

Summaries of Articles

Clinical Investigations

Spontaneous Echocardiographic Contrast in Descending Aorta in Patients Without Aortic Dissection and Associated Clinical and Echocardiographic Characteristics

C. Kaymaz, N. Özdemir, C. Kırma, H. Dinçkal, M. Özkan

Spontaneous echo contrast (SEC) is found in the thoracic aorta in association with dissection. But SEC in the descending aorta (DA) in the absence of aortic dissection has been rarely reported, and data concerning flow dependence of SEC formation in the DA is less clear than that in the intracardiac location. The purposes of this study are to evaluate both the frequency and clinical significance of SEC in the DA in the absence of aortic dissection, and to investigate the hemodynamic correlates of SEC in the DA. The study group comprised 1199 consecutive pts (male 321, female 878, mean age 47.2 ± 21.5) who underwent transesophageal echocardiography (TEE) at our institution. Cardiac rhythm was atrial fibrillation in 495 (41.3 %) pts. Peak flow velocities (pFV, cm/sec) in the DA were measured between 90 and 130 degrees with HPRF Doppler interrogation during TEE, and maximal shear rate (SR, s⁻¹) in the DA was calculated. Spontaneous echo contrast in the DA was detected in 54 (4.5 %) of pts. Between subgroups with and without SEC in the DA, age (60.6 ± 8 vs 40.6 ± 14.2 , $p=0.0001$), male gender (66.7 % vs 43.9 %, $p=0.001$), diameters (cm) of ascending aorta (AA, 4.2 ± 1.0 vs 3.3 ± 1.1 , $p=0.000$), and DA (0.06 ± 0.9 vs 2.1 ± 0.4 , $p=0.0001$), frequency of left ventricular dysfunction (LVD, 7.4 % vs 2.1 %, $p<0.05$), severe aortic regurgitation (0 vs 3.5 %, $p<0.05$), aortic wall calcification (9.3 % vs 0.5 %, $p=0.0000$), complex plaque in the DA (13 % vs 0.7 %, $p=0.0001$), nondissecting aneurysms (31.5 % vs 4 %, $p=0.00001$), pFV (38 ± 9 cm/s vs 51 ± 21 cm/s, $p<0.00001$) and maximal SR in the DA (51 ± 29 s⁻¹ vs 105 ± 47 s⁻¹, $p<0.00001$) were significantly different. But SEC in the DA was not found to be

associated with cardiac rhythm, mitral disease, intracardiac SEC and/or thrombus and embolic event ($p>0.05$). Multiple regression analysis confirmed that SR, diameter of DA, aortic wall calcification, complex plaque in the DA, severe aortic regurgitation and male gender were independent variables associated with SEC in the DA.

We conclude that (1) presence of SEC in the DA seems to be associated with larger aortic diameters, male gender, older age, atherosclerosis. LVD, absence of aortic regurgitation, relatively lower pFV and SR in the DA, (2) results appear to confirm that formation of SEC in the DA is a local flow-dependent phenomenon as those in intracardiac chambers, (3) although our results did not confirm a relationship between SEC in the DA and embolic events, further studies are needed.

Key words: Descending aorta, spontaneous echocontrast, embolism

Effect of Angina Pectoris Prior to First Q-Wave Acute Myocardial Infarction on Short Term Prognosis and Left Ventricular Function

H. Akgöz, T. Akbulut, Ş. Ünal Dayi, S. Çelik, G. Tayyareci, T. Ulusoy

Purpose: The aim of this study was to assess the prognostic significance of angina pectoris one day before the development of first Q-wave acute myocardial infarction (AMI). Patients with anterior or inferior myocardial infarction were compared.

Methods: A total number of 105 patients experiencing a first Q-wave anterior (n=51) or inferior (n=54) myocardial infarction were examined. The pattern of preinfarction angina was defined as angina developing during the last day (24 hours) preceding the infarction. A total of 43 patients in this study had angina before Q-wave AMI. During the convalescence period, selective coronary angiography and contrast left ventriculography were performed.

Results: There were no significant differences between patients with and without preinfarction angina in either of the subgroups based on infarct site with respect to age, gender, coronary risk factors, use of beta-adrenergic blockers, angiotensin-converting enzyme inhibitors or calcium channel blockers before and after infarction, proportion of patients arriving at the hospital within 6 hours after the onset of infarction. Among patients with anterior infarction, preinfarction angina was associated with lower peak creatine kinase activity ($p<0.04$), a lower in-hospital incidence of sustained ventricular tachycardia, fibrillation, pump failure ($p=0.036$) and cardiac mortality. In this subgroup it was also associated with a higher ejection fraction ($p=0.05$).

Conclusion: The presence of angina pectoris in last day before the development of first Q-wave AMI has a favorable effect on infarct expansion and left ventricular function especially in patients with anterior myocardial infarction.

