

## Summaries of Articles

### **Estimated 44% Relative Cardiovascular Event Risk Reduction Achieved in the Multicenter Riskload Study, Implemented Along the Coronary Prevention Guidelines**

*A. Onat, on behalf of the Riskload Study Group*

A multicenter study comprising 26 medical units was carried out in Turkey with the purpose of assessing the feasibility and extent of risk reduction in cardiovascular events upon implementation of the Turkish Guidelines on Prevention of Coronary Heart Disease, based on those of NCEP and the European Society of Cardiology (ESC), in patients with coronary heart disease (CHD) or those at high risk for it in the setting of clinical practice. Results obtained in 2021 enrolled volunteers over a total follow-up of 1245 patients-years among whom 970 individuals were followed up for 12 months are herein reported. Inclusion criteria postulated a minimum of 20-40% cardiovascular event risk in the subsequent 10 years as estimated from the risk table of the ESC Guidelines. Allowance was made for the presence of symptomatic CHD, family history of premature coronary disease, diabetes, low HDL-cholesterol (HDL-C) and high triglyceride levels.

The number of individuals involved in primary and secondary prevention as well as of men and women were, by coincidence, virtually identical. Laboratory tests were performed at each center. The estimated CHD risk reduction as evaluated from the risk tables of the ESC Guidelines constituted the primary endpoint, and its determinants were analyzed. In the statistical evaluation, Wilcoxon and Mann-Whitney U tests were used to test the significance of the difference in the distribution of risk categories at baseline and at the end of 12 months. In addition, Framingham risk scores, computed from the data of each individual, served to assess the mean reduction in coronary risk.

Mean global risk burden, 25.4% at baseline, diminished in absolute terms by 6.5% at 3 months, by 9.4% at six months and by 11.7% at 12 months; the latter represents a relative risk reduction by 44% which exceeds by half as much the mean relative risk reduction obtained in 5 randomized lipid lowering trials - an achievement that seems plausible by the multilaterality of the preventive measures. The risk reduction was accompanied by a fall in the level of risk factors persisting into the second 6-

month period. Independent variables determining the (enhanced) reduction in risk level at the end of 12 months were: 1) (high) level of baseline risk, 2) (high) degree of compliance with the treatment, 3) absence of a) CHD, b) diabetes and c) lipid lowering treatment, 4) younger age, 5) female gender, and 6) presence of smoking or of hypertension, 7) (high) level of baseline HDL-C.

At the end of the study, women exhibited a higher reduction in cardiovascular risk than men, and while the reduction in patients with CHD amounted to 10.1% and 43.7% in absolute and relative terms, respectively, a reduction by 13.2% ( $p < 0.001$ ) and 46% ( $p < 0.001$ ) was obtained in the setting of primary prevention. The risk reduction was more prominent in smokers than in nonsmokers. Diabetes emerged as a factor modestly limiting the extent of risk reduction. Whereas subjects without hypertension, the most prevalent risk factor in this cohort, revealed a decline of coronary risk by merely 8.7%, those with hypertension showed a decline by 12.7% ( $p < 0.001$ ). No significant difference in global risk reduction was elicited between those not requiring lipid lowering treatment, as compared to persons subjected to such a treatment. These risk reductions at the end of the study were accompanied by a diminution of mean LDL-C level by 25.4%, a rise in mean HDL-C level by 16%, a fall in mean systolic blood pressure by 26 mmHg. Half of all smokers succeeded in discontinuing the habit.

In conclusion, by implementing standard prevention guidelines in the Turkish population, among each 1000 individuals comprising equal numbers of high-risk men and women and patients with CHD, prevention of cardiovascular events could be expected in 117 persons in the following ten years.

**Key words:** Cardiovascular event risk, coronary risk reduction, guidelines, implementation of prevention guidelines, optimal treatment, preventive cardiology

### **Morphologic Characteristics of Left Atrial Trombi in Patients with Rheumatic Mitral Valve Disease in Relation to Spontaneous Echo Contrast and Embolic Events**

*N. Özdemir, C. Kaymaz, C. Kıрма, M. Balkanay, M. Şişmanoğlu, C. Yakut, M. Özkan*

