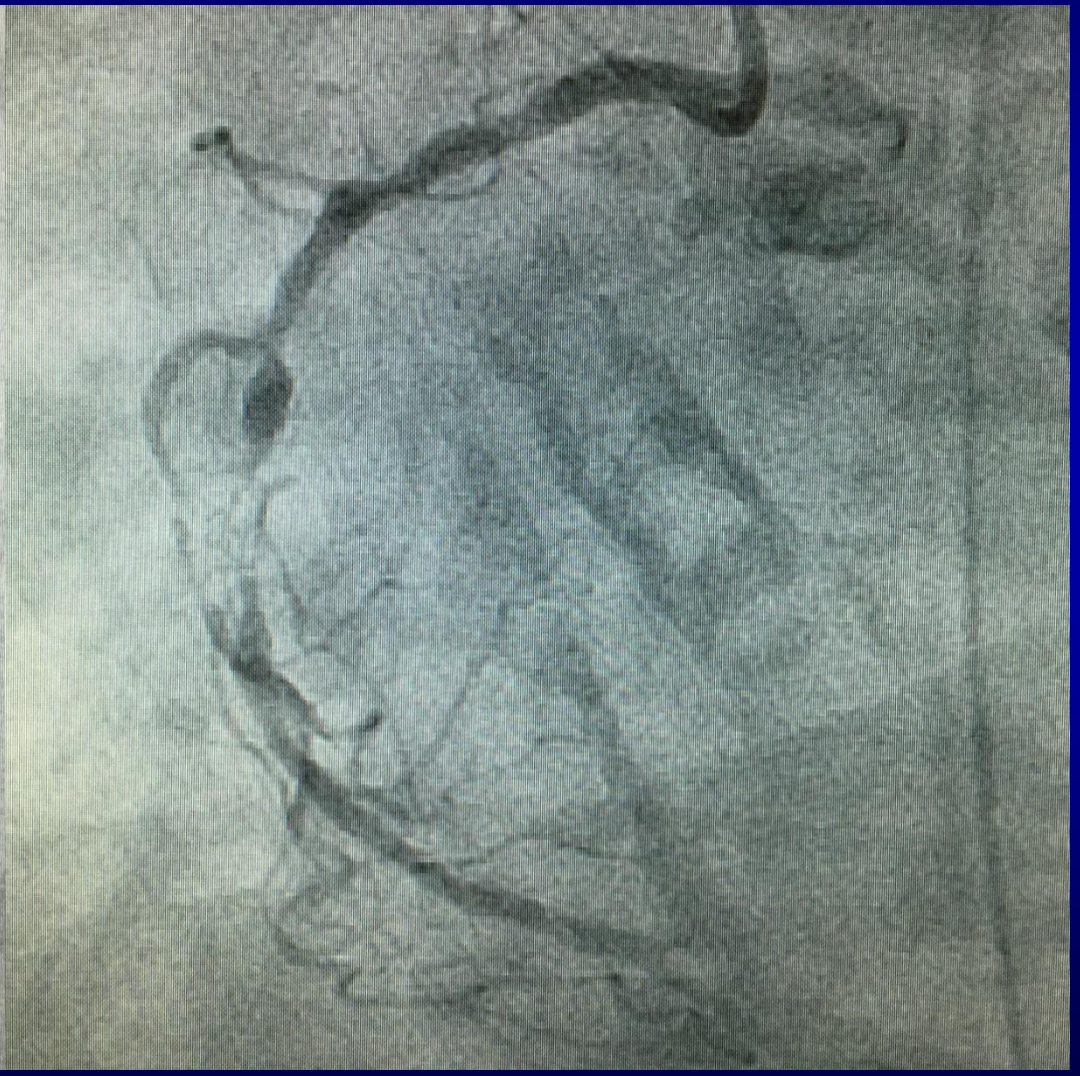


CPP= 70-26= 44mmHg

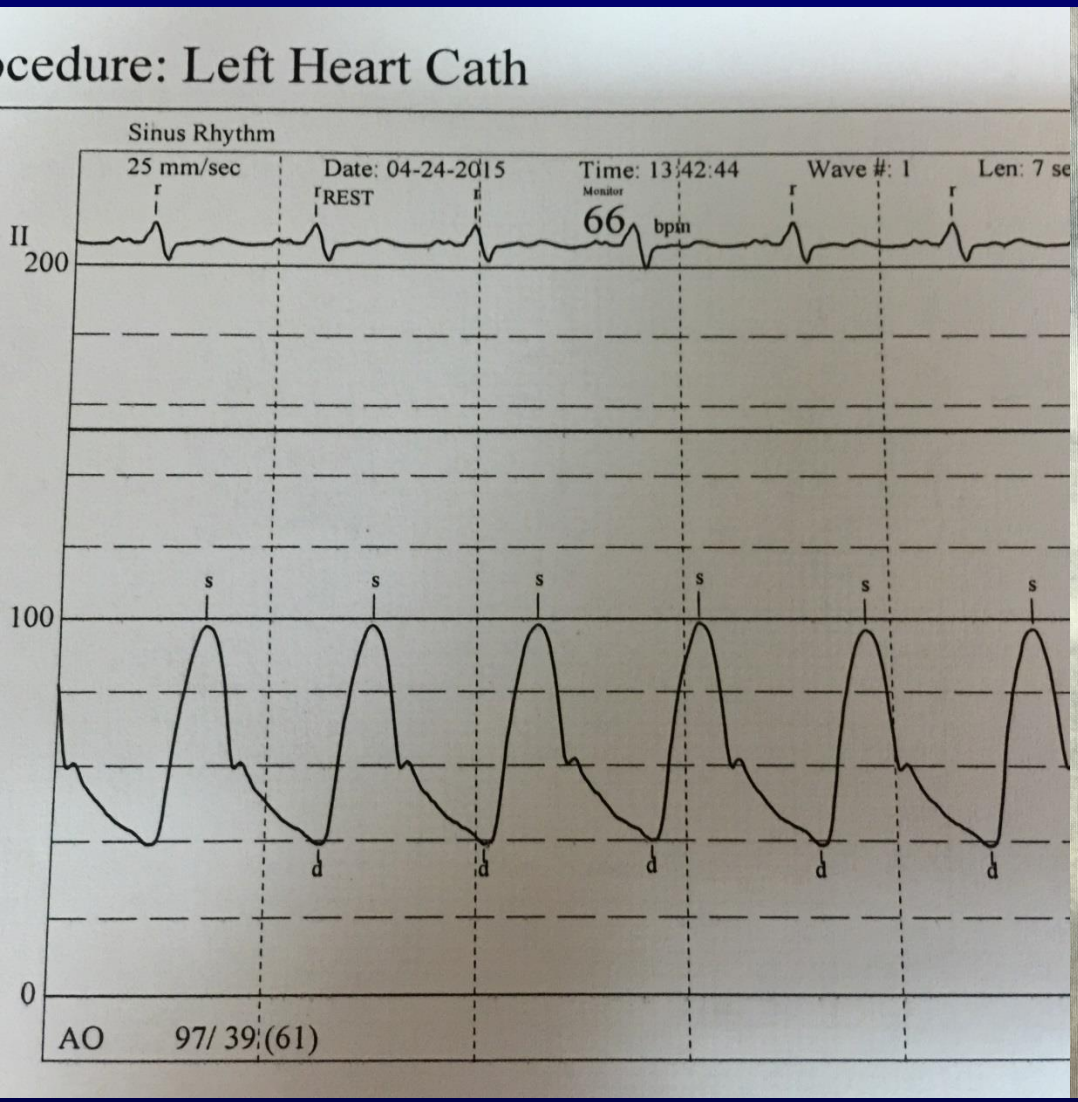


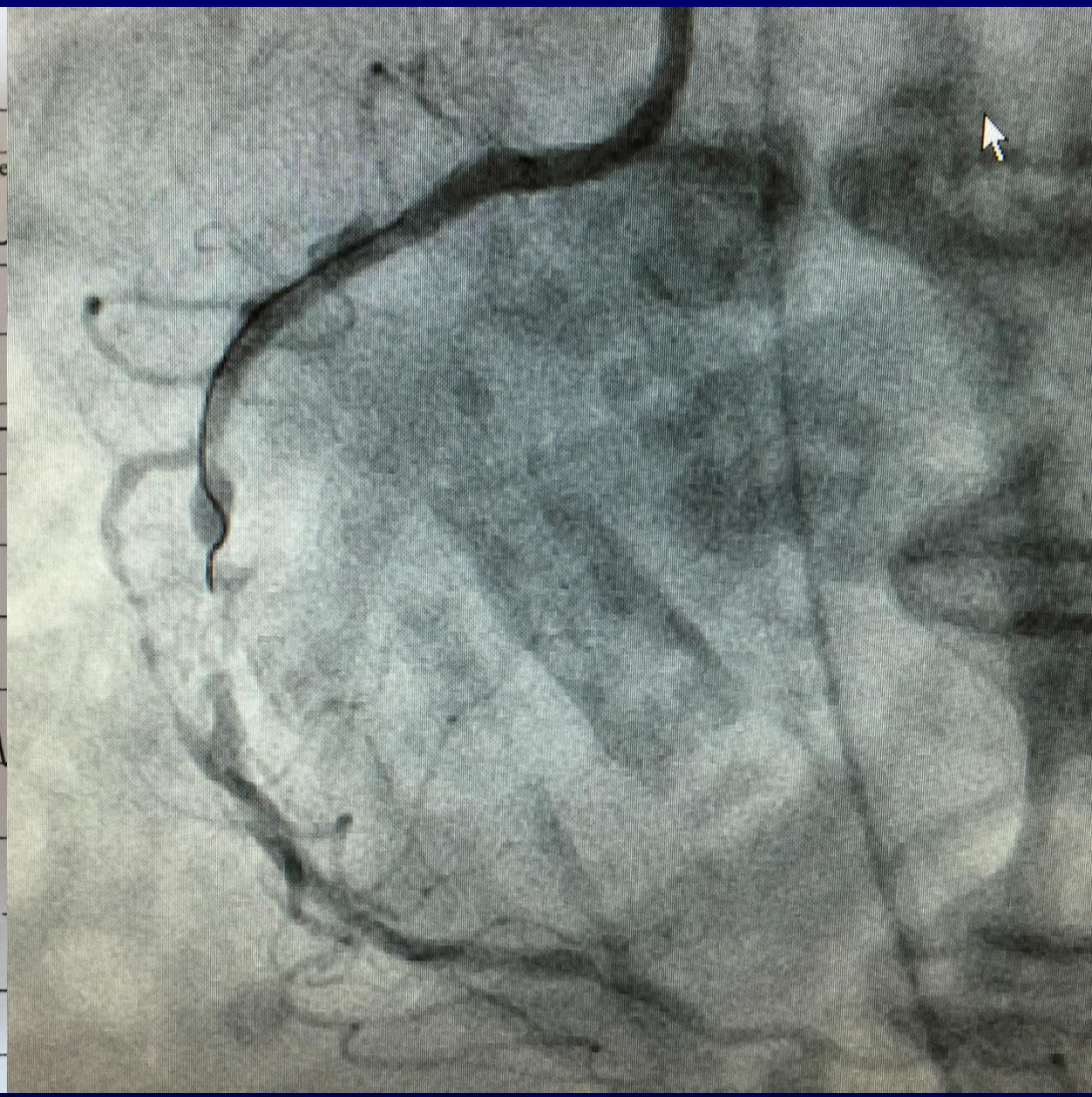






CPP= 39-26= 23mmHg





Date: 04-24-2015

th

b: K_{o2}: 133 Est O_2: 232.75 ml

Heart Rate: 99

Samples

AO	161	/ 70	(107)	SA	99 b/m	13:25:59
AO	97	/ 39	(61)		66 b/m	13:42:44
LV	135	/ 17,	26		55 b/m	13:49:28
LVp	136	/ 15,	27		77 b/m	13:49:40
AOp	115	/ 43	(74)		66 b/m	13:49:47

