Healthy Heart

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From the desk of editor:

It is with pride I announce the launch of CIMS KIDS at CIMS Hospital on June 19, 2011. CIMS KIDS is an effort by the hospital to provide exemplary and revolutionary medical care for **neonates and pediatric** patients in the area of **critical care and cardiology**. We will also have advanced and specialized pediatric ambulance services to provide speedy and efficient services.

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CIMS has witnessed an unprecedented inpatients crossing in the last few months over 5000 (from August, 2010 to May, 2011). Quality patient care has been our topmost priority and will always be. We are confident that with the CIMS KIDS we will scale newer heights in healthcare services.

Dr. Keyur Parikh

Update in Interventional Cardiology

I am happy to provide readers of Healthy Heart with this review of some important scientific work published in the field of interventional cardiology in 2010-2011. severe AS who were not suitable candidates for surgery to standard therapy (including balloon aortic valvuloplasty) or TAVI with the Edwards SAPIEN balloon-expandable bovine pericardial

Structural Heart Disease

<u>Aortic valve replacement:</u> Perhaps the most important and exciting report from 2010 was publication of the first randomized trial of Transcatheter Aortic Valve Implantation (TAVI) for Aortic Stenosis (AS). The PARTNER (Placement of Aortic Transcatheter Valves) trial randomly assigned 358 high-risk patients with



severe AS who were not suitable candidates for surgery to standard therapy (including balloon aortic valvuloplasty) or TAVI with the Edwards SAPIEN balloon-expandable bovine pericardial valve. The TAVI arm had a dramatically lower rate of death at 1 year compared with the standard therapy arm (30.7% vs. 50.7%, p < 0.001)



Results of this landmark trial will revolutionize the care of inoperable AS patients. The year also saw many other scientific reports regarding TAVI, including with Core Valve, Medtronic.



<u>Mitral valve repair</u>: Another major development this year was presentation of data from the first randomized trial of percutaneous versus surgical mitral valve repair, EVEREST II (Endovascular Edge-to-Edge Repair Study). A total of 279 patients with significant (3 to 4 +) mitral regurgitation was randomly allocated on a 2:1 basis to catheter-based repair with the MitraClip versus surgery. At 30 days, the primary safety endpoint, a composite of major adverse events, was markedly lower in the MitraClip arm (9.6% vs. 57%, p <0.0001). The entire procedure is done percutaneously.



These exciting data suggest that percutaneous mitral repair with the MitraClip is an important therapeutic option for patients with significant mitral regurgitation.

Elective Percutaneous Coronary Intervention

Left main coronary artery disease : Several publications verified the long-term safety and efficacy of unprotected Left Main Coronary Artery (LMCA) stenting compared with Coronary Artery Bypass Graft Surgery (CABG). Park et al. evaluated 2,204 LMCA disease patients who were treated with either Percutaneous Coronary Intervention (PCI), Bare-Metal Stent (BMS), or drug-eluting stent (DES), or CABG in a nonrandomized fashion. At a median of 5.2 years of followup, death, myocardial infarction (MI), or stroke was similar, but Target Vessel Revascularization (TVR) was higher in the PCI group.

The SYNTAX (Synergy Between PCI With TAXUS and Cardiac Surgery) Investigators published 1-year outcomes in the 705 patients with unprotected LMCA disease randomly assigned

to TAXUS stenting versus CABG. Major adverse cardiovascular events (MACE) were similar between the 2 groups; however, stroke was significantly higher in the CABG cohort (2.7% vs. 0.3%, p = 0.004).

<u>Multivessel disease</u>: The MASS-II (Medicine, Angioplasty or Surgery Study) reported 10-year outcomes among 611 randomized patients with stable angina and multivessel disease. <u>Medical therapy was an inferior strategy</u> compared with CABG and PCI, respectively, with lower survival (69% vs. 74.9% and 75.1%, p = 0.089) and higher infarction (20.7% vs. 10.3% and 13.3%, p < 0.01).

The CARDia (Coronary Artery Revascularization in Diabetes) trial randomized 510 diabetic patients with multivessel disease to PCI (BMS or sirolimuseluting stent [SES]) or CABG (23). One-year mortality was identical (3.2% vs. 3.2%), and combined death, MI, and stroke were similar (10.5% vs. 13.0%, p = 0.39) between CABG and PCI arms. Similarly, the ARTS-II (Arterial Revascularization Therapies Study II) found similar freedom from death, MI, or stroke in the patients with multivessel disease treated with Drug Eluting Stents compared with CABG.

