EP5

Prognostic Value of Brain Natriuretic Peptide in Elderly Patients with Aortic Stenosis

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Background: Aortic valve stenosis (AS) is the most common valvular heart disease in elderly people. Detection of high-risk patients is an important issue for the management of AS. Previous studies have shown that plasma levels of BNP increases with AS severity and may provide prognostic information. However, these studies were impeded by their small sample sizes and inclusion of relatively young patients. In addition, a wide overlap of BNP values between symptomatic and asymptomatic patients was observed.
Methods and Results: Nt-proBNP was measured at entry in the study and patients were prospectively followed on a yearly basis. Inclusion criteria were age ≥70years, at least mild AS, normal left ventricular function and absence of pulmonary or renal insufficiency. 361 patients were included. Mean age was 79±6years. 230 had severe AS and 196 were symptomatic. BNP increased with NYHA class and hemodynamic parameters (p<0.0001). However, Nt-proBNP had poor sensibility and specificity for the detection of symptomatic patients (ROC curve=0.73, sensitivity=53%, specificity=79%). Among the 165 asymptomatic patients, 12 underwent a prophylactic surgery and follow-up was in 141 (92%). Normal values of Nt-proBNP were associated to good outcome (p=0.004). However, Nt-proBNP was not an independent predictor of outcome after adjustment for valve area, age and gender (p=0.4).
Conclusion: Our study is the first to enhance the limits of Nt-proBNP for the evaluation of AS patients. Our data show that Nt-proBNP is not an independent prognostic factor of outcome and raises caution regarding a patients' management based on BNP value especially in the elderly population.

Degenerative Mitral Valve Morphological Characteristics: Are There any Gender Disparites?

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Aims: Degenerative mitral valve disease (DMVD) is a common disease and a major cause of mitral regurgitation in developed countries, with well described morphologic and epidemiologic features. Although gender is an increasingly recognized important epidemiologic factor in many cardiac conditions, putative gender-related differences in leaflet involvement have not been characterized yet in DMVD. The purpose of our study was to fill in this knowledge gap through analysis of a large registry database in our institution.

Methods: We identified from our institution echocardiography lab registry 614 consecutive patients with DMVD who underwent transesophageal echocardiography between 1995 and 2011. Out of this database, we excluded 89 patients who had mitral regurgitation graded as less than moderate or who had underwent previous mitral valve surgery.

Results: The 525 patients in our registry consisted of 159 women and 366 men. Women were slightly older than men (66 ± 15 vs 63 ± 13 respectively, $p<0.001$). The overall morphologic characteristics fell along similar lines to those described in literature, with isolated anterior leaflet involvement in 18% of the patients, isolated posterior leaflet in 59% and bileaflet in 23%. Flail leaflets were present in 58% of our patients. Mitral annulus calcification was more prevalent in women vs men (14% vs 5%, $p<0.01$). As shown in the table below, despite typical gender variation in certain morphometric characteristics, we did not find any statistically significant difference in the DMVD pattern of leaflet involvement in females versus males.

Conclusions: We did not find evidence of gender disparities in the pattern of leaflets affected in DMVD associated with significant mitral regurgitation. Mitral annulus calcification, which is also a degenerative condition, was more prevalent among female patients, similar to that described in a recent large cross-sectional study (MESA study).

Variables by Gender

Variable	All patients	Female - N±SD or (percentage out of same gender)	Male - N±SD or (percentage out of same gender)	P value
Gender	525	159	366	
Age [years]	64±14	66±15	63±14	p<0.01
Height [cm]	168±16	157±24	174±7	p<0.01
Weight [kg]	75±17	65±18	84±59	p<0.01
LA area [cm2]	31±9	30±9	31±9	NS
LVEDD [mm]	57±4	55±3	57±4	p<0.01
Severe MR	293 (56 %)	79 (50%)	214 (58%)	NS
Moderate-severe MR	132 (25%)	44 (28%)	88 (24%)	
Moderate MR	99 (19%)	35 (22%)	64 (17%)	
TR gradient [mm Hg]	26±18	27±17	27±17	NS

Mitral annulus calcification	39 (7%)	23 (14%)	16 (4%)	p<0.01
Isolated anterior leaflet	95 (18%)	33 (21%)	62 (17%)	NS
Isolated posterior leaflet	308 (59%)	93 (58%)	215 (59%)	NS
Bi-leaflet	122 (23%)	33 (21%)	89 (24%)	NS
Flail valve	305 (58%)	89 (56%)	216 (59%)	NS
Normal EF (≥50%)	454 (86%)	148 (95%)	306 (87%)	NS (0.07)
Reduced EF (≤50%)	54 (10%)	8 (5%)	46 (13%)	NS

Characteristics of Patients Presenting to the ED with Chest-Pain The Israeli Echo Research Group

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Background: Patients presenting to emergency departments (ED) with acute coronary syndromes (ACS) are well characterized, however, less is known about characteristics of those presenting with chest pain (CP) without overt signs of ischemia. We present the clinical and echocardiographic characteristics of such patients.