Summaries of What We Know

Left Ventricular End Diastolic Pressure

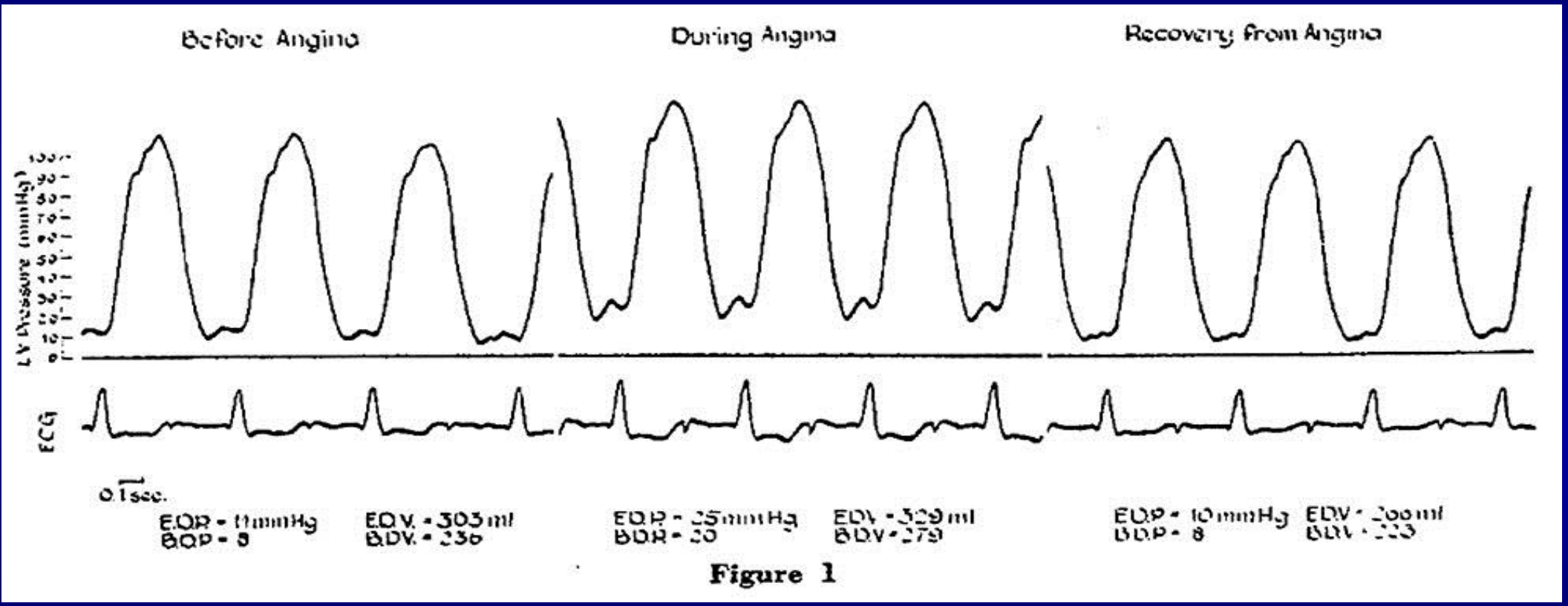
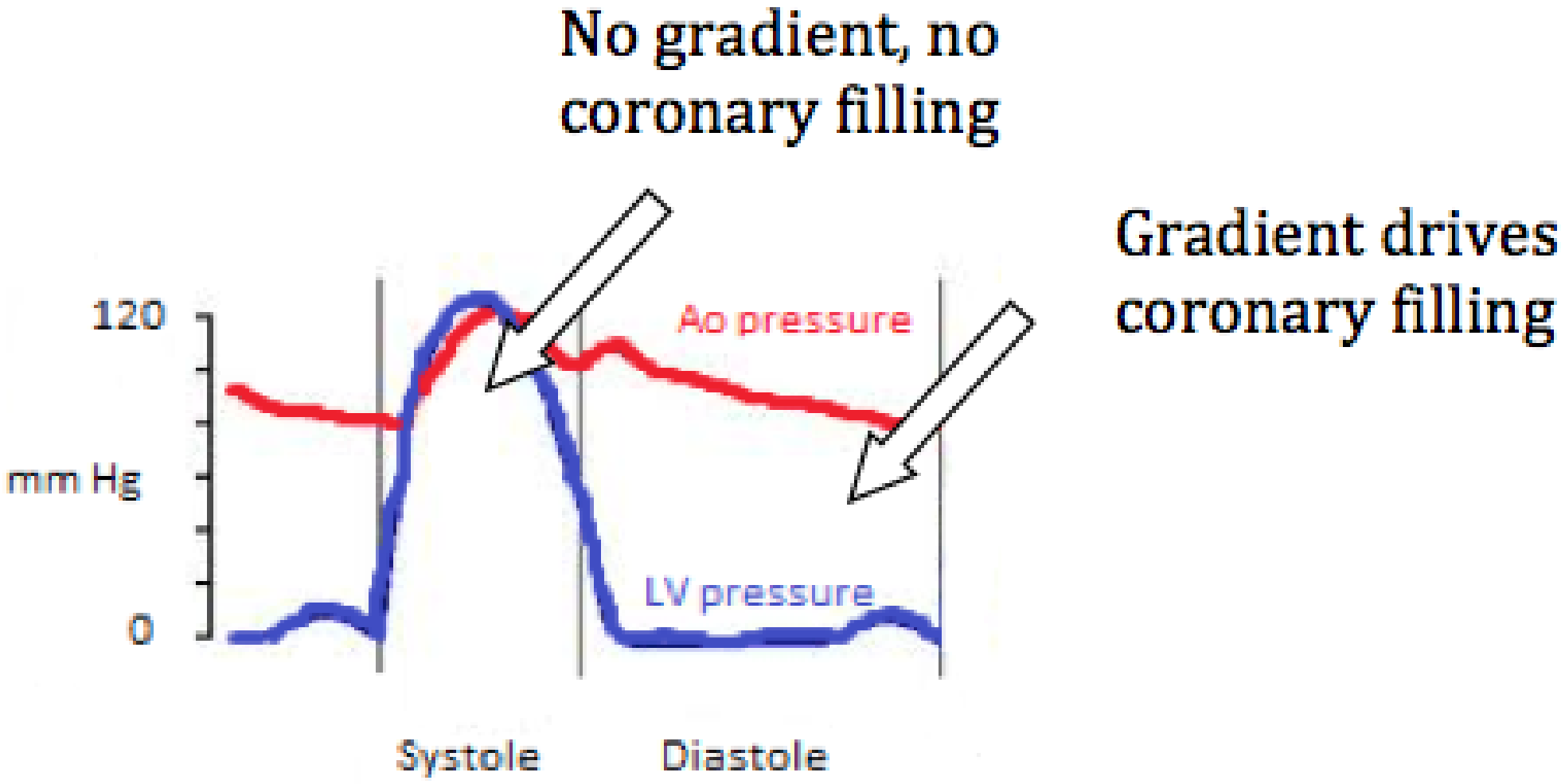
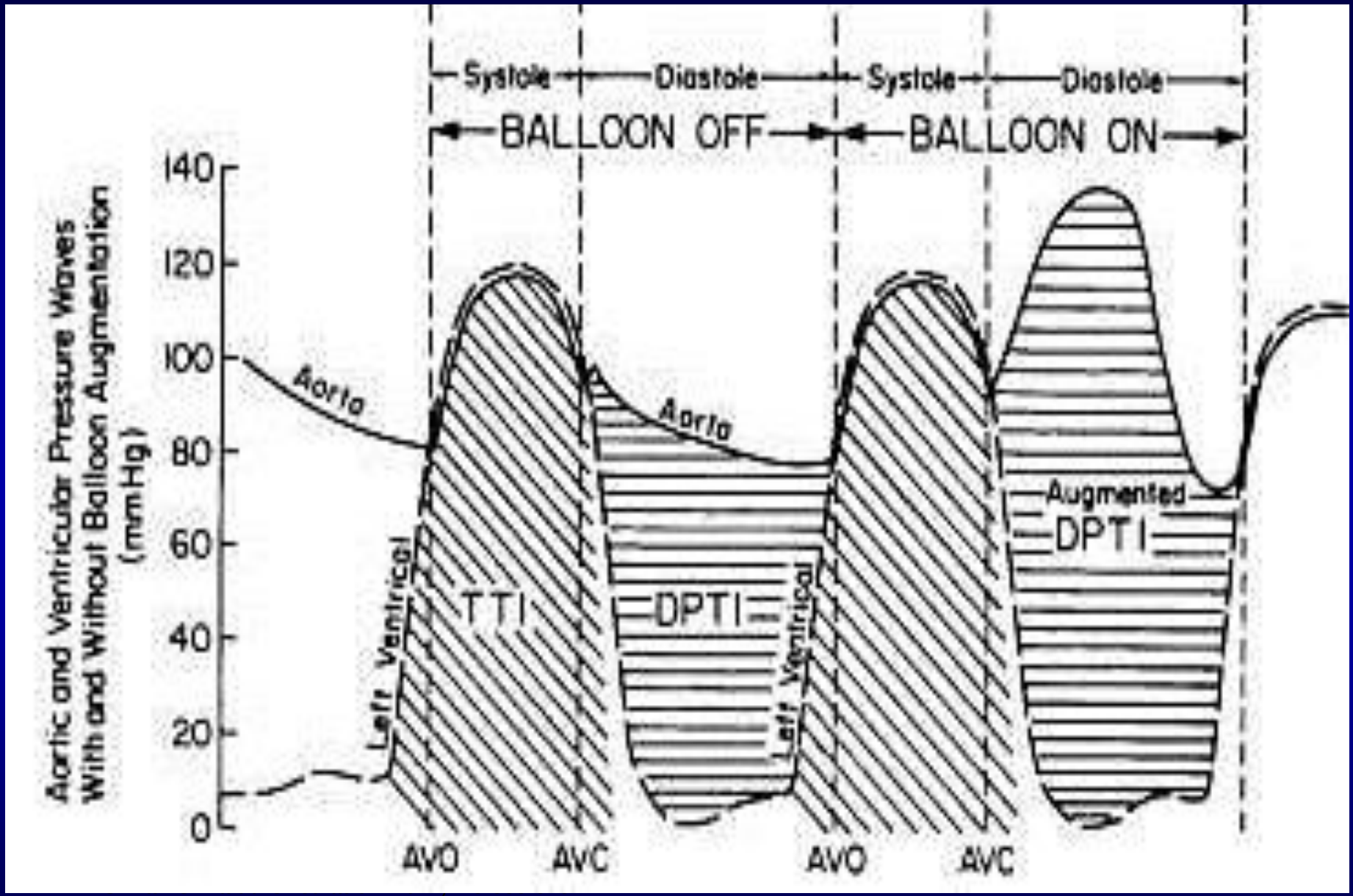


