

Myocardial InfRactions: Don't Miss the Big One



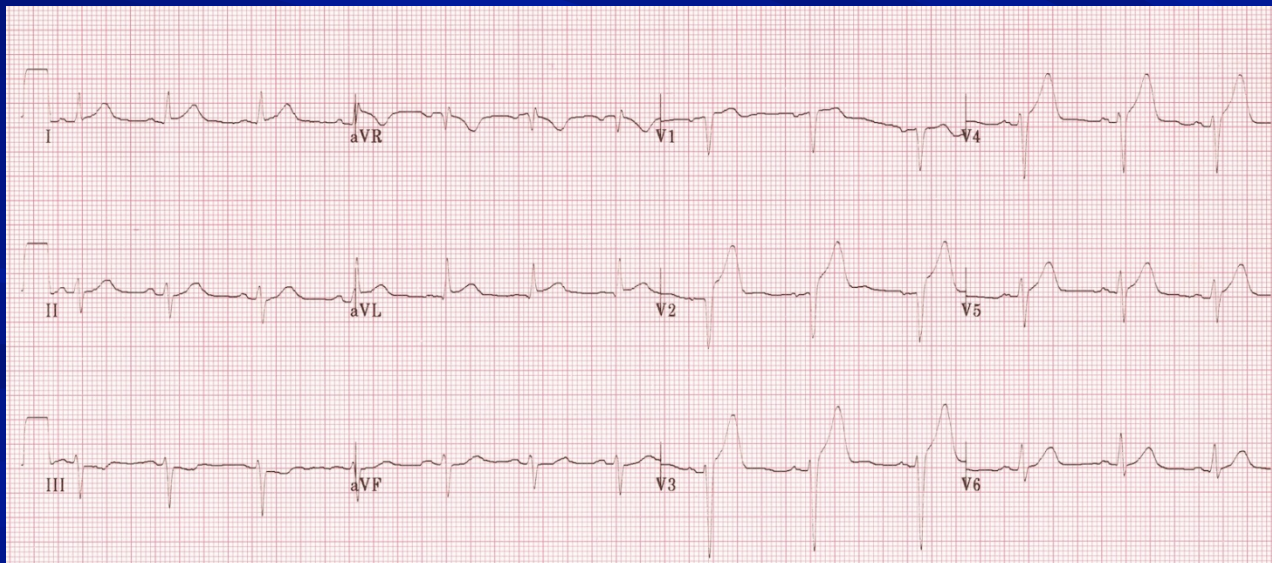
Kathleen Schrank, MD, FACEP, FACP
City of Miami Fire Rescue
University of Miami

Prehospital 12 leads

- Too often limited to “Chest Pain/Pressure”
- EDs & EMS learned to add the obvious:
 - Epigastric pain
 - “Molestia”
 - “Indigestion”
 - Post ROSC
- But if anyone’s protocols are still limited, consider 12 leads in lots more “atypicals”

83 yr old man with syncope

- Awake & alert, BP & P ok but looked pale
- No chest pain or SOB
- 3 lead NSR
- Did the 12 lead:



“Anxiety reaction”

- **Middle aged _____ with sticking chest pain, very anxious. RR28. Hx anxiety on xanax.**
- **Does it matter how I fill in the blank?**
- **YES, DO THE 12 LEAD AND TREAT THE PATIENT per CP protocol.**

76 yr old woman with syncope

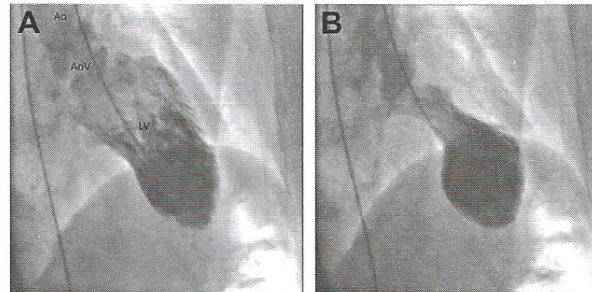
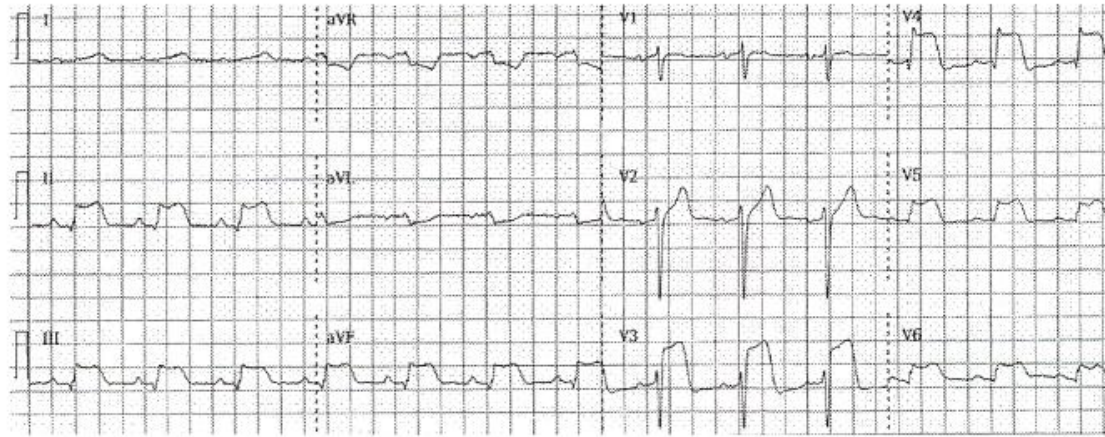


Figure 3. Left ventriculogram, apical-midwall akinesia during diastole (A) and systole (B). AoV, Aortic valve, Ao, aorta.

