

1:12 p.m.

1036MP-127 Mechanisms of Mitral Regurgitation in Aortic Stenosis: Lack of Relationship to Aortic Stenosis Severity and Management Implications

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Background: Mitral regurgitation (MR) is common in aortic stenosis (AS) and complicates its clinical course and management. It is thought to be related to AS severity and diminishes with aortic valve replacement for severe AS. However, the response to aortic valve replacement alone is variable and unpredictable. This study investigates into the mechanisms of MR in patients with AS.

Methods: Echocardiographic database search at our institution yielded 650 patients with AS - mild (valve area ≥ 1.3 cm²) in 399, moderate (valve area 0.8-1.2 cm²) in 154 and severe (valve area ≤ 0.7 cm²) in 97 patients, mean age was 73 ± 10 years.

Results: MR was present in 284 patients - mild in 197, moderate in 63 and severe in 24 patients. Patients with mild, moderate and severe AS had similar MR grades (p=ns) and similar proportion of patients with moderate/severe MR (13, 14 and 17% respectively, p=ns). Presence of moderate/severe MR (n=87) was associated with older age (75 ± 9 vs 73 ± 9 years, p=0.04), a larger LV end diastolic diameter (57 ± 10 vs 49 ± 8 mm, p<0.0001), larger LV end systolic diameter (47 ± 12 vs 34 ± 9 mm, p<0.0001), lower relative wall thickness (0.45 ± 0.16 vs 0.54 ± 0.13 , p=0.0005), lower LV ejection fraction (37 ± 17 vs 53 ± 14 %, p<0.0001), higher degrees of aortic regurgitation (p = 0.03) and left bundle branch block (15 vs 5%, p=0.0002) but not with AS severity. Logistic regression analysis identified LV ejection fraction and presence of aortic regurgitation to be the independent predictors of moderate/severe MR.

Conclusions: 1) MR is common in patients with AS and is unrelated to AS severity, but is associated with larger LV with lesser degree of LV hypertrophy. 2) LV dilatation is central to the genesis of MR and should be monitored closely in patients with AS in order to time aortic valve replacement. 3) Therapies or disease processes that reduce the hypertrophic response to AS or cause abnormal intraventricular conduction may predispose to MR.

1:24 p.m.

1036MP-128 Is Aortic Valve Sclerosis a Manifestation of Atherosclerosis?

Prabhakara S. Heggunje, T. Pratap, Ratnakar Mukherjee, Michael J. Wade, Jignesh S. Shah, Paul Kelly, Nasser Khan, VAMC, Syracuse, New York.

Background: Prior studies have shown that aortic valve sclerosis (AVS) is associated with increased cardiovascular events. It has been suggested that AVS is a manifestation of atherosclerosis. However, its association with established vascular disease has not been studied.

Methods: We evaluated 154 patients referred to our echocardiography laboratory for coronary artery disease, peripheral vascular disease and major atherosclerotic risk factors. Patients were considered to have established vascular disease if they had prior coronary or peripheral revascularization procedures or documented disease with at least 50% stenosis in one or more arteries (coronary or peripheral). All patients underwent 2-D echocardiograms, and cardiologists blinded to the clinical information assessed the echocardiograms for the presence of AVS. We then compared the prevalence of vascular disease between patients with AVS and those with normal aortic valves.

Results: AVS was diagnosed in 65 patients while 69 patients had normal aortic valves. Aortic stenosis (peak systolic gradient > 16 mm Hg) was diagnosed in 20 patients. There was no significant difference in the prevalence of documented vascular disease among the patients with AVS and those with normal aortic valves (58% vs 48%, p=0.231). Patients with AVS were older (mean age 72 years vs 60 years, p=0.0007) and had a higher incidence of diabetes (38% vs 22%, p=0.04) compared to patients with normal aortic valves. Other atherosclerotic risk factors were evenly distributed between the two groups. Even after adjusting for the confounding baseline variables, AVS did not predict a higher prevalence of vascular disease (OR=1.19, 0.56-2.52).

Conclusion: We did not find a significant independent association between AVS and established vascular disease in this cross sectional study. Our findings do not support the belief that AVS is a manifestation of atherosclerosis.

1:36 p.m.

1036MP-129 Aortic Valve Sclerosis, Hemodynamics, and Cardiovascular Risk in Hypertension: A LIFE Substudy

Michael H. Olsen, Kristian Wachtell, Jonathan N. Bella, Vittorio Palmieri, Eva Gerds, Markku S. Nieminen, Gunnar Smith, Björn Dahlöf, Hans Ibsen, Richard B. Devereux, Glostrup University Hospital, Copenhagen, Denmark, Weill Medical College of Cornell University, New York, New York.

Background: In population studies aortic valve (AV) sclerosis has been shown to be an independent risk factor for cardiovascular morbidity and mortality. We investigated the association of aortic valve with abnormalities, hemodynamic parameters and cardiovascular risk factors in essential hypertension.

Methods: After two weeks of placebo treatment clinical, laboratory and echo-cardiographic variables were assessed in 962 hypertensive patients with electrocardiographic left ventricular (LV) hypertrophy without known severe AV stenosis, aged 55-80 (mean 66 ± 7 years).