In patients with rheumatic mitral valve disease presence of thrombus (THR) and spontaneous echo contrast (SEC) in left atrium (LA) and LA appendage (LAA) have been considered to be predictors for embolic events. However impact of morphologic characteristics of LATHR in relation to embolic events has not been investigated. This study aims to evaluate whether morphologic characteristics of LATHR is associated with embolic events, and to assess the grade of LASEC in relation to morphologic characteristics of LATHR in patients with rheumatic mitral valve disease. Study population comprised 474 patients of rheumatic mitral valve disease (F 320, M 154, mean age  $40\pm 16$ ) in whom transesophageal echocardiography was performed prior to mitral valve surgery. Pure or predominant mitral stenosis and mitral regurgitation were detected in 333 and 141 of patients, respectively. Rhythm was atrial fibrillation in 267 patients. Embolic event ( $n=26$ ) was defined as presence of documented systemic arterial embolism recently, 30 days prior to transesophageal echocardiography. Thrombus was detected in 101 (LA 13, LAA 62 and LA+LAA 26) and SEC in 212 of patients. Morphology of THR was defined as their age (organised vs non organised; 54 vs 47), surface characteristics (smooth vs irregular; 69 vs 32), diameter (cm) and thickness of THR measured by transesophageal echocardiography and intraatrial extension score of THR (from 1 to 5). Overall, mean age ( $p<0.0001$ ), frequency of mitral stenosis ( $p<0.001$ ), LA/LAA thrombus ( $p<0.05$ ) and SEC ( $p<0.05$ ) were found to be significantly higher, and frequency of moderate ( $p<0.001$ ) and severe mitral regurgitation ( $p<0.0001$ ) were found to be lower in patients with embolic events than in patients without. In patients with THR associated with embolic event ( $n=26$ ), surface irregularity of THR was the only parameter found to be significantly higher than in patients ( $n=75$ ) with thrombus not associated with embolic event ( $p<0.05$ ). Moreover intensity of SEC was not found to be associated with diameter, thickness, extension score and morphologic characteristics of THR. Presence of THR with irregular surface, SEC with moderate to severe intensity and absence of severe mitral regurgitation were found to be independent variables associated with embolic events overall, and surface irregularity was the only independent variable associated with embolic event in the subgroup of patients with THR.

We conclude that 1) surface characteristics of left atrial THR seem to be associated with history of recent embolic events in patients with rheumatic

mitral valve disease irrespective of intraatrial location, age, diameter and thickness of THR detected by transesophageal echocardiography, and 2) surface irregularity of THR appears to be a risk factor for embolic events as important as presence of SEC and absence of severe mitral regurgitation.

Key words: transesophageal echocardiography, thrombus, surface irregularity

### Preoperative Assessment of Subvalvular Thickening by Transthoracic and Transesophageal Echocardiography in Patients Undergoing Valve Surgery in Rheumatic Mitral Valve Disease: Echocardiographic Characteristics Associated with Abascal Scoring

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The purpose of this study is to evaluate and to compare the subvalvular thickening in patients with rheumatic mitral valve disease by Abascal scoring determined both by transthoracic and transesophageal echocardiography (TTE, TEE). Our study also aimed to investigate the quantitative basis of this semiquantitative scoring corresponding as transmitral gradient, valve area, chordal length, calcification and mitral regurgitation and to compare subvalvular thickening of patients who underwent mitral valve replacement and reconstruction.

Study population comprised 364 patients with rheumatic mitral valve disease (F 241, M 123, mean age  $41\pm 22.6$  yrs) subjected to preoperative TTE and TEE, 210 and 154 of them underwent mitral valve replacement and mitral reconstruction, respectively. Abascal scoring of subvalvular thickening of mitral valve and calcification were determined by TTE. Anterolateral and posteromedial chordal length (cm) was measured by TEE. Morphologic assessment for subvalvular thickening, by means of measurement of chordal length was also performed in excised mitral valves. Grade I, II, III and IV subvalvular thickening was detected in 177 (48.6%), 107 (29.4%), 65 (17.8%) and 15 (4.1%) of patients by TTE. Mean transmitral gradient and mitral valve area were not found to be different ( $p>0.05$ ) between grade I and II subvalvular thickening, but were significantly different between grade I and III ( $p<0.0004$  and  $p=0.0001$ ), grade II and III ( $p=0.02$  and  $p<0.00001$ ), and grade III and IV subvalvular thickening subgroups ( $p=0.02$  and  $p<0.005$ ), respectively. Similarly, anterolateral