Methods: Patients presenting to the ED (age>45) with CP without signs of ACS on ECG or elevated troponin level were recruited in the 2D-Strain Echocardiography for Diagnosing Chest Pain in the Emergency Room (2DSPER) multicenter study. An echo was performed within 24h of CP. Data from the first 202 patients recruited (58,,b8y, 68% males) were analyzed by gender (M/F) and age (<50, 50-59, 60-69, >70).

Results: Distribution of F within age groups was: 45%, 51%, 27% and 18%. The prevalence of most risk factors increased in direct relation to age, peaking at >60: hypertension (28 to 80%), diabetes (10 to 69%), hyperlipidemia (48 to 78%), while the rate of smoking decreased (55 to 19%). Prevalence of all risk factors was higher in M vs. F.

Echocardiography: LVEF was slightly higher in F vs. M in all age groups (63% vs. 61%). E and A velocities tended to increase with age (66 to 81 and 59 to 91 cm/sec, respectively) as did E deceleration time (192 to 236 msec) and to be higher in F. E/A ratio was inversely related to age (1.2 to 0.9) and tended to be higher in F. Septal and lateral e' were inversely related to age (9.2 to 6.5 and 10.8 to 8.1 cm/sec, respectively) and were slightly higher in M.Septal and lateral E/e' ratios increased with age and in F it almost doubled (septal: F- 9.5 to 17.2 vs. M- 8.1 to 10.2; lateral F-7.0 to 14.2 vs. M- 7.0 to 8.4).

Conclusions: Patients presenting with CP but without objective ischemia demonstrate a high prevalence of risk factors which increase with age and are more prominent in males. Their systolic function was normal but diastolic dysfunction tended to increase with age and with F gender.

Predictive Power of White Blood Cells in Patients with Aortic Stenosis

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Aims: The pathophysiology of aortic stenosis (AS) involves inflammatory features including infiltration of the aortic valve (AV) by activated macrophages and T-cells, deposition of lipids and heterotopic calcification. We sought to probe the ability of WBC differential counts to predict AS development and progression.

Methods: We identified from our institution echocardiography lab registry 150 consecutive patients with AS who underwent two repeated echo studies spaced greater than six months apart in the interval between 2007 and 2010 and evaluated the association between the average of repeated WBC differential counts sampled 3 years earlier and subsequent echocardiographic AS indices. We excluded 14 patients with malignant or chronic inflammatory disease, or who had been on chronic steroid or immunosuppressive treatment, or with blood counts that were higher or lower than 2 SDs of all the collective blood counts.

Results: There was no significant difference in total white blood cell, lymphocyte or eosinophil count among mild, moderate or severe AS groups. There was a progressive decrease in monocyte count with AS severity (p=0.046); more prominent when comparing the mild and severe groups. There was a negative correlation between AV peak velocity or peak or mean gradient and monocyte count in the entire group (r = -0.31, -0.24, and -0.25 respectively, all $p \leq 0.01$). Similar partial correlations controlling for age, gender, hypertension, smoking, dyslipidemia and ejection fraction remained significant but were abolished upon inclusion of aortic calcification to these factors. A mean total white blood cell count lower than 7100/ml predicted an increase in peak aortic valve velocity greater than 0.3 m/sec/year in patients with calcific severe AS.