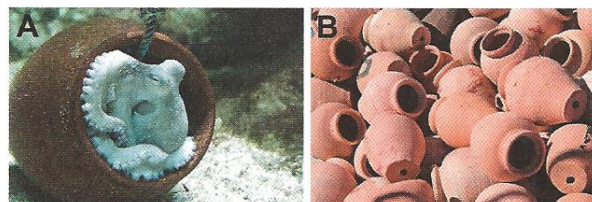


Figure 4. Octopus pot.

***Takotsubo
Stress-induced
cardiomyopathy***

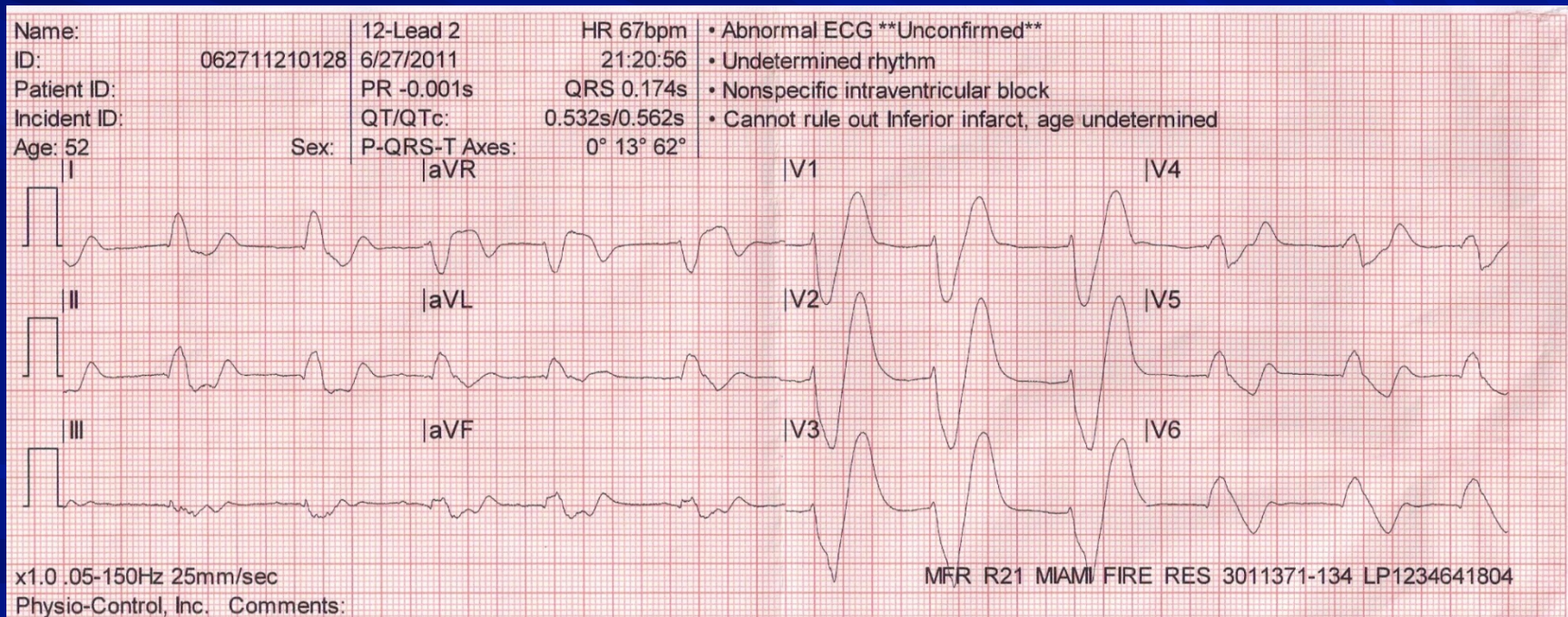
52 yr old man with “feels bad”

- Hx HTN, no taking meds for “a few days”
- Progressive “feeling bad” over 2-3 days, now feels like he’s going to die
- No CP or SOB but looks crappy

Sometimes you find a different “Big One”

One of those OMG moments...

- “Umm, Doc, we’ re sending you a 12 lead as a Cardiac Consult:”



I love being able to transmit 12 leads!!