and posteromedial chordal length were found to be different between grade I and III(  $p<0.0005$  and  $p<0.0005$ ), II and III ( $p<0.001$  and  $p<0.005$ ), III and IV subvalvular thickening subgroups ( $p<0.005$  and  $p<0.005$ ), respectively. Frequency of severe mitral regurgitation is found to be decreasing by increasing grade I to IV subvalvular thickening, and frequency of severe mitral regurgitation is found to be different between I,II and III grade subvalvular thickening ( $p<0.05$ ). No relationship was found between subvalvular score and calcification in overall group. Transthoracic scoring of subvalvular thickening was found to be closely correlated with that of TEE( $r=0.91$ ,  $p<0.001$ ), morphologic score of excised mitral valve ( $r=0.9$ ,  $p<0.001$ ), and mildly correlated with mitral valve area detected by pressure half-time ( $r=-0.53$ ,  $p<0.05$ ), and planimetry ( $r=-0.5$ ,  $p<0.05$ ). Chordal length of excised valves were found to be well correlated with anterolateral ( $r=0.8$ , $p<0.001$ ) and posteromedial chordal length ( $r=0.82$ , $p<0.001$ ) detected by preoperative TEE. Transthoracic and TEE scores of subvalvular thickening were significantly higher in patients who underwent mitral valve replacement than in patients who underwent mitral valve reconstruction ( $p<0.05$ ,  $p<0.05$ ).

We conclude that ; 1) TTE and TEE are both reliable methods in assessing subvalvular thickening of the rheumatic mitral valves which may predict whether surgical choice is valve replacement or reconstruction before mitral valve operation, 2) and Abascal scoring of subvalvular thickening seems to be a semiquantitative method representing the chordal length measured by TEE, 3) because of the absence of significant difference between mitral mean gradient, mitral valve area and mean chordal lengths in patients with grade I and II subvalvular thickening, it seems to be possible to consider them as mild thickening, and grade III and grade IV subvalvular thickening may counterpart as moderate and severe subvalvular thickening, 4) subvalvular thickening and calcification status of rheumatic mitral valve were not found to be concordant.

Key words: rheumatic mitral valve disease, subvalvular thickening, transesophageal echocardiography

**Differentiating Features of Clinical, Echocardiographic and Hemodynamic Course in Patients with Chordal Rupture Associated with Rheumatic Mitral Valve Disease and Mitral**

## Valve Prolapse

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The purpose of this study is to investigate and to compare clinical and echocardiographic characteristics and hemodynamic consequences secondary to chordal rupture (CR) associated with rheumatic mitral valve disease (RMVD) and primary mitral valve prolapse (MVP). Study group comprised 224 pts (M 118, F 106, mean age  $46.3\pm 15.3$ ) with severe mitral regurgitation associated with RMVD( $n=141$ ) and with MVP( $n=83$ ) evaluated by transthoracic and transesophageal echocardiography. Chordal rupture was detected in 58 (25.9 %) of the pts, and CR found to be associated with RMVD in 25 pts (M 11, F 14, mean age  $44.3\pm 13$ ) and with MVP in 33 pts (M 26, F 7, mean age  $55.4\pm 11.4$ ). Mitral leaflet(s) associated with CR, left atrium diameter, mitral regurgitation jet area, mitral annulus circumference, posteromedial and anterolateral chordal length, infective endocarditis, functional class (NYHA), frequency of acute decompensation, estimated pulmonary artery systolic pressure by Doppler, need to mitral valve surgery in the following 3 months in both groups with CR were compared. Chordal rupture was found to be associated with anterior, posterior and both mitral leaflets in 20 (80%), 4 (16%) and 1 (4%) of pts with RMVD, and in 6 (18.2%), 24 (72.7%) and 3(9%) of pts with MVP, respectively ( $p<0.05$ ). In pts with CR secondary to MVP, frequency of male gender ( $p<0.05$ ), mean age ( $p<0.0001$ ), anterolateral ( $p<0.00001$ ) and posteromedial chordal length ( $p<0.00001$ ), mitral annulus circumference ( $p<0.05$ ) was found to be significantly higher than in pts with RMVD. Although jet area of mitral regurgitation and left atrial diameter were not found to be different ( $p>0.05$ ), functional class ( $p < 0.05$ ), pulmonary artery systolic pressure ( $p< 0.05$ ), frequency of acute decompensation ( $p< 0.05$ ), infective endocarditis ( $p<0.05$ ) and mitral valve surgery ( $p<0.05$ ) were found to be lower in group with CR secondary to MVP than in pts with CR due to RMVD. In pts with MVP mean age( $p<0.05$ ), frequency of male gender ( $p<0.05$ ), anterolateral ( $p<0.05$ ) and posteromedial chordal length ( $p<0.05$ ) were higher in pts with CR than in patients without. However in pts with rheumatic mitral regurgitation, mean age and gender were not different ( $p>0.05$ ),but anterolateral ( $p<0.0001$ ) and posteromedial chordal lengths ( $p<0.0001$ ) were