Conclusions: Severe AS is associated with decreased total monocyte count whereas decreased WBC count predicts a more rapid progression in patients with calcified severe AS.
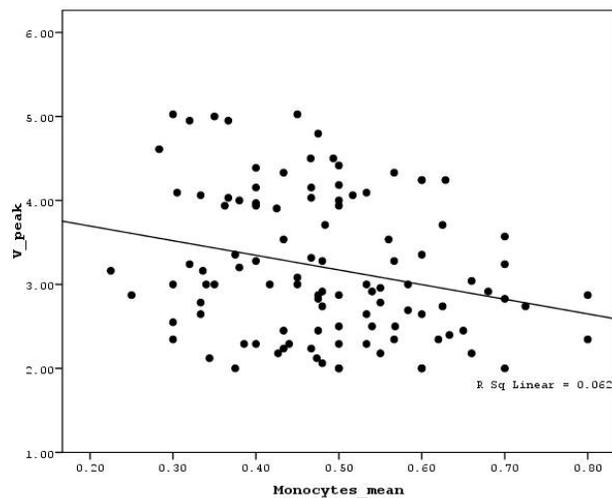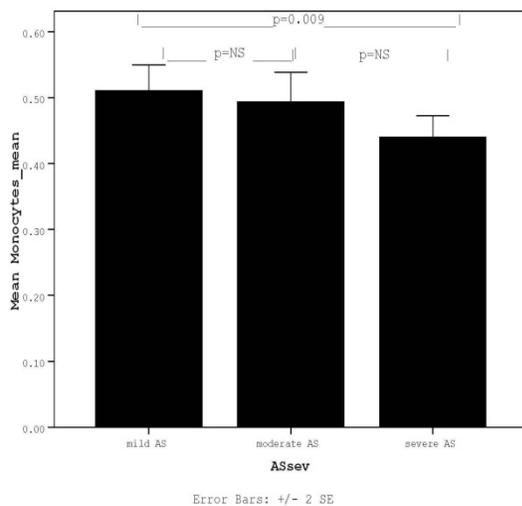
Course of Mitral Regurgitation and Relation to Dyssynchrony in Acute Inferior Myocardial Infarction

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Mitral regurgitation (MR) worsens prognosis in the setting of acute myocardial infarction (AMI). MR during AMI was reduced by fibrinolytic treatment. MR is related to ventricular dyssynchrony and is reduced by resynchronization therapy.

Aim: Serial evaluation of MR severity, QRS width and their relation in patients with inferior AMI and comparison between fibrinolysis and primary angioplasty (PPCI).

Methods: Seventy one patients with inferior AMI were evaluated, 35 of them had primary angioplasty. Doppler echocardiography with evaluation of MR severity, QRS width from surface 12-lead electrocardiography were measured at admission, 3 days later and pre-discharge. Comparison of trends of change in MR and QRS width were performed.

Results: Nine of 11 patients who had reduction in severity of MR were in the PPCI group. None of the PPCI patients had significant MR at discharge while 3 of the fibrinolysis group had MR grade 3. Patients with reduction in MR grade had a decrease in QRS width at discharge, $p < 0.05$.

Conclusions: Most of the patients with inferior AMI who had decrease in MR severity were treated by PPCI. None the PPCI patients had significant MR at discharged while patients who were treated with fibrinolysis had less reduction MR severity and some had significant MR at discharge. Reduction of MR severity tended to be associated with reduction of QRS width.

Assessment of Aortic Annulus Diameter by TTE and TEE in Patients Undergoing TAVI

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Precise measurement of the aortic annulus diameter (AAD) is critically important in pts undergoing Transcatheter Aortic Valve Implantation (TAVI), for appropriate valve size selection. AAD measurements are usually performed using transthoracic echocardiography (TTE), transesophageal echocardiography (TEE) or CT. Aim: To determine whether TTE or TEE measurements of AAD alone can predict correct valve size in pts undergoing TAVI. Methods: 75 pts (49% male, mean age 82.4±7yrs) who underwent successful TAVI in our department since 2008, were included in the study. AAD was measured a few days before TAVI by TTE. If imaging of AAD was not optimal, pts underwent TEE. Measurements were repeated several times (3-5 loops). A 23mm prosthetic valve was implanted if the AAD was >18 and <22mm; and a 26mm valve was implanted if the AAD was ≥22 and <25mm. In borderline measurements of AAD, final size was confirmed after aortography with an inflated balloon during TAVI.
Results: A balloon expandable valve (Edwards-Sapien-69pts, Medtronic-6pts) was implanted: 59 by retrograde transfemoral, 15 by anterograde transapical and 1 by subcalvian approach. Additional 3 pts died during procedure and 2 were transferred for urgent surgery and survived. Aortic peak/mean gradient in pre and post TAVI were 87.1±26/49.8±18mmHg and 22.4±11/12.4±7mmHg respectively (p<0.0001 for both). Mild aortic incompetence (AI) post TAVI was observed in 24(31%) pts, moderate in 16(20%) patients. No patient had severe AI. Mean AAD size was 22.0±0.2mm. Valve size was 23mm in 39(52%) pts, 26mm in 33(44%) and 29mm in 3(4%) pts. TEE predicted the correct valve size in all pts. TTE/TEE predicted valve size in 72/75 (96%) pts (p<0.0001). Failure of valve implantation was not related to incorrect AAD measurement.
Conclusions: TTE/TEE are reliable methods for determining correct valve size in TAVI. Decision can be made based on TTE alone; if imaging is not optimal, TEE should be performed.