Figure 1

http://diastolicstresstest.com/?page_id=214

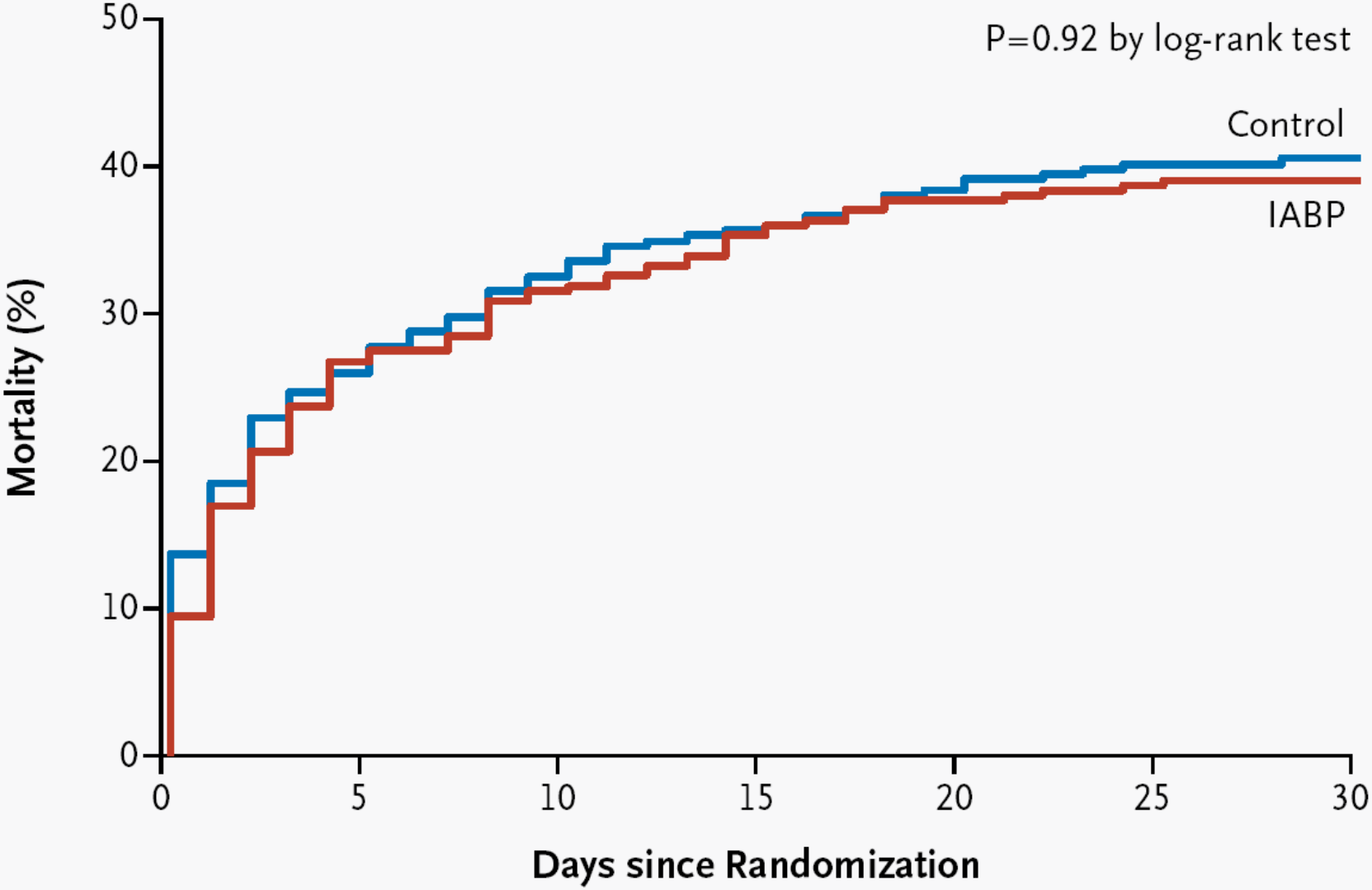
Coronary Perfusion Pressure (CPP)= AOD-LVEDP