found to be lower in pts with CR than in patients without.

We conclude that: 1) It seems to be that there is a significant predilection of CR for leaflet(s) associated with etiology of the mitral valve disease. Chordal rupture is found to be frequently associated with anterior mitral leaflet in pts with RMVD, but frequently associated with posterior leaflet in pts with MVP, 2) in pts with MVP male gender, age, chordal elongation were found to be associated with CR, but chordal length was lower in pts with CR due to RMVD, 3) existence of CR seems to be more favorable in pts with MVP than in pts with RMVD, 4) predilection of CR for strut chordae of anterior mitral leaflet and increased frequency of infective endocarditis may be associated with acute decompensation in pts with CR due to RMVD.

Key words: Chordal rupture, mitral valve prolapse, rheumatic mitral valve disease

### **Influence of Stent Length on the Outcomes of Coronary Stent Implantations**

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Objective of our study was to find whether the stent length affects the outcomes after coronary stenting. Ninety-five patients with 100 GFX coronary stents who were performed a six-month angiography were individually matched into a short-stent group (SS group, (18 mm, 53 stents in 51 patients) and a long-stent group (LS group, (18 mm, 47 stents in 44 patients). Study groups were comparable in regard to the most of the possible predictors of adverse outcomes of coronary stenting, except lesion type and stent length. Results: Early outcomes in SS and LS group, respectively; acute Q-wave MI was seen in 1 and 2 patients, an operation for CABG was required in 1 patient in both groups, stent thrombosis occurred in 1 and 2 patients ( $P>0.05$  for all). There were no deaths during follow-up. At six month angiography binary restenosis rate (50%) was significantly higher in LS group ( $n=14$ , 34%) than in SS group ( $n=7$ , 13%,  $P(0.05)$ ). Percent diameter stenosis of the target lesion at six month was significantly different between the groups ( $23 \pm 27\%$  vs  $44 \pm 28\%$  in SS and LS group, respectively,  $P<0.01$ ). Target vessel re-intervention was required more frequently LS group than in SS group (5 vs 12 patients in SS and LS group, respectively ( $P<0.05$ ). Conclusion: Long

term outcomes of long GFX stents were significantly worse than that of short GFX stents. The stent length did not affect the short term results but induced a higher rate of re-intervention later.

### **Alterations of Vascular Cell Adhesion Molecule, Interleukin, Fibrinogen Levels Following Interventional Revascularization Procedures and Relationship with Restenosis**

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Coronary artery injuries occurred during interventional revascularization procedures may lead to acute occlusion and restenosis. Cytokines and adhesion molecules are major elements for the adhesion of the cells to the vascular endothelium and regulation with the vessel walls. The aim of this study is to determine the alterations in the levels of vascular adhesion molecule (VCAM-1), interleukin-6 (IL-6), interleukin-2 receptor (IL-2R), fibrinogen and leukocytes following stent implantations. The study consists of 29 patients.

Blood samples were taken before the procedure (BP), at the third hour of the procedure (AP-3), and 24th hour (AP-24). Restenosis was determined by coronary angiograph performed at the  $116 \pm 5$  days. In the overall patient population, we observed a significant increase in the VCAM - 1 levels at the 24th hour. ( $p<0,001$ ). There was a significant decline in the IL - 6 levels comparing AP - 24 with AP - 3 ( $p<0,05$ ). Leukocyte levels were increased at 3rd hour and then declined again at 24th hour. Fibrinogen levels were increased throughout the measurements ( $p<0,01$ ), whereas no difference observed in the IL-2R levels.

