Acute Coronary Syndromes: PBL

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Dr. Schneider cares for the underserved in Santa Rosa, California, serving Latino, Southeast Asian, and Eritrean populations. He has taught the breadth and depth of family medicine for more than 20 years, and his professional interests include the physician-patient relationship and clinical skills. Cardiovascular system conditions are one of his specialty topics, and he points to “the growing body of evidence suggesting that lifestyle is as effective as, or more effective than, pharmacologic interventions in primary prevention.” Dr. Schneider also focuses on conditions of the endocrine system (especially thyroid), skin conditions and dermatology, primary prevention, with a focus on lifestyle and procedures. Board certified in both family medicine and integrative holistic medicine, he produces Dr. Dave’s To Your Health segments for Wine Country Radio and BlogTalkRadio.com.

Learning Objectives

1. Practice applying new knowledge and skills gained from Acute Coronary Syndromes (ACS) sessions, through collaborative learning with peers and expert faculty.
2. Identify strategies that foster optimal management of ACS, within the context of professional practice.
3. Formulate an action plan to implement practice changes, aimed at improving patient care.

Associated Session(s)

• Acute Coronary Syndromes: Broken Hearts and Spare Parts
Chief Complaint
- A 47 y.o. Caucasian woman (LS) is in your office for her diabetes follow up. You notice that she is uncomfortable, speaking in abbreviated sentences. You ask her if she is having breathing problems, and she responds, “Yes.”

History of Present Illness
- 47 y.o. WF diabetic presents w/dyspnea intermittently for 3 weeks, restarted & constant since she awoke this morning @ 0800 (it is now 10:00).
- Further questioning reveals:
  - Today she feels different.
  - Difficulty breathing.
  - No chest pain, but very uncomfortable sensation in her chest.
  - R shoulder feels uncomfortable—sore.
- Continued questioning re today:
  - No pain, but endorses sort of pressure in chest when you ask.
  - No orthopnea.
  - Hard to breathe at rest, worse w/exertion.
  - No palpitations, no syncope.
  - Feels ‘clammy.’
  - Maybe some nausea, no vomiting.
  - SOB last 3 weeks less severe/protracted vs now. This is more uncomfortable now.

Past Medical History
- DM2 X 14 years, not optimally controlled.
  - HbA1C range 7.0 – 9.3; usu ~ 8.
- HTN X 8 yrs, generally well controlled.
- Dyslipidemia.
- Probable osteoarthritis of knees.

Medications, Allergies
- Meds:
  - Metformin 1000 mg bid.
  - Lisinopril 20 mg daily.
  - Pravastatin 20 mg hs.
  - Ibuprofen 600 mg prn – mostly tid.
  - Prior MD had her on rosiglitazone, which you stopped several years ago when you started seeing her.
  - MVI, vitamin D.
Medications, Allergies—2
• Mostly adherent w/meds.
  – How do you assess for med adherence?
• Allergies: NKDA

Family History
• Both parents w/HTN.
• Mother w/DM2.
• Mother smoked, & had MI at age 62.
• Maternal uncle (mom’s bro) diet of heart condition in his 50’s.
• A cousin had cancer and died at age 46.

Social History
• Smoked <1/2 ppd for 10 years starting in high school, quit at age 26.
• Social drinker.
  – What does this mean to your pt?
  – Used to drink a bit more when younger.
• Experimented with drugs in late teens – 20’s: hallucinogens (LSD, mushrooms), tried cocaine.
• No parenteral drug use.

Review of Systems
• No F/C/NS/wt loss.
• CV/pulm per HPI.
• Otherwise negative.

Physical Examination
• BP 158/84, T 98.6, P 56, R 16.
• Obese – BMI = 34.7.
• Anxious & uncomfortable, diaphoretic.
• PERRL, EOMI.
• Neck supple, no nodes, No obvious JVD.
• Heart: RRR, NS S1-S2, no murmur.
• Lungs clear.
• No cyanosis/clubbing/edema. Pulses WNL.

Laboratory/Radiology
• You have no office lab, nor Xray.
  – Most recent lipid panel 9/2013:
    • Total chol = 190.
    • LDL = 110.
    • HDL = 40.
    • Non-HDL = 150.
Decision Point

• Next steps?