Calcium, bicarb given

20-SEP-1958 (52 yr)
Male Black
01b
Room:MI08
Loc:46

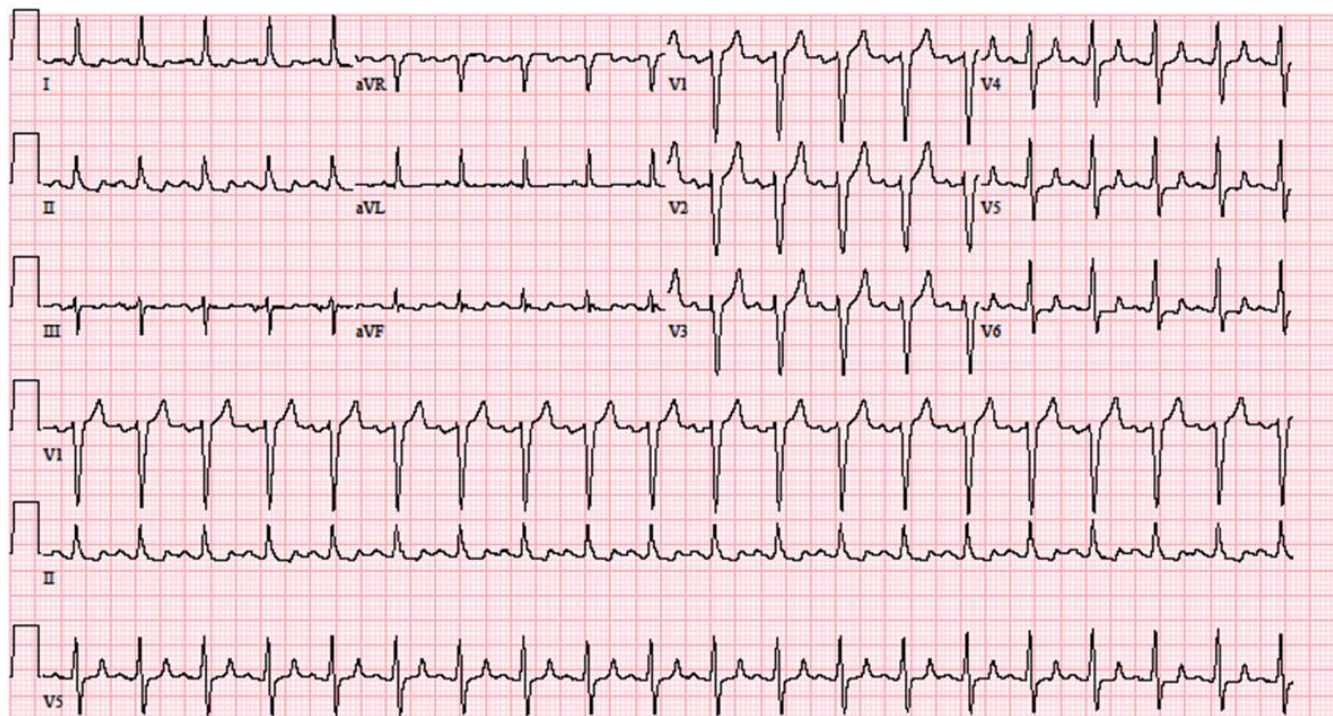
Vent. rate 118 BPM
PR interval 158 ms
QRS duration 104 ms
QT/QTc 310/434 ms
P-R-T axes 32 9 71

Sinus tachycardia
Nonspecific T wave abnormality
Abnormal ECG
I personally reviewed this film / recording and the resident's findings,
and agreed with the final report
Confirmed by HEBERT, KATHY (7044) on 7/1/2011 12:27:49 PM

Technician: ML
Test ind:

Referred by: REFERRING NOPHYSICIAN

Confirmed By: KATHY HEBERT



25mm/s 10mm/mV 40Hz 7.1.1 12SL 235 CID: 86

EID: 7044 EDT: 12:27 01-JUL-2011 ORDER: 608519633 ACCOUNT: 40005938917

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49 yr old woman with Hiccups

