# Updates on Valvular Heart Disease

Nine presenters across two sessions discussed various aspects of valvular heart disease, from key studies, optimum medications, and medical management vs. surgical repair. Emerging concepts in aortic stenosis received special attention, included in both the Special Session "State-of-the-Art Management of Valvular Heart Disease" and serving as the topic of a Cardiovascular Seminar two days later. Here are highlights from those presentations.

Highlights from the American Heart Association Annual Meeting 2005

*Credit: AJ Photo/Photo Researchers, Inc.*

**Aortic regurgitation** (AR) suffers from sparse data, according to Jeffrey S. Boyer, MD, of the Weill Medical College of Cornell University in New York, NY. "AR has been studied less than any other form of valvular heart disease," he said.

Calcium channel antagonists have received attention as vasodilators of choice in AR. Studies, however, have been contradictory.

Dr. Boyer reported a recent study (Evangelista et al, *New England Journal of Medicine* 2005) which randomized 95 individuals with AR between nifedipine, enalapril, and no treatment. Endpoints were LV functional status and need for valve replacement surgery. After a 7-year follow-up, aortic valve replacement was roughly similar between all three study arms, although fewer (39%) in the control (no medication) group went on to replacement. Replacement surgery was somewhat higher in the enalapril arm (50%) and somewhat less (41%) in the nifedipine arm.

An earlier study, however (Sondergaard et al. *Am Heart J* 2000:139), used MRI to demonstrate that felodipine brought favorable short- and long-term improvements in AR, and actually reduced the regurgitant volume.

In calling for more AR studies, Dr. Borer offered the following guidance: Pay close attention to all clinical variables that contribute to long term outcomes and consider long-acting nifedipine the best and most current approach to long-term pharmacotherapy for AR.

**Mitral stenosis** (MS) is less commonly seen in the United States thanks to prophylaxis of rheumatic fever. But in the developing world, notably Africa and India, MS is still common. Stenotic lesions typically emerge 10-20 years post-infection. Overt symptoms generally fail to emerge until the stenotic valve leads to functional impairment.

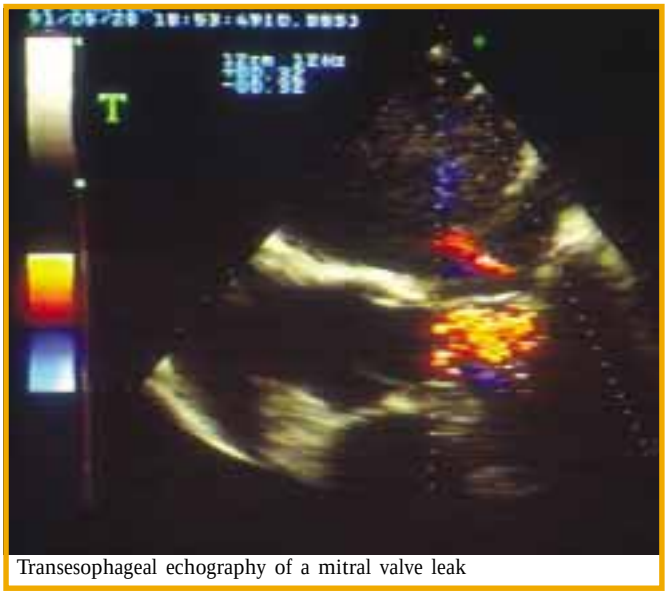
"Percutaneous mitral valve balloon valvuloplasty (PMV) is the procedure of choice for selected patients with mitral stenosis," said Igor F. Palacios, MD, Associate Professor of Medicine at Harvard Medical School.

PMV is "widely accepted as an excellent alternative to commissurotomy for managing patients whose stenosis has become symptomatic," he said. "Studies show that PMV offers dependable immediate and long-term follow-up results. And that's what we're seeing in our patients as well."

Dr. Palacios and his colleagues have developed a scoring system based on echocardiography that helps to select patients more likely to see positive outcomes with PMV. Dr. Palacios has published several reports on his "echo score" over the last decade, and "this system has proven fundamental to predicting both immediate and long-term outcomes."

"PMV achieves excellent hemodynamic and clinical improvement," Dr. Palacios said. "Improvements continue at long-term follow-up as well."