Fractional flow reserve guidance: Fractional flow reserve measurement is useful to reduce adverse events in multivessel disease patients undergoing PCI. The FAME (FFR Versus Angiography for Multivessel Evaluation) trial randomized 1,005 patients with multivessel disease. It helps to decide severity leseon & establishes need for stenting.

The group randomly assigned to fractional flow reserve had lower utilization of stents (1.9 vs. 2.7, p < 0.001) and reduced death or MI at 2 years (8.4% vs. 12.9%, p = 0.02). We, at CIMS, do have FFR available.

Acute MI

Time to treatment. Several studies investigated the impact of time to reperfusion on clinical outcomes. Short door-to balloon times (90 min) had greatest impact in patients presenting early (90 min), especially in high-risk patients TIMI (Thrombolysis In Myocardial Infarction).

Patients who received reperfusion therapy outside of



guideline recommended maximum delay (30 min for fibrinolysis; 90 min for PCI) had significantly higher 30-day mortality (6.6% vs. 3.3%).

PCI after thrombolysis : A Norwegian trial evaluated the safety and efficacy of immediate angioplasty versus ischemia-guided therapy after thrombolysis in 266 AMI patients presenting to remote non-PCI hospitals. The group randomly assigned to immediate transfer for PCI had reduced ischemia at 30 days and improved composite endpoint of death, reinfarction, or stroke at 12 months. Borgia et al. performed a meta-analysis of 7 trials of routine PCI versus standard care after fibrinolysis. The early routine invasive strategy was associated with significant reductions in reinfarction and recurrent ischemia compared with standard therapy, both at 30 days and at 6 to 12 months of follow-up. Nielsen et al. reported late follow-up (median 7.8 years) of the DANAMI-2 (Danish Acute Myocardial Infarction-2) trial in which 1,572 STEMI patients were randomly allocated to PCI or fibrinolysis. The short-term benefit of PCI over fibrinolysis was maintained at long-term follow-up with a reduced the risk of reinfarction and (11.7% vs. 18.5%) and death/reinfarction (34.8% vs. 41.3%).

Acute Coronary Syndromes

An early invasive strategy is currently recommended in patients with non–ST-segment elevation acute coronary syndrome (ACS) and high-risk features. In 2010, Fox et al. performed a meta-analysis of 3 randomized trials (n = 5,467) comparing a routine early invasive versus selective invasive strategy. Over 5 years, a routine early invasive strategy was associated with a significant reduction in death or myocardial infarction (14.7% vs. 17.9%, p = 0.002) compared with the selective approach (greatest benefit was observed in the highest-risk patients).

Pharmacotherapy

DRUG INTERACTIONS. Recently, there has been controversy about use of proton pump inhibitors (PPI) in patients requiring clopidogrel. Concomitant use of PPI (especially omeprazole) does appear to reduce the antiplatelet effect of clopidogrel, irrespective of when the PPI is given, but recent studies suggest that this drug interaction does not significantly impact clinical outcomes

P2Y12 inhibitors. TRITON–TIMI 38 (Trial to Assess Improvement in Therapeutic Outcomes by Optimizing Platelet Inhibition With Prasugrel–Thrombolysis In Myocardial Infarction 38), showed superiority of prasugrel over clopidogrel in selected group of patients.

Ticagrelor is an oral reversible adenosine diphosphate inhibitor with more rapid and consistent platelet inhibition than clopidogrel. In patients with STEMI and ACS patients with a planned invasive strategy, ticagrelor was associated with significant reductions in death, MI, and ST without an increased risk of major bleeding, prasugrel is available now in India & Ticagrelor will be available in few months.

Glycoprotein IIb/IIIa inhibitors. Several trials in 2010 expanded the evidence base regarding the benefits of glycoprotein IIb/IIIa inhibitors in primary PCI, and in particular, the role of small molecule agents.

A meta-analysis of randomized trials with tirofiban in ACS and PCI suggested tirofiban reduces mortality.

Hypertension

Renal denervation. In one of the most exciting developments of the year, results of a 1 0 6 - p a t i e n t randomized trial of catheter-based renal s y m p a t h e t i c denervation for



treatment of resistant hypertension (systolic blood pressure 160 mm Hg despite taking 3 or more antihypertensive medications) were published. At 6 months, the office-based blood pressure was substantially lower in patients treated with renal denervation (decrease 32/12 mm Hg vs. no difference in the control group). Eightyfour percent of renal denervation patients had a reduction in systolic blood pressure >10 mm Hg versus 35% of controls (p < 0.0001).



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