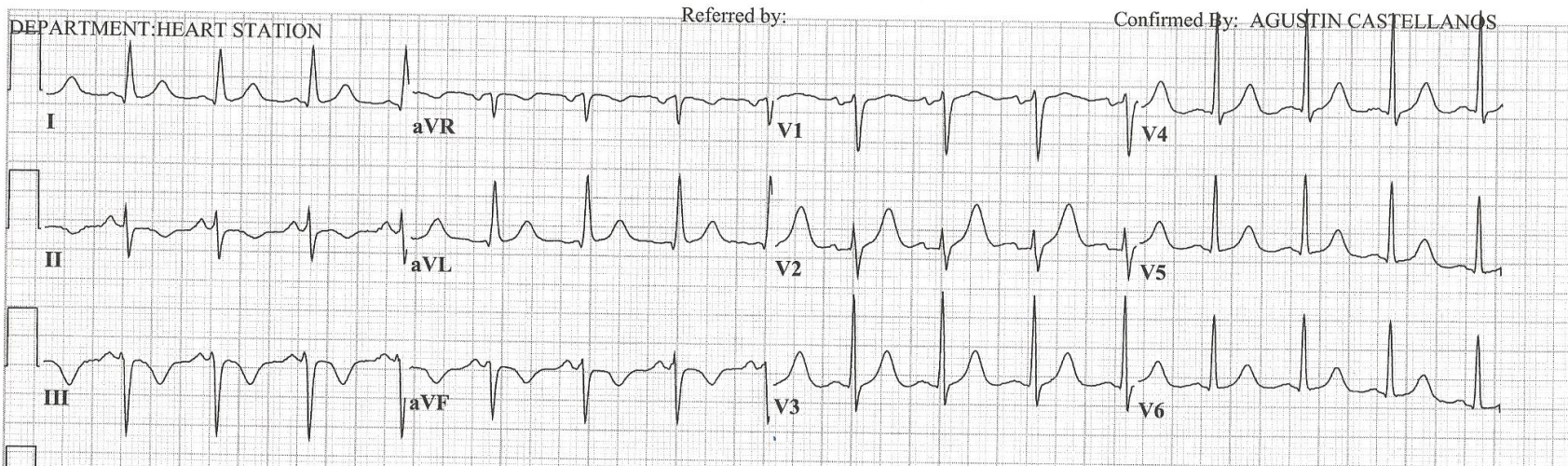
49 yr
Female Black
Room:MER
Loc:28

Vent. rate	97	BPM
PR interval	134	ms
QRS duration	92	ms
QT/QTc	374/474	ms
P-R-T axes	75 -42 -47	

Normal sinus rhythm
Left axis deviation
Left anterior hemiblock
Abnormal ECG

I PERSONALLY REVIEWED THIS FILM / RECORDING AND THE RESIDENT'S FINDINGS,
AND AGREED WITH THE FINAL REPORT

Technician: JMP
Test ind:R/O MI



American Journal of Emergency Medicine (2012) 30, 266.e1–266.e2



ELSEVIER

Case Report

Hiccups as the only symptom of non–ST-segment elevation myocardial infarction

[J Emerg Med.](#) 2014 Jan 25. pii: S0736-4679(13)01397-8. doi: 10.1016/j.jemermed.2013.11.071. [Epub ahead of print]

The Tooth, the Whole Tooth, and Nothing But the Tooth: Can Dental Pain Ever Be the Sole Presenting Symptom of a Myocardial Infarction? A Systematic Review.

[Jalali N](#)¹, [Vilke GM](#)², [Korenevsky M](#)¹, [Castillo EM](#)², [Wilson MP](#)²

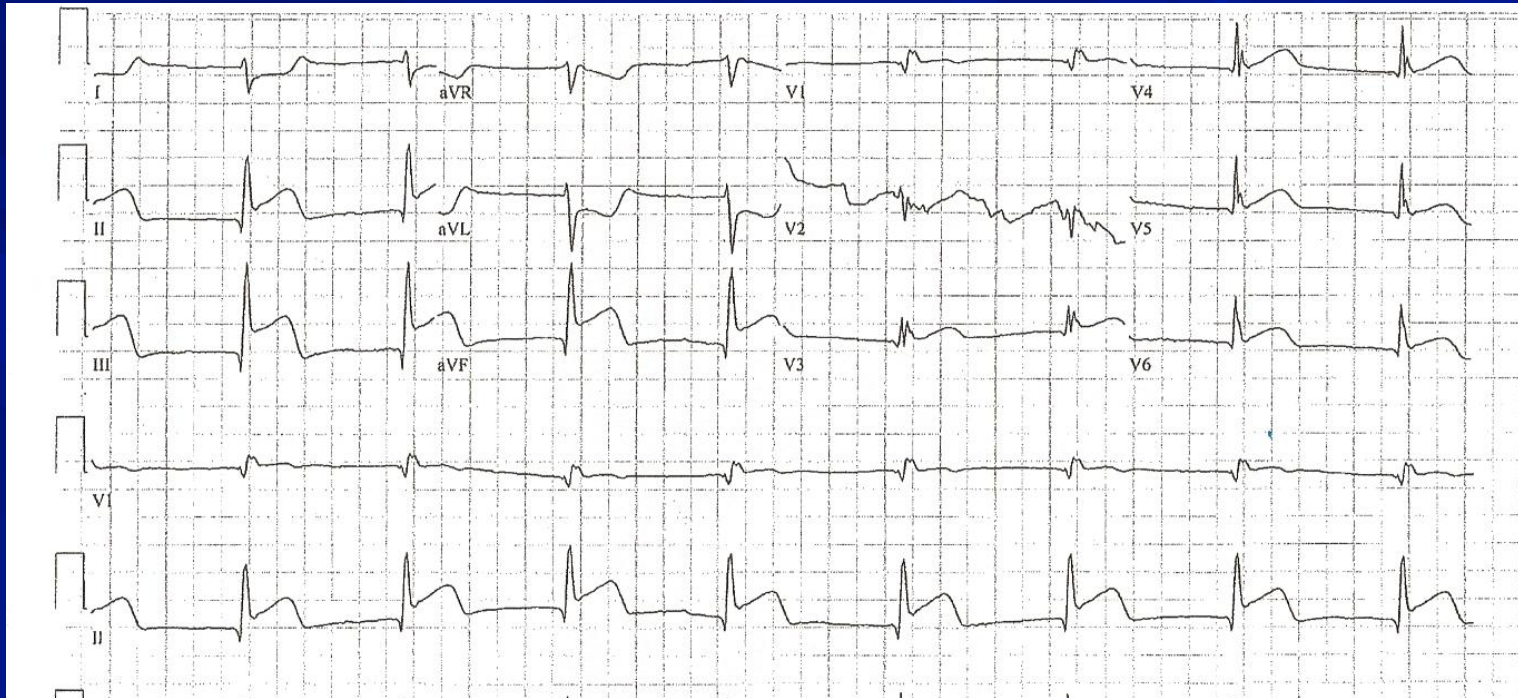
Elderly, women, diabetics...

