STABLE ISCHEMIC HEART DISEASE: 
A NON-INVASIVE CARDIOLOGIST’S PERSECTIVE

2018 Cardiovascular Course for Trainees and Early Career Physicians

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DISCLOSURES

NO DISCLOSURES
WHAT IS STABLE ISCHEMIC HEART DISEASE (SIHD)?

- Patients with known or suspected CAD / IHD with new symptoms (low risk UA), stable CP syndromes or asymptomatic patients (previously symptomatic)
- Includes patients with CAD post revascularization
- Includes asymptomatic patients with abnormal screening studies (e.g. stress test, coronary Ca+ score)
- Does not include patients with high risk UA / NSTEMI / STEMI
Three Case Presentations: Questions to Consider

- Should this patient undergo coronary angiography?

- At your institution, would this patient undergo coronary angiography?

- Should this patient undergo coronary revascularization?

- At your institution, would this patient undergo coronary revascularization?
Case 1

- 50 y/o woman with poorly controlled HTN and DM, smoker
- 6 months of exertional CP and dyspnea (no rest pain)
- Taking ASA, BB and statin
- Stress Perfusion
  - 4 minutes of Bruce Protocol
  - Anginal CP
  - 2 mm ST depression that persists into recovery
  - Flat BP response
  - Perfusion defects in LAD and RCA territories
  - DTS -14
Case 2

- 60 y/o man with HTN and HLD
- 6 months of exertional chest pain
- Taking amlodipine and pravastatin
- Stress Echo
  - 9 minutes of Bruce Protocol
  - Mild (non limiting) CP
  - 0.5 mm ST depression
  - Normal BP / HR response
  - Echo with new inferior WMA, EF augments
  - DTS 2.5
Case 3

- 45 y/o man with HTN and 6 months of CP only when he “over does it”
- Taking HCTZ
- Stress Perfusion
  - 10 minutes of Bruce Protocol
  - No ST changes
  - Mild non limiting chest pressure
  - Perfusion imaging with a small lateral perfusion defect, normal EF
- DTS 6
CONSIDERATIONS IN THE EVALUATION AND MANAGEMENT OF SIHD

- General Considerations
  - Medical decision making should be shared between the patient and providers who often overestimate the value of non-medical interventions.

- Diagnostic Evaluation (H/P, ECG, functional vs anatomic testing)

- Risk Assessment (drives decision making)

- Treatment
  - Medical therapy (GDMT)
  - Revascularization
    - Percutaneous
    - Surgical
DIAGNOSTIC EVALUATION: SUSPECTED IHD

- High risk / unstable patients go on to cath / intervention + GDMT
- Initial approach in low risk patients depends on patient factors and usually involves a non-invasive test (stress test or CCTA)

- Choosing the “right” test involves many factors
- Goal is diagnosis and risk stratification
Guideline Directed Medical Therapy (GDMT)

- The foundation for patient management / treatment regardless of decisions for future revascularization

- Most patients with SIHD should have a trial of GDMT before revascularization is undertaken
  - Angiography and revascularization indicated
    - high risk patients (to improve survival)
    - lower risk patients who fail GDMT (persistent symptoms)
What Constitutes GDMT for SIHD?

**Risk Factor Modification**

- Anti-platelet therapy
  - ASA 75-162 mg or Clopidogrel 75 mg
- Life style modification (diet, weight loss, physical activity)
- Smoking cessation
- Statin (mod - high intensity)
  - Non statin therapies if needed
- Hypertension treatment (tailor to other co-morbidities)
  - ACEi (DM, LV dysfn, CHF, CKD)
- Glycemic Control
What Constitutes GDMT for SIHD?

Symptom Management

- SL NTG
- Beta blocker
- CCB and/or long acting nitrate
- Ranolazine
- Consider revascularization for symptom relief
RISK ASSESSMENT IS THE DECISION POINT IN SUBSEQUENT MANAGEMENT
What Constitutes a High Risk Clinical Evaluation?

- Sociodemographic Status (age)
- CV Risk Factors (Tobacco, HTN, HLD, FH, Obesity, sedentary)
- Co-morbidities (CKD, DM, COPD, malignancy)
- CV co-morbidities (CHF, PVD, CVD)
- Psychosocial (depression, poor social support, poverty, stress)
- Health Status (sx, FC, QOL)
- Anginal Frequency
- Disease Severity (anatomy, stress test data, LVEF)

Clinical risk stratification tools exist
- Incorporate different clinical variables
- Some individuals with high risk features may warrant initial angiography rather than NI testing
What Constitutes a High Risk Stress Test?

- High Risk Features (Stress ECG)
  - ST depression at low workload / persisting in to recovery
  - Poor Functional Capacity (< stage II)
  - Blunted BP response
  - Abnormal HR recovery
  - Duke Treadmill Score (Ex time - 5xST- 4xAngina index)
    - High risk ≤ - 11; Low risk ≥ 5

- High Risk Features (Imaging Data)
  - Normal Echo / MPI confers very low risk
  - Risk increases with degree of abnormality, abnormalities in > 1 coronary territory, fall in EF
    - MPI: > 10% moderate, > 15 % severe defects; TID; lung uptake
    - Echo: > 2-3 segments; LV dilation; fall in EF; > 1 coronary territory

- Low risk test: medical management
- Low risk test with high risk clinical features: consider angiography
- Moderate / high risk test: angiography / revascularization
SIHD: What is the Goal of Angiography?