Key words: Acute myocardial infarction, angina pectoris, ischemic preconditioning

Correlation of Myocardial Fractional Flow Reserve with Thallium-201 Spect Imaging In Intermediate Severity Coronary

O. Caymaz, A. S. Fak, H. Tezcan, S. İnanır, S. Tokay, N. Bekiroğlu, T. Turoğlu, A. Oktay

The physiologic assessment of angiographically intermediate-severity stenosis remains problematic. The purpose of this study was to compare measures of fractional flow reserve of the myocardium (FFRmyo) with results of quantitative coronary angiography (QCA) and stress single-photon emission computed tomography (SPECT) thallium-201 (201Tl) imaging in patients with intermediate severity coronary artery disease (ISCAD). We prospectively evaluated 20 lesions of QCA determined ISCAD [% diameter stenosis (DS) between 30 and 70] in 15 patients (age 53.3 ± 10.2 years, %66.6 male) using a 0.014 inch pressure wire

during elective coronary angiography. All patients subsequently underwent to SPECT 201Tl imaging in the following week and blinded results were compared. There was a moderate correlation between %DS and FFRmyo (53.1 ± 13.4 and 0.75 ± 0.09 , respectively. $R: -0.59$, $p: 0.006$). There were perfusion defects in 11 (%55) of 20 vascular territories (Group 1) and 9 (%45) territories were found as normal (Group 2). While stenosis severity determined by QCA was not different between Group 1 and Group 2 (55.9 ± 11.5 vs. 49.7 ± 15.5 , respectively, $p: 0.3$); FFRmyo was found to be significantly different between the two groups (83.5 ± 5.3 vs 68.2 ± 5.4 respectively, $p: 0.001$). When the results of both tests were dichotomised as normal (FFRmyo ≥ 0.75 and %DS < 50) and abnormal, and SPECT 201Tl taken as the golden standart sensitivity, specificity, positive predictive value and negative predictive value of both tests were 0.91 vs 0.55, 100 vs 0.56, 100 vs 0.60, 0.90 vs 0.50, respectively. In conclusion: FFRmyo accurately predicts the presence of ischemia on SPECT 201Tl in patients with ISCAD. QCA does not reliably assess the physiologic impact of the same lesions.

Key words: Fractional flow reserve, intermediately severe coronary lesions, myocardial perfusion scintigraphy, thallium-201

Ventricular Late Potentials in Patients with Primary and Secondary (Rheumatic) Mitral Valve Prolapse: Relationship with Ventricular Arrhythmias and Mitral Valve Morphology

C. Kıрма, C. Kaymaz, N. Özdemir, H. Dinçkal, İ. Akdemir, K. Sönmez, B. Mutlu, M. Özkan

We enrolled 75 patients with primary mitral valve prolapse (45F, 30M, mean age: $42,1\pm 13$) and 30 healthy volunteers matching in regard to sex and age in our study in order to assess the incidence of ventricular late potentials (LP) and the factors associated with them in primary MVP. We also included 30 age - and sex matched patients with secondary (rheumatic) MVP in order to investigate

the contribution of the mechanical effects of mitral regurgitation (MR) and mitral valve prolapse in the genesis of LP in patients with primary MVP. Ventricular late potential analysis, 24-hours ambulatory ECG monitorization and 2-D echocardiography were performed in every patient. The incidence of complex ventricular arrhythmias (VA) were found to be higher in patients with primary MVP (20%, 15/75) compared to the secondary MVP (3,3%, 1/30) patients and the control group (0%, 0/30) ($p<0.05$). Also, the frequency of late potentials were higher in the primary MVP group (21,3%, 16/75) compared to the control group (3,3%, 1/30) and secondary MVP group (3.3%, 1/30) ($p<0.05$). In the primary MVP group, age, sex, presence of click and/or MR, anterior leaflet length, mitral annular circumference, DE amplitude and the severity of prolapsing leaflet were found to be not related with ventricular LP. However, in the primary MVP group, in patients with late potentials, anterior ($0,39\pm 0,07$ vs $0,32\pm 0,06$ mm) and posterior ($0,41\pm 0,05$ vs $0,34\pm 0,04$ mm) leaflets were found to be thicker, and the posterior leaflet ($1,9\pm 0,3$ vs $1,72\pm 0,4$ cm) was found to be longer than in patients without LP (<0.05). Also, the incidence of complex VA's were higher in patients with LP (43,7%, 7/16) than in pts without (13,5%, 8/59) ($p<0.05$).

We concluded that the incidence of complex VA and LP were higher in patients with primary MVP than those with secondary (rheumatic) MVP and the control group. Although the late potentials detected in patients with primary MVP were found to be related to with the thickness of both leaflets and complex VA, they were not related to the mechanical effects of mitral prolapse and MR. Further studies are needed to detect factors associated with LP and the clinical value of LP in patients with primary MVP.