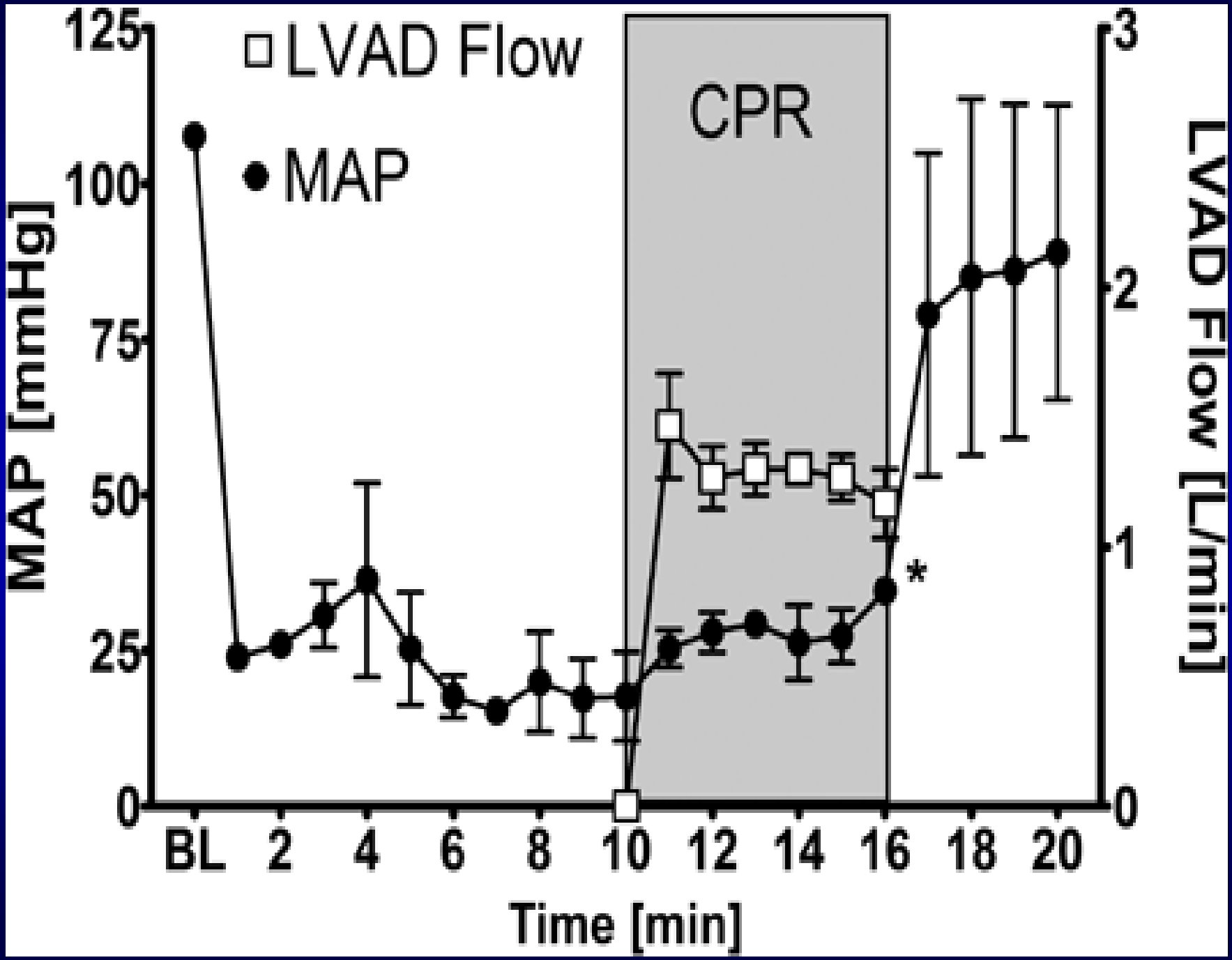




Demystify the Misconceptions

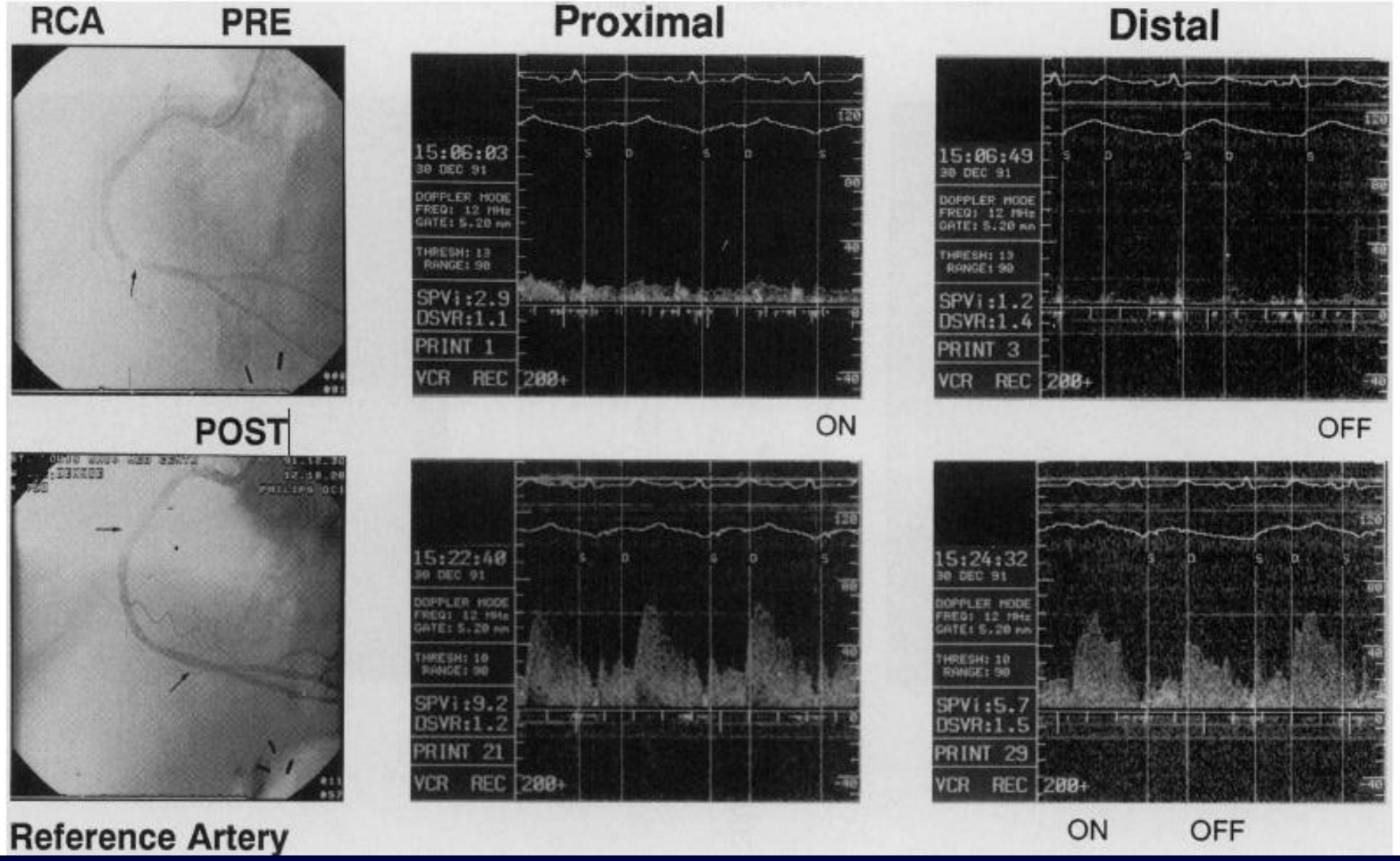
IABP- SHOCK II



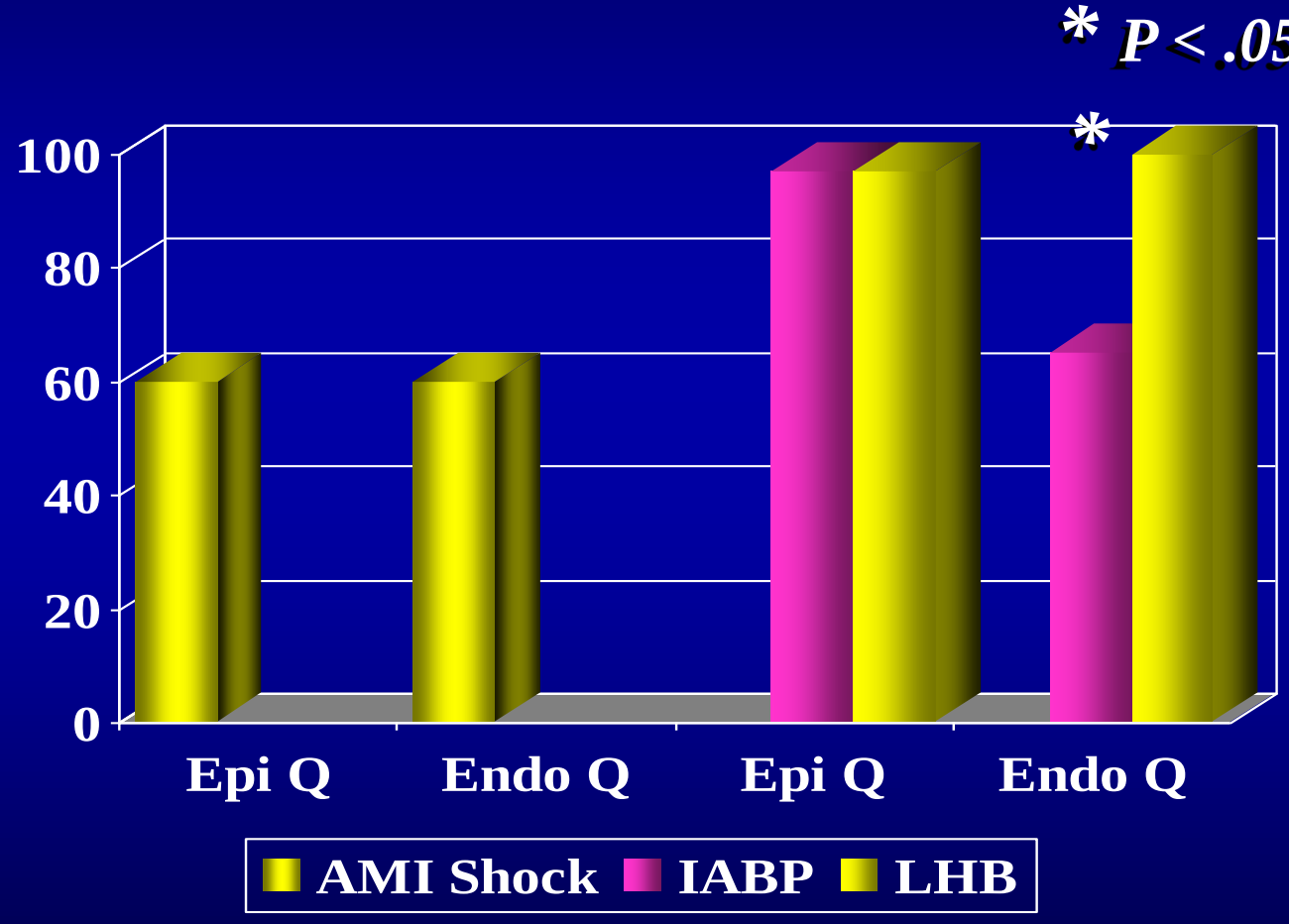

LVAD Flow
MAP
CPR
MAP [mmHg]
LVAD Flow [L/min]
Time [min]
125
100
75
50
25
0
3
2
1
0
BL
2
4
6
8
10
12
14
16
18
20
*

Does the IABP Help to Perfuse the Coronary Arteries?

Circulation 1993: 87:500-511