The subgroup of patients having dissection and thrombus as complications during the procedures, VCAM-1 levels were increased at the 24 hour ( $p<0,001$ ). This increment was less significant in the noncomplicated patients ( $p<0,05$ ). When comparing the patients with and without restenosis, alterations in the VCAM-1, IL-6, IL-2R levels were similar with the overall study population and there was no significant difference between the subgroups. Fibrinogen levels were higher in the restenotic patients, and this was the only difference observed ( $p<0,01$ ).

As a result of vascular injury occurred during the

stent implantations, we observed an increase in the VCAM-1 leukocyte and fibrinogen, levels within the 24th hour of the procedures. We could not observe any difference in the IL-6 and IL-2R levels. Comparing the restenotic patients with the nonrestenotics, only fibrinogen levels were different.

Key words: Adhesion molecule, interleukin, stent

### Are Left Ventricular Diastolic Filling Velocities as Assessed by Doppler Tissue Imaging Independent from Preload ?

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Pulsed Doppler indexes of diastolic filling have been used as measures of left ventricular diastolic function. However, various hemodynamic factors and loading conditions influence the pattern of LV filling. Doppler tissue imaging (DTI) is a new technique for assessment of regional systolic and diastolic left ventricular function. The aim of the present study has been to evaluate whether the diastolic mitral annular velocities by Doppler tissue imaging are affected by changes in preload conditions. Pulsed Doppler transmitral inflow velocities (E, A), diastolic mitral annular velocities at the lateral (LatE, LatA) and septal (SepE, SepA,) side of the mitral annulus by pulsed DTI, and the ratio of peak early to peak atrial filling velocities (E/A, LatE/A, SepE/A) were assessed in 38 subjects (age  $56 \pm 9$  years) with coronary artery disease at baseline and after nitroglycerine administration. All measures were performed at end expiration and averaged over three cardiac cycles.

Heart rate increased from  $68 \pm 10$  to  $77 \pm 12$  beats/min ( $p < 0.001$ ). The E, LatE, and Sep E velocities (cm/sec) decreased from  $68.7 \pm 25.6$  to  $54.2 \pm 18.7$  ( $p < 0.0001$ ), from  $9.2 \pm 3.2$  to  $8.1 \pm 2.6$  ( $p < 0.001$ ), and from  $7.4 \pm 2.8$  to  $6.6 \pm 2.6$  ( $p = 0.001$ ), respectively. The A, LatA, and SepA velocities were not significantly changed ( $68.6 \pm 21.2$  vs.  $71.3 \pm 21.4$ ;  $p = 0.518$ ,  $9.4 \pm 2.4$  vs.  $9.5 \pm 2.5$ ;  $p = 0.721$ ,  $8.8 \pm 2.0$

vs.  $8.7 \pm 2.0$ ;  $P = 0.521$ , respectively). The E/A, LatE/A, and SepE/A decreased from  $0.98 \pm 0.33$  to  $0.87 \pm 0.36$  ( $p = 0.0001$ ), from  $1.07 \pm 0.59$  to  $0.92 \pm 0.44$  ( $p = 0.0002$ ), and from  $0.87 \pm 4.2$  to  $0.78 \pm 3.2$  ( $p = 0.0049$ ), respectively. Conclusions: Alterations in preload significantly altered the pattern of diastolic filling as assessed by DTI of mitral annular velocities in a similar manner to the pulsed Doppler transmitral flow velocity profile.

Key words: Doppler, tissue, preload

### Turkish International Medical Publication Output Rose by 15% in 1998

A. Onat

With the purpose of assessing the progress of the output of medical publications originating from Turkey, these were identified from the Science Citation Index compact disk SCI CD-ROM 1998. A weighted credit system was utilized for items published jointly with a foreign or a nonmedical Turkish institution. A total of 1736 publications were traced which comprised 1078 articles, reviews and editorials. These figures represented increases by 15% and 8.4%, respectively, over the previous year. A rise to 5.5 per mille of Turkey's share of world medical publication output was noted.

The number of full-text articles were evaluated with respect to distribution to the fields of medicine, the cities and institutions. Medical basic sciences as a group slightly declined over the preceding year, whereas publications among the surgical branches and in neurosciences rose substantially. The share of institutions in Ankara (45%) and in Istanbul (18.5%) were slowly on decline, whereas that of the smaller cities in Anatolia (27%) rose as might be expected. A total of 60 full-text articles were published in the field of cardiovascular medicine in 1998, which was estimated to represent a world share of 4.8 per mille.