57 yr old woman called 911 for vomiting several times, not feeling well today. No CP, SOB, or epig pain

- PHx HTN on med, no DM, no CAD**
- VS OK, actively vomiting, not diaphoretic**
- Transported to ED**

Oops

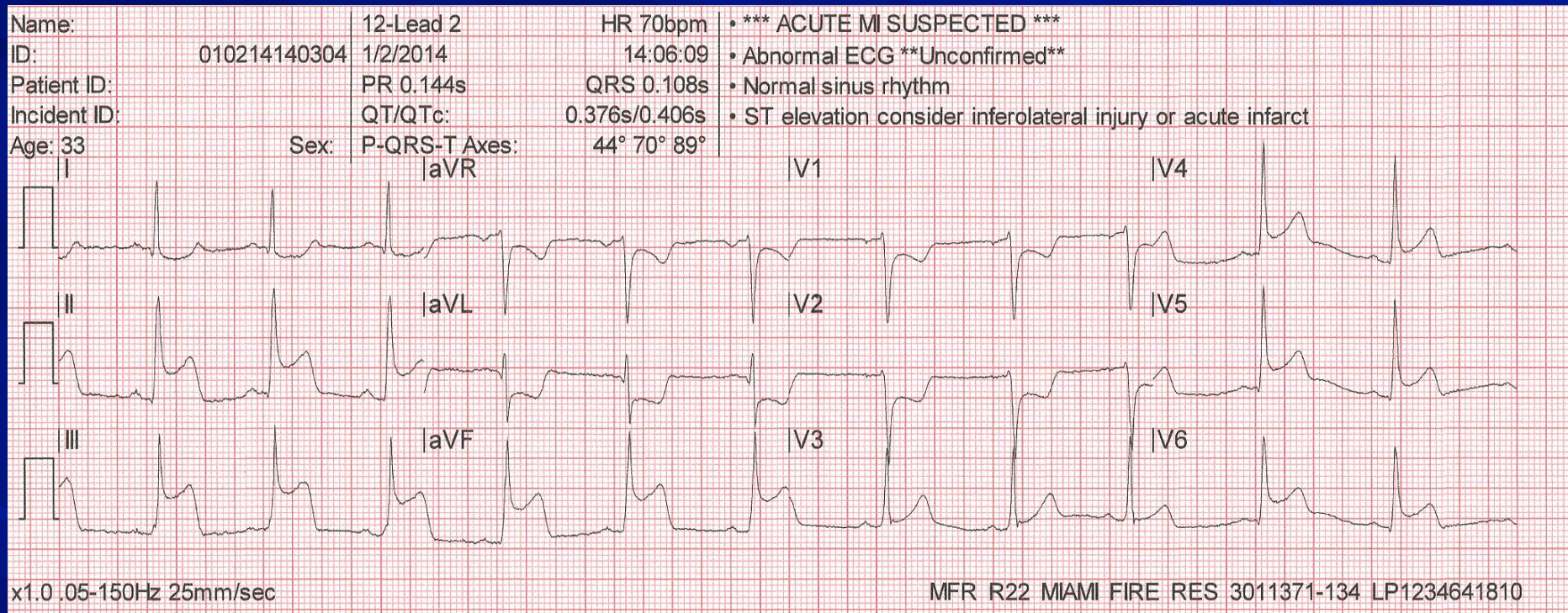
ED EKG:



But even our EMS protocols didn't call for 12 ld in the field

CP in Age < 35

- 33 yr old male with CP



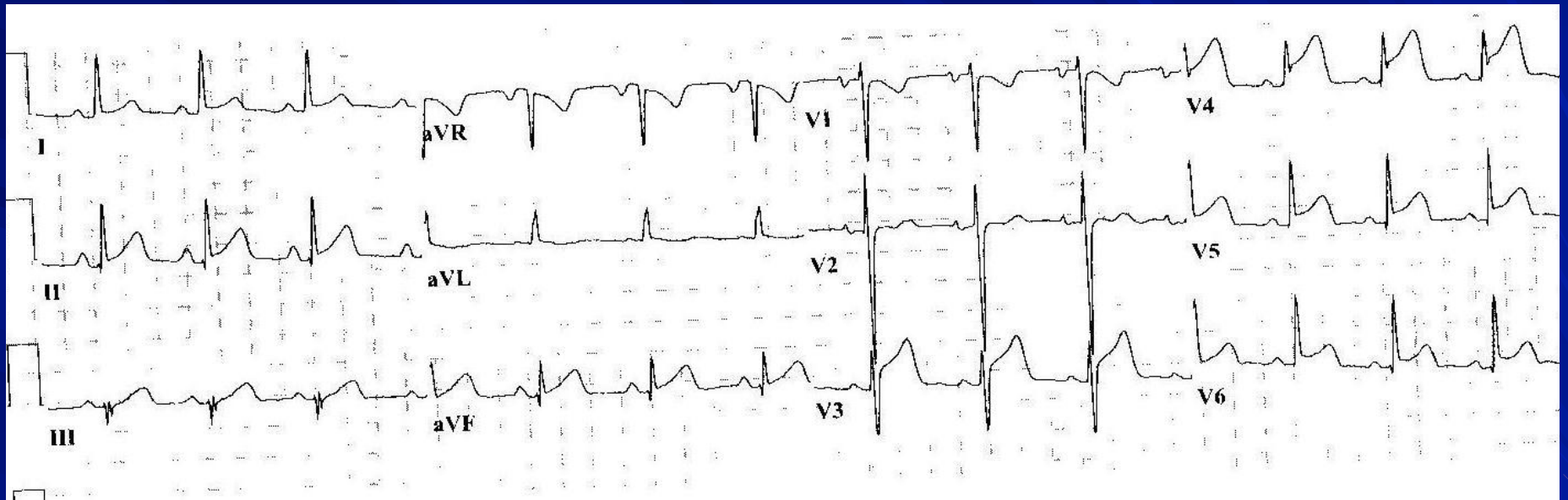
- Cath Lab: Active coronary spasm

CP in young ♀

38 yr old Haitian woman:

- 2 weeks post partum after 8th child
- Severe “pain all over,” mostly chest and epigastric
- Anxious, histrionic, language barrier
- Tachypneic, tachycardic, clear lungs

Peripartum Cardiac Disease



BUT WHY??

ZERO cardiac risk factors for atherosclerosis

Peripartum women are at ↑ risk of ACS and MI and...

Coronary Artery Dissection !!



- **Spontaneous CA Dissection:**
 - Arterial wall layers can separate
 - Occludes lumen so no distal flow, but NOT CAD
- **Pathophysiology ???**
 - Hormonal changes in connective tissue
 - Hemodynamic changes vs. hypercoagulable vs. autoimmune response
- **Prehospital care same as any STEMI**
- **Outcomes:**
 - May heal spontaneously, cause MI or sudden death; high mortality without Rx (cath, stents)

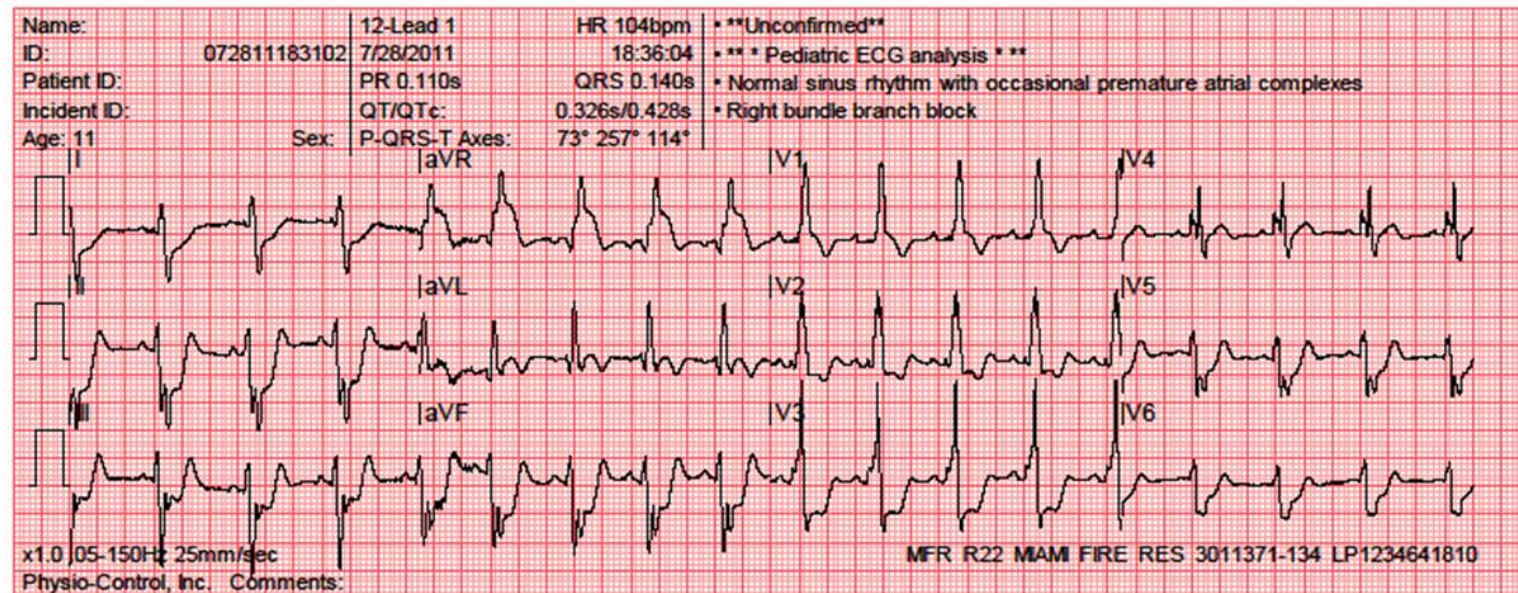
But age 11?