PIG MODEL CGS - LVAD vs IABP EFFECT on MICROCIRCULATION



Modified from Hata el al. Artificial Organs. 20(6); 1996:678-680

Conclusions

During PCI, blood pressure to be monitored,

1. *AOD*
2. *LVEDP*

if LVEDP is good (<14mmHg), then the high LVEDP may not prevent perfusion of the endocardial layer of the myocardium

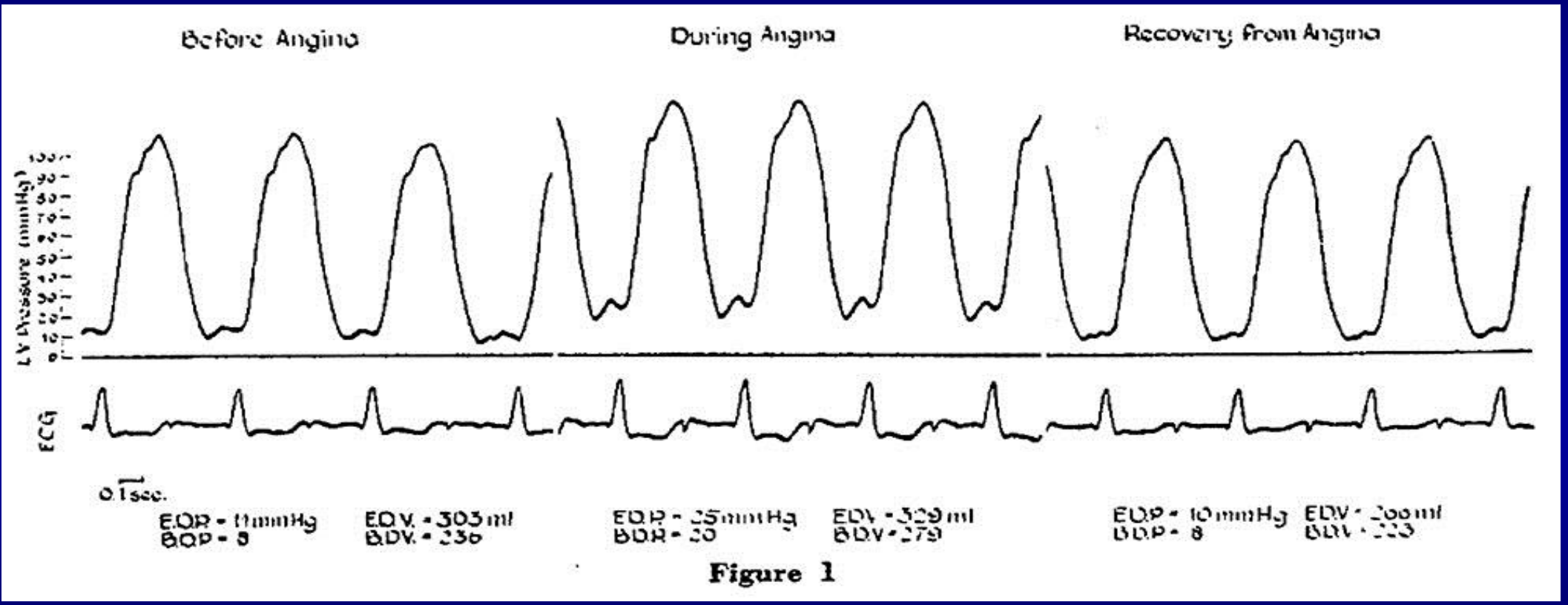
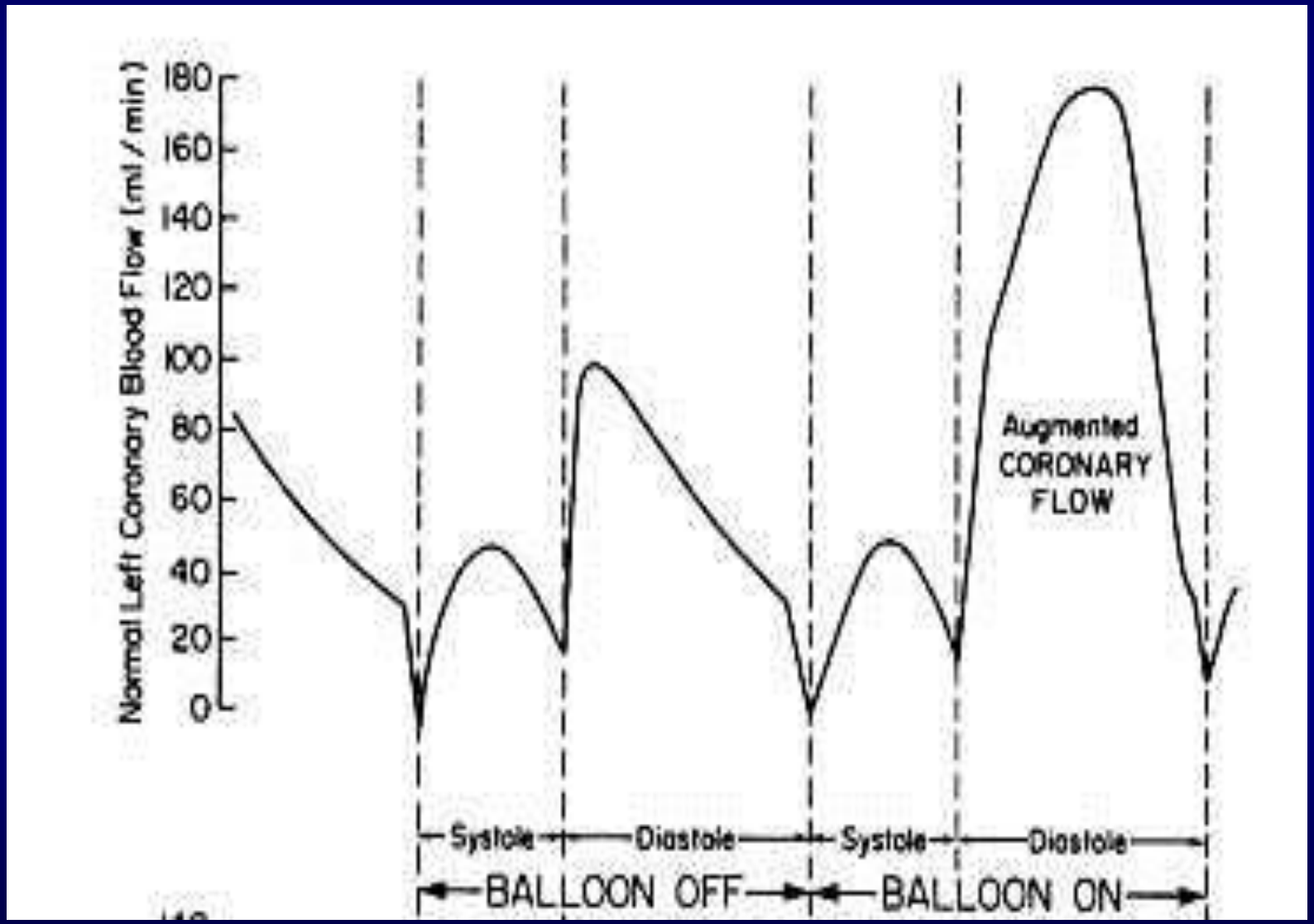