**Mitral regurgitation** "begets more mitral regurgitation," said Patrick O'Gara, MD, Director, Cardiovascular Division, Brigham & Women's Hospital, Boston, MA. "Chronic volume overload leads on to LV dysfunction. And things tend to degrade from there."



Transesophageal echography of a mitral valve leak

*Credit: James Cavallini/Photo Researchers, Inc*

What do we know about chronic mitral regurgitation in 2005? "Myxomatous degeneration dominates as the causative pathology in the United States," Dr. O'Gara said, accounting for 45% of all cases. "It's the most common cause of mitral regurgitation among adults."

With regard to surgery, "repair beats replacement every time," Dr. O'Gara said. "Repair should be the choice in 90% of patients."

There are special challenges in MR, Dr. O' Gara noted, including "patients who present initiallly with ischemic changes, very severe LV dysfunction, and infective endocarditis." But "whatever the clinical scenario, there are three objectives to keep in mind: establish the specific etiology of the chronic regurgitation, quantitate the severity, and stratify risk. And remember the importance of antibiotic prophylaxis."

Dr. O'Gara urged collaborative approaches to care in MR. "Institute a coordinated team approach. Work with the surgeon and other caregivers. Everybody should be in the loop." And when it comes to initiating this approach Dr. O'Gara said, "the earlier the better. I firmly recommend consulting earlier rather than later— the outcomes definitely improve."

**Aortic stenosis** (AS) is another valvular abnormality where "the jury is still out on pharmacotherapeutic approaches," Dr. O' Gara said. "Statins appear to retard the rate of progression in AS, with ACEIs doing the opposite. But a recent study (Cowell SJ et al, *New England Journal of Medicine* 2005) did not bear out statin superiority. "Stay tuned on this issue," Dr. O'Gara said.

In a companion presentation, "Aortic Stenosis in Clinical Practice—Statins and Beyond," Nalini Rajamannan, MD, Northwestern University Medical Center, Chicago, IL, presented intriguing new evidence supporting the role of valve calcification in the development of AS. "Epidemiological studies support an 'atherosclerotic hypothesis' for the cellular mechanisms behind AS," Dr. Rajamannan said. "We're seeing that the same risk factors for atherosclerotic disease are risk factors for AS. And hsCRP levels are elevated as well in AS. This appears to be

an inflammatory process associated with calcification."

Emerging experimental evidence has demonstrated calcification and "bone-like features" including osteoclast deposition in stenotic aortic valves. "Hypercholesterolemia plays a role in this calcification," Dr. Rajamannan said. She referred to a study by Shavelle and colleagues (*Lancet* 2002) which found that statin therapy reduced aortic valve calcification by more than 60%.

This mirrored Dr. O'Gara's earlier report that statins, at least in some studies, retard AS progression. With new evidence pointing to inflammatory and calcific features in AS, statins appear to be promising medical alternatives for treatment of AS.

**Tricuspid regurgitation** "involves the nearly forgotten valve," said Heidi Connolly, MD, Mayo Clinic, Rochester, MN.

The causes of tricuspid regurgitation "are many, but it is not the most common valvular abnormality. Tricuspid regurgitation is often associated with right-sided heart overload, so we tend to see hypoxia, cyanosis, and polycythemia. But not all tricuspid regurgitation is 'pure' (only one etiology) and when there are other valves involved there will certainly be signs and symptoms related to LV dysfunction as well."

Causes of tricuspid regurgitation can range from rheumatic heart disease (the most common 'pure' etiology) to endocarditis, prolapse, and papillary muscle dysfunction. Other causes include carcinoid, Marfan Syndrome, as well as the congenital Ebstein anomaly.

"Medical care is limited," Dr. Connolly said. "Diuretics are the only drugs demonstrated to help." Nor are there adequate percutaneous techniques. "When medical therapy fails, you have to get in there and fix the problem."

Dr. Connolly reviewed annuloplasty techniques, noting that replacement with a porcine valve is indicated in cases resulting from either rheumatic disease or carcinoid, or when there is recurrent regurgitation despite earlier repair. "There are mechanical valves available as well, but we see no difference in outcomes between bioprostheses versus mechanical valves."