12 Lead ECG Case Studies

Jeffrey L. Jarvis, MD, MS, EMT-P
EMS Medical Director
#1: 71 y/o WM. Chest Pressure

- Found supine in bed, A&OX4 c/o 2 hours of chest pressure radiating to left arm a/w nausea and frequent belching.
- PMH: Diet Controlled DM, HTN, Hypothyroidism, hypercholesterolemia
- Meds: levothyroxin, Finesteride, HCTZ, Amlodipine, Lovastatin
- SHx: Doesn’t smoke, limited EtOH
Physical Exam

- VS 112/64, 50, 18
- A&OX4
- No JVD
- BS CTA
- Abd SNT
- Ext w/o edema,
Field ECG #1
Field ECG #2
Field ECG #3
Treatment

- IV, O2, Monitor
- ASA 161mg
- 12 lead ECG
- Code STEMI called
- NTG 0.4 mg X 2 with improvement of pain
- 12 lead repeated X 2
- No further changes in condition
Hospital Course

• Arrived with EM and cardiology in room
• STEMI confirmed
• Consents signed
• Plavix 600 mg PO
• Shaved, prepped
• Taken to cath lab on EMS stretcher
**Transferring EMS: Williamson County EMS Medic 31**

**Date: 11/24/2010**

- **911 Call**: 1119
- **At patient**: 1127
- **First EKG completed**: 1137
- **Total time with EMS (goal <30 minutes)**: 34 minutes

**Receiving Facility: Scott & White Healthcare- Round Rock**

- **Arrival Time to ED**: 1201
- **Door to EKG (goal <10 minutes)**: 0 minute (used EMS’ ECG)
- **Time in ED (goal <30 minutes)**: 7 minutes
- **Time arrived in Cath Lab**: 1209
- **Total Time in Cath Lab**: 17 minutes
- **Door to Balloon (goal <60 minutes)**: 25 minutes

**Outcome**

Stenting of the RCA – 100% occlusion with "Dottering" of the embolic debris in the distal PDA.

No complications

Planned discharge on 11/27/2010

<table>
<thead>
<tr>
<th>Medic 31</th>
<th>ED Staff</th>
<th>Cath Lab Staff</th>
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<tbody>
<tr>
<td>Jeff Matthew</td>
<td>Dr. Kaylor</td>
<td>Dr. Caldera</td>
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<td>Renea, Tech</td>
<td>Eric, RN</td>
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<td>Don, Monitor</td>
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<td>Joe, Scrub Tech</td>
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**Times**
Hospital Course

- Initial CK: 415/34/8.4
- Initial troponin I: 3.68
- Max CK: 824/106/13
- Max troponin I: 30.69
Hospital Course

- RCA 100% occlusion. Stented
- Hypotension in lab/ICU resolved with fluids and small doses of dopamine
- Echo: LVEF 61%
- Discharged POD #2 with ACEi, BB and Effient added to Rx.
- F/U with cardiology in California
Summary: Inferior STEMI

- ST Elevation in inferior leads: II, III, aVF
- May have reciprocal changes in precordial leads, I and aVL.
- Typically caused by occlusion of RCA
- RVI: V4R, Hypotension, JVD, Clear Lungs
#2: 82 y/o WM, chest pain

- CC: sudden onset substernal chest pain radiating to neck/shoulders. No SOB or nausea. No prior similar symptoms. Onset while shopping at WalMart.
- PMH: HTN, OSA, TIA, Hyperlipidemia
- Meds: HCTZ, ASA, Lovastatin, Norvasc, Protonix.
- Allergies: None
- Social: life long non-smoker
Physical Exam

- VS 154/70, 80, 16. SaO2 99%, EtCO2 34
- Skin: pale, diaphoretic
- Neck: no JCD
- BS: CTAB
- Abd: soft, nontender
- Ext: no edema
Field ECG #2
Treatment

- Field: ASA, NTG X 3, Fentanyl with some relief
- Code STEMI Alert
- EDMD & Cardiologist waiting on arrival
- Loaded with Plavix and a bolus of heparin
ED ECG
Post Cath ECG
### Transferring EMS: Williamson County EMS Medic 31

**Date:** 12/01/2010  #2

- 911 Call: 1423
- At patient: 1426
- First EKG completed: 1442
- Total time with EMS (goal <30 minutes): 34 minutes

### Receiving Facility: Scott & White Healthcare- Round Rock

- Arrival Time to ED: 1457
- Door to EKG (goal <10 minutes): 2 minutes
- Time in ED (goal < 30 minutes): 21 minutes
- Time arrived in Cath Lab: 1519
- Total Time in Cath Lab: 13 minutes
- Door to Balloon (goal <60 minutes): 35 minutes

### Outcome

- LAD 100% occluded proximally, status post successful thrombectomy and percutaneous coronary intervention / drug-eluting stent.
- No complications
- EF 53%

**Planned discharge on 12/4/2010**

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<tr>
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<th>Cath Lab Staff</th>
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</thead>
<tbody>
<tr>
<td>Willis Kenneth</td>
<td>Dr. Henson, Jennifer, Triage, Ramir, Primay</td>
<td>Dr. Caldera, Eric, RN, Don, Monitor, Joe, Scrub Tech</td>
</tr>
</tbody>
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# 3: 66 y/o White Male, anorexia

- **CC:** Anorexia, generalized weakness. D/C hospital 2 week ago from osteomyelitis. Scheduled for pacemaker for ‘abnormal heart rhythm”. No chest/abd discomfort, SOB, nausea.

- **PMH:** CHF, NIDDM, HTN

- **Meds:** ... Bactrim, Lisinopril, Lasix, Aldactone...

- **SHx:** Lifelong smoker
Physical Exam

- BP 141 / 58; P 51; R 18; Pulse Ox 93%; 99.77Kg
- A&OX4, uncomfortable
- No JVD
- BS CTAB
- Heart: irregular, slow
- Abd: soft, nontender
- Ext: partial amputation right foot
- Skin: Multiple decubitus ulcers