Figure 1

http://diastolicstresstest.com/?page_id=214

IABP could help



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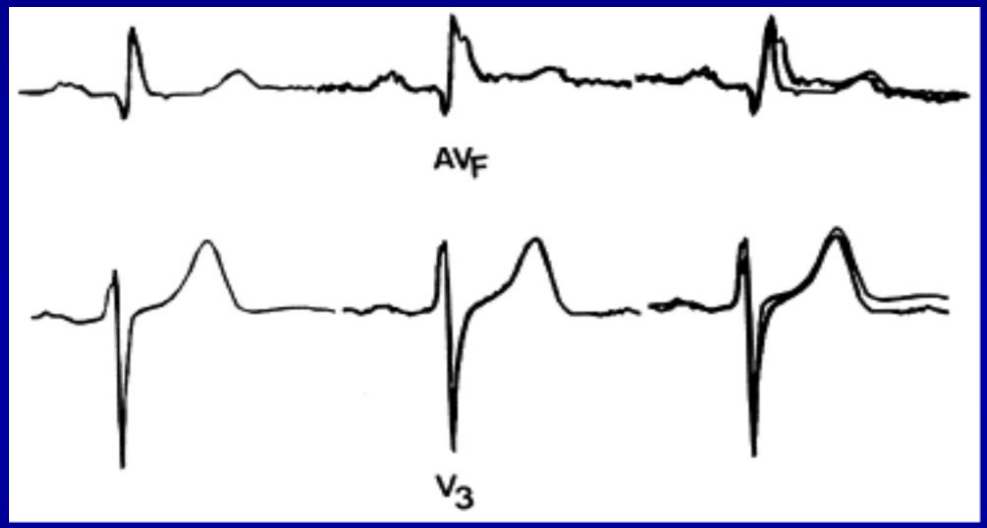
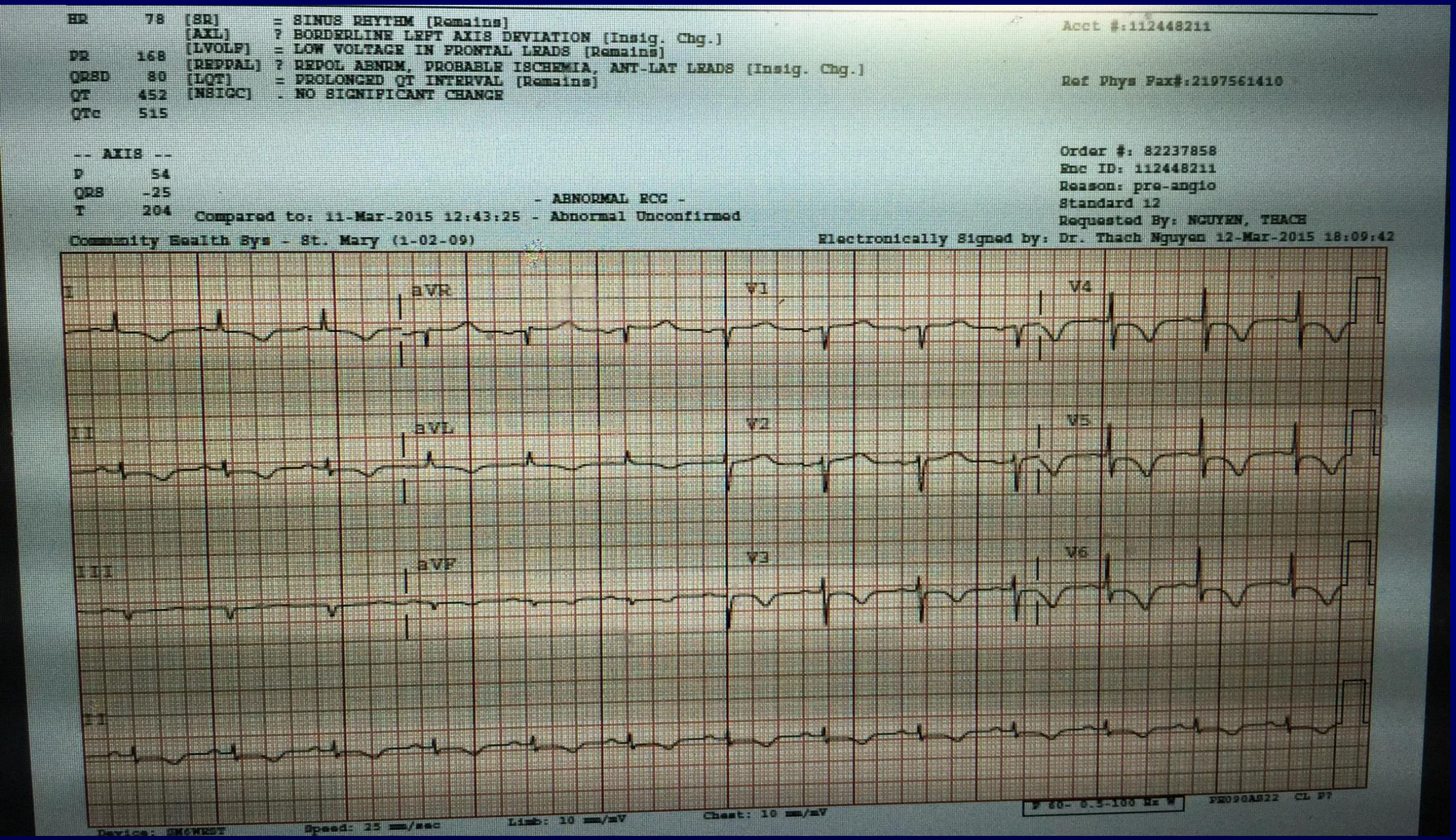


Figure Legend:

Superposition of the ECG before and during RCA occlusion in leads aVF and V_3 in a patient whose QRS duration was increased by 32 ms in lead aVF and by 10 ms in lead V_3. (See text.)