Results: AV sclerosis was found in 389 patients and mild AV stenosis was found in 15 patients. AV sclerosis was associated with higher LV mass (244 vs. 227 g), higher LV mass index (128 vs. 120 g/m²) and older age (68 vs. 65 years, all P<0.001), higher systolic blood pressure (175 vs. 173 mmHg, P<0.05), lower serum high density lipoproteins

(1.48 vs. 1.55 mmol/l, P<0.05), higher plasma glucose (6.3 vs. 5.8 mmol/l, P<0.01). AV stenosis was associated with higher relative wall thickness (0.47 vs. 0.41, P<0.001), lower circumferential end-systolic stress (157 vs. 183 kdynes/cm², P<0.05), lower stress corrected midwall fractional shortening (89 vs. 97 %, P<0.05), higher pulse pressure/stroke volume (1.24 vs. 1.05 mmHg/ml, P<0.05), lower cardiac output (4.41 vs. 5.24 l/min, P<0.05), higher total peripheral resistance (2.4 vs. 2.0 kdynes*sec/cm⁵, P<0.01) and older age (71 vs. 65 years, P<0.001).

Conclusions: AV sclerosis is common in hypertensive patients with electrocardiographic LV hypertrophy and associated with other known cardiovascular risk factors such as higher LV mass, older age and metabolic abnormalities. AV stenosis was associated with concentric geometry, decreased LV contractility, increased vascular stiffness and increased total peripheral resistance, but not to metabolic abnormalities.

1:48 p.m.

1036MP-130 Exercise Testing Predicts Symptom Onset in Aortic Stenosis: A Prospective Study of 85 Patients

Paul Das, Helen Rimington, Scott Takeda, Alex Crowther, John Chambers, Guy's and St. Thomas' Hospitals, London, United Kingdom.

Background: The onset of spontaneous symptoms in aortic stenosis is an indication for valve replacement. However, the prognostic value of symptoms induced by exercise testing is not established in patients who are asymptomatic on clinical assessment.

Method: We studied 85 patients aged 65 years (range 32-88), 58 male/27 female, of whom 36 had severe (effective orifice area (EOA) ≤ 0.8 cm²) and 49 moderate stenosis (EOA 0.8-1.2 cm²). All denied symptoms and had normal left ventricular systolic function. Treadmill exercise testing was performed using the Modified Bruce protocol. A positive test was defined by the onset of limiting chest pain, breathlessness or dizziness. Patients were followed for 12-65 months and the end-point was the onset of spontaneous symptoms within 12 months.

Results: 41 exercise tests (48%) were positive and during follow-up 32 patients (38%) developed spontaneous symptoms, 21 (58%) of those with severe and 11 (22%) with moderate stenosis. For the whole population, onset of spontaneous symptoms was related on univariate analysis to peak transaortic velocity, mean gradient, EOA, mean resistance, total exercise time and systolic blood pressure at peak exercise. On multiple logistic analysis EOA ≤ 0.8 cm² and a positive test were significant factors (p=0.0001). For severe stenosis, the positive and negative predictive values of an exercise test for predicting symptom onset were 65% and 54%. For moderate stenosis the positive and negative predictive values were 44% and 90%.

Conclusions: Exercise testing adds prognostic information to effective orifice area. A negative test reliably defines a low risk group in patients with moderate aortic stenosis.

POSTER SESSION

1060 Innovations in Management of Cardiac Surgery Patients

Sunday, March 17, 2002, 3:00 p.m.-5:00 p.m.

Georgia World Congress Center, Hall G

Presentation Hour: 4:00 p.m.-5:00 p.m.

1060-131 Increased Incidence of Surgical Reexploration for Postoperative Bleeding Due to Early Postoperative Use of Unfractionated Heparin or Enoxaparin

Heath U. Jones, Joseph B. Muhlestein, Kent W. Jones, Dale G. Renlund, Tami L. Bair, Benjamin D. Horne, Donald L. Lappe, Donald B. Doty, LDS Hospital, Salt Lake City, Utah, University of Utah, Salt Lake City, Utah.

Background: A variety of indications (e.g., presence of prosthetic heart valves, atrial fibrillation, ventricular thrombus, etc.) exist for the use of heparinoids in the early post-operative (post-op) period after open-heart surgery. However, the overall post-op risk for hemorrhage and the comparative risks between unfractionated heparin (UFH) and subcutaneous enoxaparin (ENOX) are not known.

Methods: From 1998 to 2001, 2,977 consecutive patients undergoing open-heart coronary artery bypass graft or valve surgery were included in this study. Of this group, 2,037 received no heparinoid anticoagulation, 579 received intravenous UFH and 361 received ENOX at some point during their post-op hospitalization. Study outcomes were the need for surgical re-exploration for post-op bleeding and the interval between the primary surgery and the first re-exploration. Logistic regression controlled for the covariates of age and gender.

Results: Average patient age was 64 ± 11 , 65 ± 12 , and 68 ± 11 years among those receiving no post-op heparinoid, UFH (p=0.003 vs. none), and ENOX (p<0.001 vs. none), respectively; and, in those groups, 75%, 63% (p<0.001 vs. none), and 62% (p<0.001 vs. none) were male. Rates of surgical re-exploration were 2.7% for no heparinoid, 7.8% for UFH and 8.9% for ENOX recipients (Adjusted odds ratio (OR) compared to no heparinoid = 2.8, p<0.001 for UFH and 3.3, P<0.001 for enoxaparin). Females were also at higher risk to return (OR=1.5, p=0.02). For those requiring re-exploration, the interval between the primary surgery and the first re-exploration was prolonged (≥ 4 days) among those receiving ENOX (37.5%, OR=36.7, p=0.001) and UFH (20%, OR=14.7, p=0.01) compared to none (1.8%), and more frequent for ENOX than UFH: OR=2.5, p=0.09. Younger age also tended to predict later re-exploration (OR=0.97 per year, p=0.07).

Conclusion: Post-open heart surgery use of heparinoid anticoagulants results in a significant increase in the incidence of re-exploration for post-op bleeding. Enoxaparin appears to produce a higher and significantly delayed complication rate compared with UFH.