What’s New in Antiplatelet Therapy and DES in 2016

Peter Pollak MD
Director of Structural Heart Disease & Intervention
Mayo Clinic Florida

Disclosures

• Financial – None
• Off-label - None
Outline

- Antiplatelet Therapy → Cangrelor
- Bioabsorbable Polymer → SYNERGY
  - Different from BVS → ABSORB
- Dual Anti-Platelet Therapy (DAPT)
  - Stopping & Continuing
- Bare Metal Stents?
  - NORSTENT

Case

- 59yo male with sudden severe chest pain
  - Began 2 hours ago
  - Brought by ambulance
- Past Medical History:
  - Diabetes, Hypertension, Hyperlipidemia
- Medications:
  - Metformin, Lisinopril, Aspirin
- Exam: BP 150/80, Pulse 60, Resp 15
  - Uncomfortable and anxious
  - Extremities warm
  - No murmur
ECG

RCA
What is the best approach:

- What drugs?
- Balloon result & CABG?
- Heart team approach?
- DES vs. BVS – LIMA in future?
FREEDOM Trial
1900 pts with DM & MVCAD

- PCI/DES
- CABG

Logrank P=0.005

5-Year Event Rates: 26.6% vs. 18.7%
What about Cangrelor?

A “new” IV antiplatelet drug

Cangrelor – CHAMPION Trials

- Direct platelet P2Y$_{12}$ receptor antagonist
- Parenteral administration
- T1/2 = 3 to 6 minutes
- Offset = 60 minutes

- 8716 patients undergoing PCI
- Pre-treated with 600mg Clopidogrel
Cangrelor Pharmacodynamics

Plasma Concentration

Platelet Activity

Recovery time ~60 minutes

Cangrelor – transition to other drugs

IPA (%) vs Time (hours)

Cangrelor Infusion

Ticagrelor (180 mg)

Prasugrel (60 mg)

Clopidogrel (600 mg)

C: Cangrelor

P: Prasugrel

T: Ticagrelor

Graph showing the transition of platelet aggregation over time with different drugs.
Cangrelor Summary

• Intravenous & Reversible antiplatelet effect
• Cannot load Clopidogrel or Prasugrel until infusion has stopped
  • Cannot bind until Cangrelor is off site
• Can load Ticagrelor during infusion
Returns for Staged LCX Intervention

What kind of DES to use?

Anatomy of a Drug Eluting Stent

Drug

Polymer

Stent Frame
Bioabsorbable Polymer Stent

Thinner stent
Drug only on vessel wall side

SYNERGY

Promus Premier
Drug and Polymer disappear

No significant difference in outcomes
Low Stent Thrombosis rate
Lucky?

Bioabsorbable Polymer Summary

- Low profile stent
  - More deliverable?
- Drug and polymer on vessel side only
- Bio-resorbable → BMS after 3 months
- Use & advantage?
  - Transplant patients?
  - Diabetics with bleeding risk or need for surgery?
Bioresorbable Vascular Scaffold

ABSORB BVS stents

- Poly L-lactide scaffold
- 150 µm thick
- Bioresorbably polymer
- Everolimus

**Exciting Possibilities**
- Return of vasomotor fxn
- Less late lesions
- Possible grafting
Meta-analysis of 3738 patients at 1 year

ABSORB BVS vs. Xience CoCr EES

Odds Ratio

TLF | TLR | MI | Death | ST
---|---|---|---|---
1.2 | 0.97 | 1.36 | 0.97 | 1.99

Cassese et al LANCET 2016; 387:537
Some Hiccups…

- Many exclusions in trials (and package insert)
  - Bifurcation lesions
  - Ostial lesions
  - Small (<2.5mm) or large (>3.5mm) vessels
  - Long lesions (>24mm)

- In Use
  - Vessel pre-dilatation required
  - Careful sizing required – QCA, IVUS, or OCT
  - High pressure post-dilatation required
  - Less deliverable?
How long should I treat with DAPT?

Continuum of Coagulability & Bleeding Jeopardy

SIHD → ACS → STEMI
DAPT after ACS

Class IIB at 6 Months

Class I recommendation for 12 Months

Class IIB >12 Months
DAPT in Stable Ischemic Heart Disease (shorter, only Clopidogrel)

- Class I recommendation for 6 Months
- Class IIB >6 Months

The NEW ENGLAND JOURNAL of MEDICINE

Twelve or 30 Months of Dual Antiplatelet Therapy after Drug-Eluting Stents

- DAPT continuation 12 to 30 months
- 9961 patients randomized to continue thienopyridine vs. placebo
- Questionable catch-up phenomenon noted

Mauri et al NEJM 2015
DAPT Study Data

- Stent Thrombosis
  - Thienopyridine: 0.4%
  - Placebo: 1.4%

- MACCE
  - Thienopyridine: 4.3%
  - Placebo: 5.9%

- Myocardial Infarction
  - Thienopyridine: 2.1%
  - Placebo: 4.1%

- Death*
  - Thienopyridine: 2.0%
  - Placebo: 1.5%

- Mod/Svr Bleeding
  - Thienopyridine: 2.5%
  - Placebo: 1.6%

* P=0.05 for Death

Mauri et al NEJM 2015

DAPT >1 Year after MI

Hazard Ratio

- Death/MI/Stroke Hazard Ratio: 2.32
- Major Bleeding Hazard Ratio: -0.84

Bittl et al Circ 2016
Prolonged DAPT per 1000 treated patients

- Stent Thrombosis
- MI
- Major Bleed

Bittl et al Circ 2016

DAPT calculator

DAPT calculator (risk/benefit for dual antiplatelet therapy)

www.daptstudy.org/for-clinicians/score_calculator.htm
DAPT Calculator

DAPT Score = 2: HIGH
Calculated DAPT Score Shown by Red Arrow

Distribution of DAPT Scores in the DAPT Study
Bare Metal Stents
New Again?

9013 Patients
SIHD & ACS
Randomized BMS vs. DES
No Difference in Primary Outcome (Death or MI)

No significant difference in the primary outcome of death or MI between bare-metal stents and drug-eluting stents.

Still Some Differences

- **TLR**
  - DES: 5.3%
  - BMS: 10.3%
  - P < 0.001

- **Any Revascularization**
  - DES: 16.5%
  - BMS: 19.8%
  - P < 0.001

- **Def. ST**
  - DES: 0.8%
  - BMS: 1.2%
  - P = 0.0498
Summary Points

- Cangrelor
  - Rapid acting IV antiplatelet
- New Stent technologies
  - Bioabsorbable Polymer – SYNERGY
    - Vessel healing?
  - BVS – ABSORB
    - Gone in few years
    - Concerns about stent thrombosis
- Prolonged DAPT → Calculator
- Bare Metal Stents – better than used to be

Thank you!

Pollak.peter@mayo.edu
@DrPeterPollak

Questions?