Assessment

• DDx: Does she have a potentially lethal condition?
  • Dissecting aneurysm.
  • Embolism (pulmonary).
  • Acute coronary syndrome.
  • Tension pneumothorax.
  • Hole in GI tract.
    • Esophageal perforation.
    • Perforated ulcer.

Assessment

• DDx of chest pressure in 47 y.o. obese uncontrolled diabetic w/controlled HTN:
  – Angina – chronic stable.
  – ACS/MI.
  – Asthma.
  – PE.
  – Anxiety/panic attack.
  – GERD.
  – Biliary colic.

Assessment—2

• Pt is having an acute inferior MI.

Lipid Management

• 2013 ACC/AHA Guidelines:
  – Pt's 10-yr risk = 5.5%.
  – She has DM2 → mod intensity statin.
  – Pravastatin 20 mg = low intensity statin.
Decision Point

- Next steps?
- Things to consider.

Special Considerations—Inferior MI

- May be associated w/RV MI (1/3 of IWMI).
  - Check R sided leads – V4R – V6R (ACC rec).
  - Most sensitive: ST ↑ 1mm V1 – V4R.
  - Triad: hypotension + clr lungs + JVP.
  - RVMI → dep on preload to maintain cardiac output.
    - ↑ neck veins may NOT be dt fluid overload—consider IV NS 250ml!
    - Low CO (↓ BP/perfusion, ↓/nl JVP), no pulm congestion/R heart failure.
    - Avoid diuretics in proven RVMI.
    - Caution w/nitrates & opiates.
    - Dopamine if persistent hypotension.
    - Early reperfusion (PCI/thrombolysis) → morbidity & mortality (rapid recovery of RV function).

F/U of Ms. LS

- EKG shows completely normal V4R – V6R.
- You send her to the ED & meet her there.

  ED:
  - HR = 52, PR interval is normal (168 ms).
  - BP = 90/45.

Decision Point

- What's going on?
- Next steps?

Special Considerations 2—Inferior MI

- Inferior MI may be associated w/bradycardia.
  - RCA tends to supply:
    - Inferior LV.
    - RV.
    - SA & AV nodes (sinus brady, Wenckebach).
      - SB = up to 40% of IWMI in 1st 2 hrs, 20% 1st day.
    - Increased vagal tone (SB).
    - 2nd/3rd deg AVB: 10% of IWMI receiving thrombolysis; ½ of those are already present on admission (5% tot).

Management of Bradycardia in IWMI

- Atropine (0.5 – 1 mg/dose, max 3 mg).
  - Brady + normal PR (no AV block) → possible cardioinhibitory reflexes (Bezold-Jarisch).
  - Early (≤24 hr) IWMI: usu responsive to atropine.
  - P-24 hr & RVMI: may be atropine-resistant.
  - Caution: case reports of Vfib w/atropine in active ischemia.
  - May need RV or AV pacing.
  - NB: VT or VF may occur in up to 1/3 of RVMI.
Decision Point
• Acute inferior wall MI.
• Next steps?

Plan
• Dr Dave’s 3 steps in ACS management:
  1. Emergency management.
  2. Look at the EKG (you’ve already done it).
  3. (ABC)^2 meds.

Plan—2
1. Emergency management:
   – Monitor.
   – MONA.
     • Morphine.
     • Oxygen.
     • Nitrates.
     • ASA.

Oxygen—Friend or Foe?
• Cochrane 2016:
  – 5 trials, N=1173.
  – Inconsistent & low quality evidence.
  – No effect of O2 on mortality or infarct size.
  – No RCT evidence to support routine use of O2 MI, can’t R/O harmful effect.

Oxygen—Friend or Foe?
• AVOID trial 2015 (p-Cochrane):
  – Multicenter RCT, 441 STEMI pts.
  – 8L O2 mask vs RA.
    • 7.7% in RA arm rec’d O2 for sat<94% (4L NC, few 8L mask).
  – In normoxemic pts, routine high-flow O2 NOT assoc’d w/↓ pain or infarct size.
  – Larger infarct (early CK, 6 mo MRI).
  – In hosp: 5X ↑ recurrent MI, 29% ↑ arrhythmia.