11 year old boy collapses at football practice :

- Lying on the ground, awake but agitated, cool and sweaty skin
- BP 82/palp, P 106, RR 24, O2 sat 97% RA
- Monitor: sinus tach
- Airway, lungs normal
- Treatment?



Surprise



**Transmitted 12 lead to ED, Pedi Cardiologist in ED w echo
No STE but + troponin, cardiogenic shock with low EF
Cath: Congenital absence of part of prox LCA, CABG done**

Reproducible CP

22 yr old man, severe left chest pain for one day, hurts to take a deep breath.

Athletic, lifts weights

- Exam and VS normal except for
- Point tenderness at 4th rib to left of sternum
- Dx by MD: Costochondritis
- Rx Local anesthetic injection into rib
- Pain gone, went home, plan ibuprofen

But...

- Cardiac arrest a few hrs later
- Autopsy: 3 cm long total LAD occlusion
- Diagnosis: Coronary Vasculitis
- Main medical error: No 12 lead done
(should' ve done one thinking pericarditis)

Young patients with CP: MIs

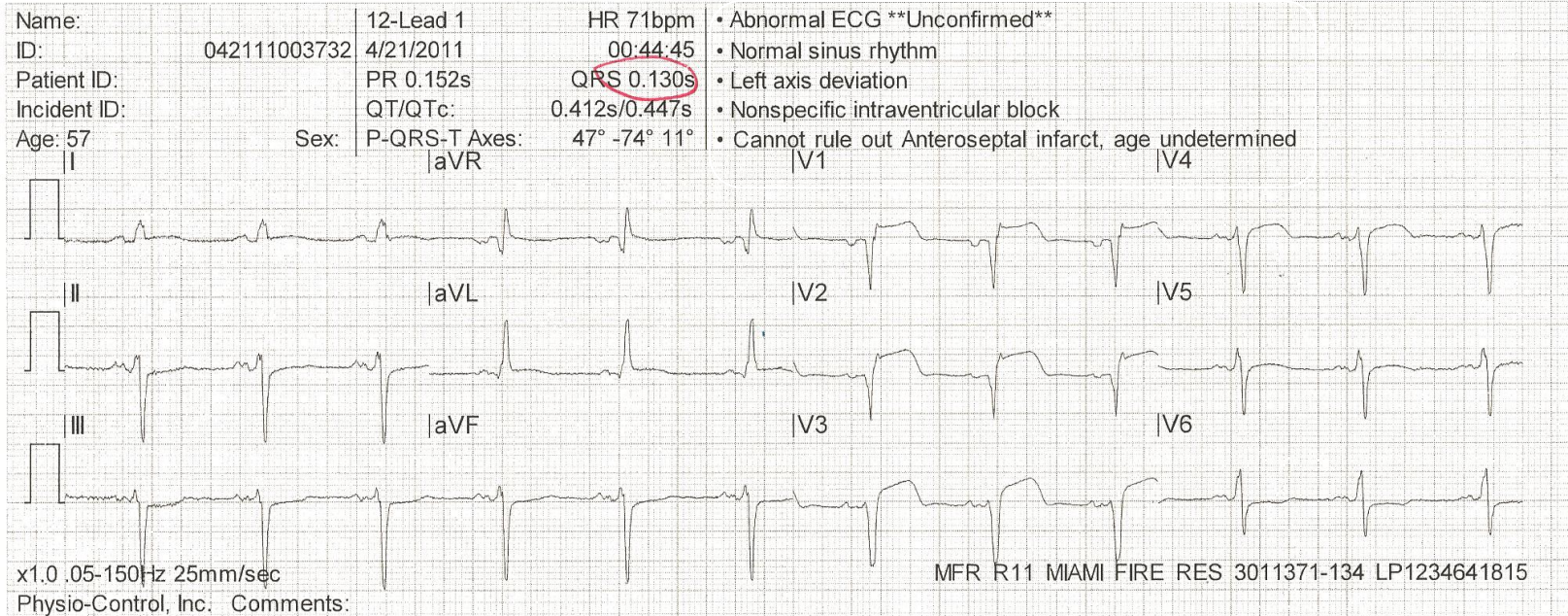
- Obesity, hypertension, diabetes
- Cocaine, amphetamines
- Coronary bridging (cardiac muscle on top on an artery)
- Congenital abnormalities of coronary arteries
- Genetic/familial hyperlipidemia
- Chest trauma, myocardial contusions
- Late pregnancy to 2 months post partum
- Vasculitis, arteritis
- Sickle cell disease