- Anatomic Risk Assessment (based on number / severity of diseased vessels)
- Guide revascularization strategy
  - Why Revascularize?
    - Improve Prognosis: reduce morbidity / mortality (vs GDMT)
      - PCI does not prevent MI / death
      - CABG improves survival in selected (high risk) individuals
    - Symptom Relief
      - Is CABG and / or PCI superior to GDMT?
        Yes / Probably (doubts raised by ORBITA for PCI)
        Optimal method a function of anatomy
        Appropriate Use Criteria as a guide
DOES (Percutaneous) REVASCULARIZATION IMPROVE SYMPTOMS?

- **ORBITA (Lancet 2017)**
  - Randomized 230 patients (single vessel disease) to GDMT ± (sham) PCI
    - No difference in sx relief, time to ST depression
    - PCI improved results of DSE
    - 2.9 AAD / patient
    - Short term f/u (6 weeks)
SIHD: Revascularization to Improve Survival

- No Class I Indications for PCI
  - Several Class IIa / IIb Indications

- Class I CABG
  - LMCA
  - 3 v disease or 2 v disease with prox LAD

- Class IIa CABG
  - LV dysfunction, prox LAD or extensive ischemia

- Class III (to impact survival)
  - Single vessel disease w/o proximal LAD disease
Revascularization for Symptom Relief

- CABG or PCI for patients with persistent symptoms despite GDMT (Class I) or with contraindications / side effects / patient preference (Class IIa)
- More complex anatomy favors CABG
SIHD: Why is there a bias toward angiography and intervention?

- Perception by patients (and providers) but not proven in many clinical scenarios that revascularization is superior to medical therapy for preventing MI, death and providing symptom relief.
- Revascularization (rather than treating medically) is seen as “doing something” or “fixing” the problem.
  - Patients and referring providers expect “action”
- Fear of liability for not “doing something”

**Original Investigation**

How Cardiologists Present the Benefits of Percutaneous Coronary Interventions to Patients With Stable Angina
A Qualitative Analysis

Sarah L. Goff, MD; Kathleen M. Mazor, EdD; Henry H. Ting, MD, MBA; Reva Kleppel, MSW, MPH; Michael B. Rothberg, MD, MPH

CONCLUSIONS AND RELEVANCE Few cardiologists discussed the evidence-based benefits of angiogram and PCI for stable CAD, and some implicitly or explicitly overstated the benefits.

GDMT: 50% statin; 47% ASA; 6% on > 1 AA med

“I don’t have strong feelings, but I want to do something because I’m not happy sitting and not knowing for sure.”

Cardiologist: “If you don’t do it [angiogram/PCI], what could happen? Well, you could infarct or have a heart attack involving that area which can lead to a sudden death potentially or at the
Case 1: High Risk Clinical, Stress and Imaging

- Should this patient undergo coronary angiography? **YES**
- At your institution, would this patient undergo coronary angiography?
  **YES:** 90% prox LAD, 80% cx and modest RCA disease
- Should this patient undergo coronary revascularization? **YES**
- At your institution, would this patient undergo coronary revascularization? **YES**

AUC #14 (CABG>PCI)
Case 2: Intermediate Risk Clinical and Stress data, low risk imaging

- Should this patient undergo coronary angiography? MAYBE / YES
- At your institution, would this patient undergo coronary angiography? YES: 75 % mid RCA, non obs LAD and Cx
- Should this patient undergo coronary revascularization? No, unless he fails GDMT (including BB), then Maybe
- At your institution, would this patient undergo coronary revascularization? YES

AUC # 2 (M PCI, especially if still sx with GDMT)
Case 3: Low Risk Clinical, Stress and Imaging Data

- Should this patient undergo coronary angiography? NO
- At your institution, would this patient undergo coronary angiography? PROBABLY / YES: 75% mid Cx, non obs Cx, no LAD dx
- Should this patient undergo coronary revascularization? No, unless he fails GDMT
- At your institution, would this patient undergo coronary revascularization? Probably / YES

AUC # 1 (PCI only if sx on GDMT)
STABLE ISCHEMIC HEART DISEASE

SUMMARY

- SIHD is a common problem
  - High cost to the patient and society
- Clinical evaluation, diagnostic testing and risk stratification are essential components in patient management
- GDMT is the cornerstone of treatment
- Revascularization is indicated in high (and some intermediate) risk individuals or those who fail GDMT (primarily on-going symptoms)
  - CABG improves survival in selected patients
  - PCI does not reduce MI / death but may provide symptom relief in some patients
- Not all patients with a positive stress test need angiography and / or revascularization
  - An initial trial of GDMT for many (if not most) patients with SIHD does not place them at increased risk of MI / death
2nd Annual 2018 Cardiovascular Course for Trainees and Early Career Physicians:

Current Concepts in the Diagnosis and Management of Coronary Artery Disease

Friday, April 20, 2018
The Grand Event Center at Grandview Yard
820 Goodale Blvd. Grandview Heights, OH 43212

The course will focus on current concepts in the diagnosis and management of patients with coronary artery disease (CAD). Preventive measures for CAD and how to approach each phenotype of the disease will be discussed. Special issues and special patient populations related to CAD will be presented based on cutting edge information. Further, hands-on cardiac dissection will be performed where cardiac and coronary artery anatomy will be related to cardiac imaging.

THANK YOU