Oxygen—Friend or Foe?
• O2 may ↑ coronary artery & other vasoconstriction.
• Hyperoxia (PaO2 > 300) may harm organs (resp failure, cerebral hypoperfusion) or worsen outcomes—uncertain.
• “O2 should be treated like all other medical therapies, for which physicians balance efficacy and side-effect profiles. Until larger studies are available, O2 should not be routinely administered to patients unless oxygen saturations are <94%.”
Plan—3
2. Look at the EKG.
   - STEMI ➔ reperfuse, if able.
   - No ST elevation = unstable angina or NSTEMI.
   - NSTEMI:
     • Unstable, persistent sx, severe arrhythmia ➔ reperfuse.
     • TIMI risk score.

Plan—4
3. (ABC)² meds.
   - ASA — already done in MONA.
   - Anticoagulant.
   - Beta-Blocker — w/in 24 hr.
   - Clot inhibitor — clopidogrel, prasugrel, ticagrelor.
   - Cholesterol — high intensity statin.
   • Pathophys of MI is plt aggregation + coagulation ➔ block ‘em!

Plan—Our Pt
• ASA 162-325 mg chewed immediately (NO EC).
  - CURRENT-OASIS 7 suggests 81 may work.
• Beta blocker:
  - Oral unless hypertensive @ presentation OR uncontrolled angina @ presentation ➔ IV.
  - Metoprolol tartrate 25-50 po q 6-12 hr.
    • May convert to LA drug @ or p-D/C — metoprolol succinate or atenolol.

Decision Point
• Reperfusion:
  - Should Ms. S be reperfused?
  - If so, how? If not, why not?

Plan—Our Pt—2
• Pt arrived w/in 12 hr of sx onset.
• If door-to-balloon time ≤90 min ➔ PCI.
  - If non-PCI-capable hospital:
    • Can you get pt transferred out of ED w/in 30 min?
    • Can you get pt to PCI w/in 120 min of 1st contact in non-PCI-capable hospital?
    • If yes to both ➔ transfer for PCI.
    • If time from 1st contact to PCI >120 min, thrombolysis IF not contraindicated (use protocol, tables, list, etc).

Plan—Our Pt—3
• We are at a PCI-capable hospital ➔ call cardiologist.
• While awaiting cardiologist:
  - Heparin drip.
    • Principle: if pt to get procedure that might make him/her bleed, use reversible agent — heparin.
  - Atorvastatin 80 mg po.
Decision Point

- Which antiplatelet agent?

Plan—4a: Which Antiplatelet Agent?

- Clopidogrel 600 mg po loading dose.
  - STEMI pts may benefit even if not reperfused.
- Ticagrelor 180 mg po loading dose.
  - ↑ non-procedure-related bleeding.
  - ↑ hemorrhagic stroke.
  - ↑ SOB.
  - Bid drug (clopidogrel = once daily).
  - FDA initially did not approve—US pts (PLATO trial) did not benefit!
  - Concerns w/PLATO—biases (↓ outcomes @ company-sponsored sites).

Plan—4b: Which Antiplatelet Agent?

- Prasugrel 60 mg po loading dose.
  - Contraindicated if any H/O TIA, stroke.
  - Contraindicated if wt <60 kg, or age ≥75 years.
  - Superior to clopidogrel 300 mg—not current dose.
  - TRILOGY-ACS (smaller trial, longer duration) contradicts TRITON-TIMI 38—no mortality benefit for prasugrel.
- Thrombolyis:
  - Clopidogrel 300 mg.
  - Prasugrel & ticagrelor not studied.

Plan—4c: Which Antiplatelet Agent?

- Our cardiologists have switched to ticagrelor.
  - ACC recommends ticagrelor or clopidogrel.
  - ESC recommends ticagrelor or prasugrel.
- I would like more good RCT's.
  - Conflicting & concerning evidence since initial trials.

Outcome

- Pt had PCI w/good result, no complications.
- Normal EF.
- Home meds:
  - Metoprolol succinate 100 mg daily.
  - Atorvastatin 80 mg daily.
  - ASA 81 mg daily.
  - Clopidogrel 75 mg daily.

Questions