Can Acute Diastolic Heart Failure Cause Ischemia?



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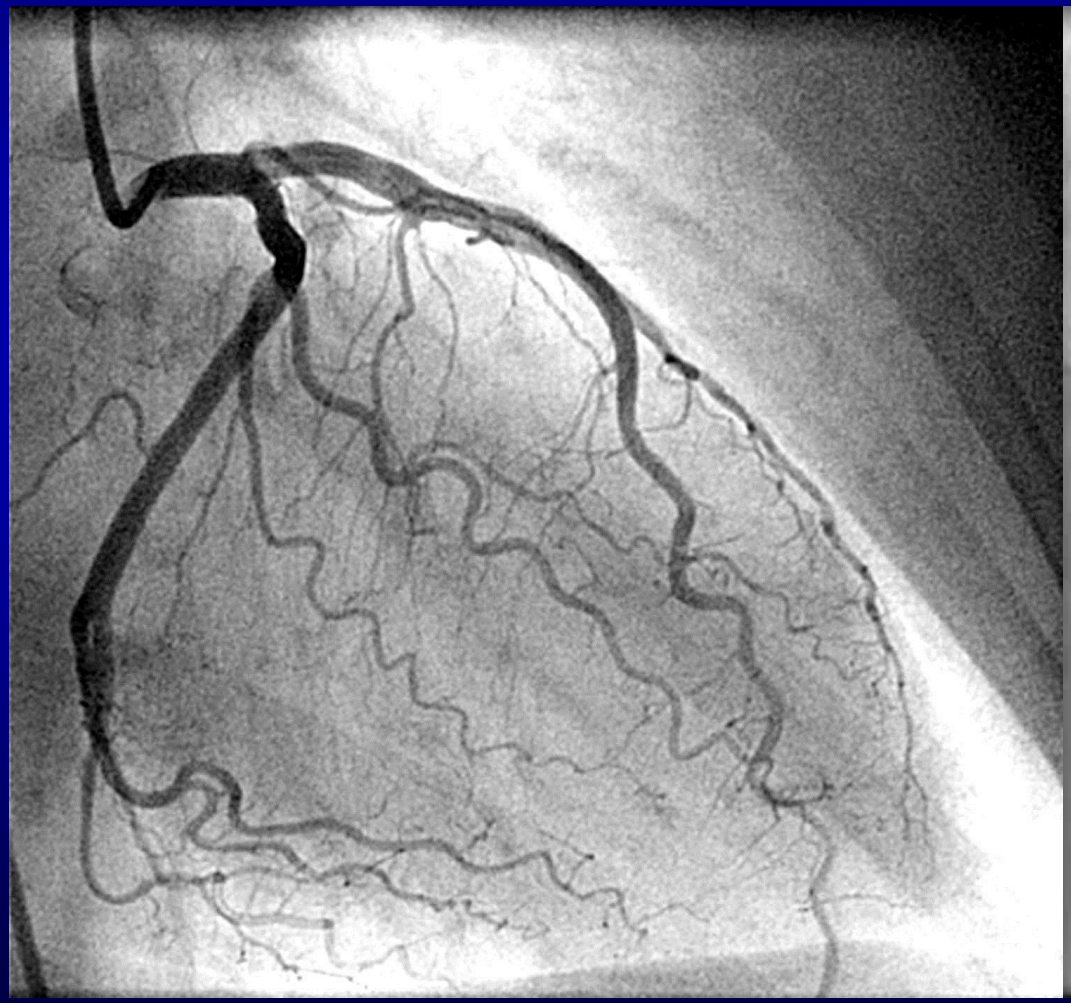

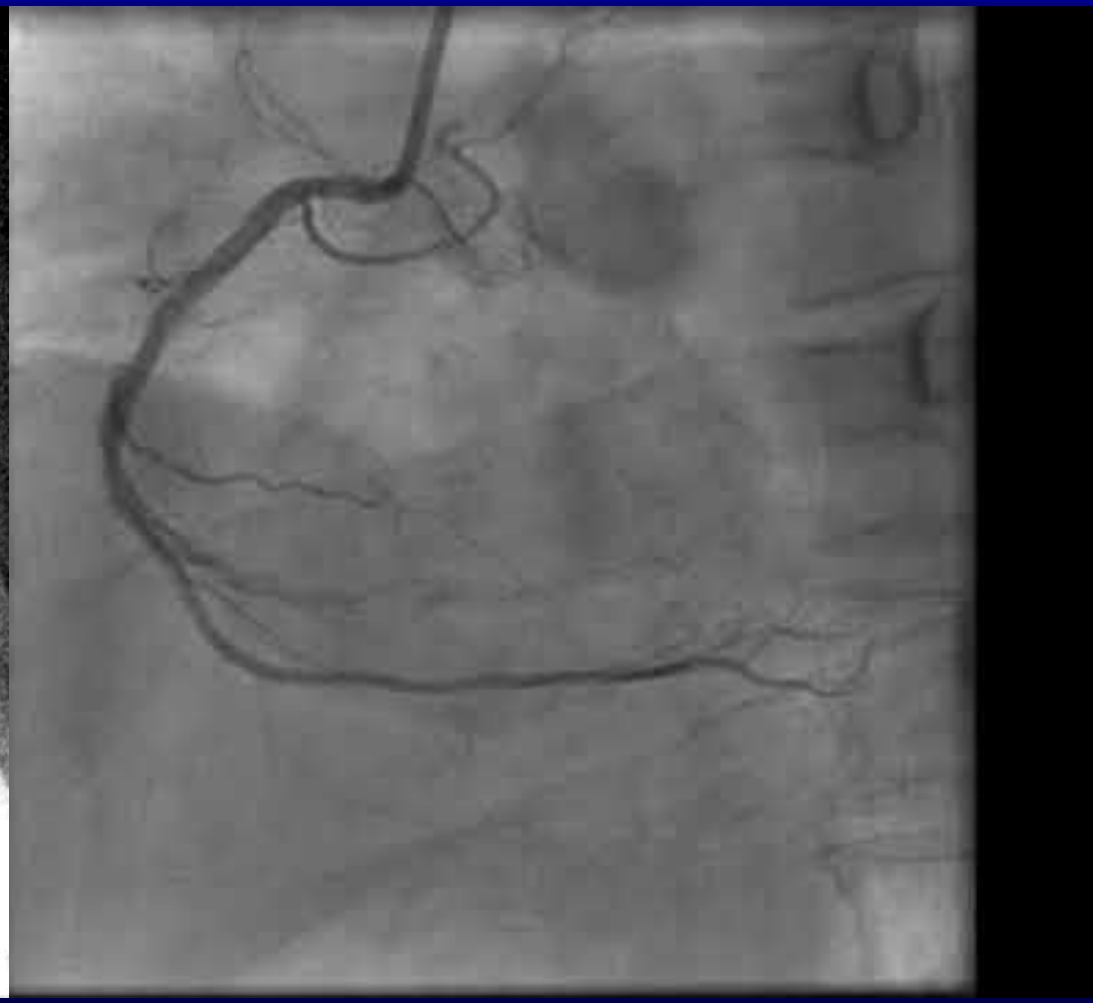

Thank You