No nitro unless abnormal 12 lead, but do the 12 lead

Computer Error

57 yr old man with crushing chest pain



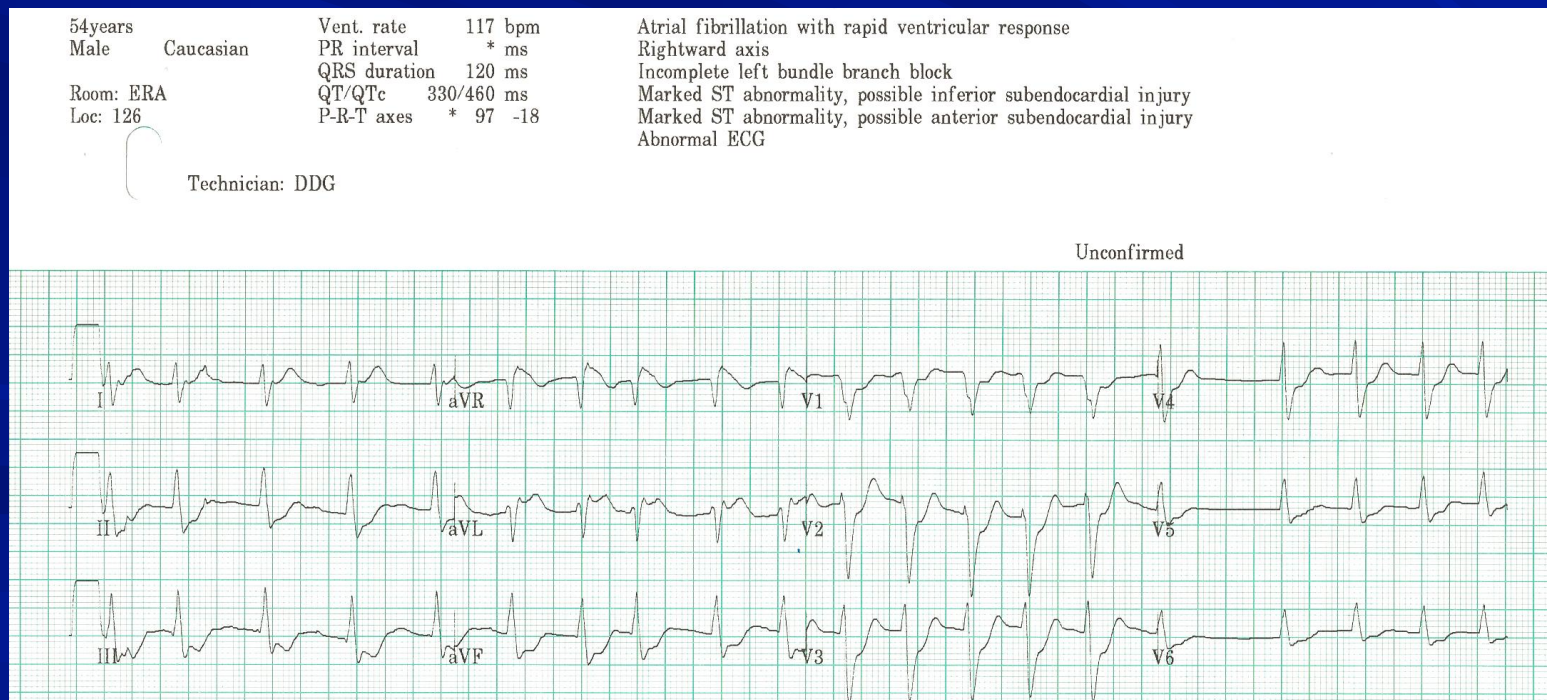
ST measurements are measured at the median point and are expressed in mm.

I	II	III	aVR	aVL	aVF	V1	V2	V3	V4	V5	V6
0.68	-0.10	-0.79	-0.30	0.73	-0.44	2.14	3.46	3.46	1.85	0.63	-0.59

To ensure printer accuracy, confirm that the calibration markers are 10mm high and the grid squares are 5mm wide.

STEMI / ACS: Be Prepared

- Put the defib pads on!
- Keep the patient on the cardiac monitor, and monitor the monitor



1 min later, seizure

54years
Male Caucasian
Room: ERA
Loc: 126

Vent. rate 168 bpm
PR interval * ms
QRS duration 154 ms
QT/QTc 264/441 ms
P-R-T axes * 232 231

Technician: DDG

*** Suspect arm lead reversal, interpretation assumes no reversal
Atrial fibrillation with rapid ventricular response with premature ventricular or aberrantly conducted complexes
Nonspecific intraventricular block
Possible Right ventricular hypertrophy
Inferior infarct, age undetermined
Anterolateral infarct, age undetermined
Abnormal ECG

Unconfirmed



Did this 4 times in ED. Total L main. Did well

So...do 12 leads to look for ACS:

- **Syncope (unless active bleeding)**
 - May also find long QT, delta waves, other clues
- **Acute onset SOB (without hx asthma/COPD)**
 - May also find signs of pulm embolus
- **Unexplained diaphoresis**
- **Sudden onset weak & dizzy**
- **Abd pain above navel in age >35 (or CAD risk)**
- **“Don’t feel well” and has “THE LOOK”**

So feel free to do 12 leads!

- **GIVE A COPY TO ED**
 - Whether normal or not
 - Whether they want it or not
 - Put a name on it
- **For STEMI / ACS patients**
 - Transport with defib pads on!
 - If no CP or CHF, give the aspirin, hold the nitro