The Effect of Perindopril and Amlodipine on Brachial Artery Pulse Wave Velocities in Patients With Essential Hypertension

N. Güler, M. Bilge, B. Eryonucu, Ü. İpeksoy

It is known that the brachial artery flow velocity as assessed by duplex Doppler ultrasound is changed in hypertension. The main purpose of this study was to assess the effects of perindopril and amlodipine on the brachial artery pulse wave velocity in essential hypertension. Blood flow profile and velocity of the brachial artery were determined noninvasively by pulsed Doppler ultrasound technique under the guidance of a B-mode ultrasound image. Thirty-two untreated hypertensive patients and 11 control subjects matched for age and sex were included in the study. Hypertensive patients were classified into two groups which were treated either with amlodipine 5 mg or perindopril 4 mg and re-evaluated after 15 days. Patients with essential hypertension had significantly larger peak systolic velocity than those without it ($71(18$ cm/sec vs. $45(16$ cm/sec, $P<0.001$). After antihypertensive treatment, significant decrease was found in the mean blood pressures of both groups ($P<0.001$). After treatment with perindopril, peak systolic velocity decreased (73 ± 19 vs 58 ± 14 cm/sec, $P<0.05$) and duration of systolic flow prolonged (269 ± 18 ms vs 291 ± 17 ms, $P<0.05$). Also, after treatment with amlodipine, peak systolic wave decreased (68 ± 15 ms vs 55 ± 13 ms, $P<0.05$) and duration of systolic flow prolonged (266 ± 17 ms vs 288 ± 18 ms, $P<0.01$). In conclusion, as assessed by duplex Doppler ultrasound, peak systolic wave was increased and systolic flow duration not changed in essential hypertension. Both perindopril and amlodipine treatments decreased peak systolic velocity and prolonged systolic flow duration. Further study is needed to clarify the exact mechanisms of the flow velocity alterations with antihypertensive therapy.

Key words: Brachial artery, duplex Doppler sonography, essential hypertension

Lipoprotein(a) and Atherosclerosis

N. Koylan

The role of lipoprotein(a), which structurally resembles LDL and plasminogen, in the pathogenesis of atherosclerosis is not clear yet. Its levels are ma-

inly under genetic control and may be influenced by some hormones and disease states and its role in the pathogenesis of atherosclerosis may be either proatherogenic due to its similarity to LDL and or prothrombotic due to its similarity to plasminogen. The normal values of this molecule is still under debate and its determination may be suggested for certain situations in clinical practice.

Key words: lipoprotein(a), apo(a), plazminogen, kringle.

Less Invasive Cardiac Surgery

*E. Ersek, T. Sarıoğlu, M.S. Bilal, B. Kınoğlu,
N.A. Aydemir, A. Sarıoğlu, V. Sansoy, K. Karaoğlu*

Purpose: Recently, less invasive or minimally invasive procedures have gained increasing popularity in cardiac surgery. Applications of these techniques on different pathologies should be investigated.

Materials and Methods: Between April 1997 to March 1998, open heart surgery was performed in 21 patients via a right anterior submammary minithoracotomy incision. Procedures were: Atrial septal defect (n=6); partial anomalous pulmonary venous return (PAPVR) (n=2); ventricular septal defect and mitral cleft (n=2); partial atrioventricular septal defect (n=1); aortic commissurotomy (n=3); aortic valve replacement and subaortic stenosis (n=2); subaortic stenosis (n=3); mitral commissurotomy (n=2). A right submammary skin incision was made. It runs from 1 - 1,5 cm lateral to the sternal edge and extends to anterior axillary line. The thorax was opened through the third intercostal space for aortic valve procedures and through the fourth intercostal space for others. Incision length ranged from 7 to 10 cm in 10 patients and 10 to 12 cm in 11 patients. Cardiopulmonary bypass was connected through the thoracotomy incision. Standard surgical technique and equipment were employed during the procedures. The mean age of the patients was 17.4 years (range 3 to 75 years) and mean weight was 32,7±16.5 kg (range 13 to 60 kg). The mean cardiopulmonary bypass and cross-clamp

time was 77.9±54 min and 46±34 min respectively. Right internal thoracic artery was preserved in 13 patients.

Results: There was no mortality. To obtain adequate exposure, we had to make transverse sternotomy in one patient who had atypical PAPVR. Patients could be extubated at an average of stay 10.2±4.4 hours postoperatively. The intensive care stay was 1.5 days and hospital stay 6 days (5.8±3 days).

Conclusion: This method was safe and effective for aortic and mitral valve operations and for some congenital operations which may be done via right atrial approach. This method may be preferred because of patient's psychology and cosmetic causes.

Key words: Minimally invasive cardiac surgery, minithoracotomy, submammary incision

Effect of Trimetazidine on Myocardial Contractile Protein Troponin-T Destruction During Coronary Bypass Grafting

*B. Tünerir, S. Dernek, Y. Beşoğlu, Ö. Çolak,
Ö. Alataş, T. Kural, R. Aslan*

The aim of the present study was to evaluate the effect of trimetazidine (TMZ) on destruction of human myocardial contractile protein troponin-T during ischemia and reperfusion.

The study was carried out on 30 patients undergoing aorto-coronary bypass surgery randomized to the TMZ group (composed of 15 patients) and the placebo group (15 patients) in NYHA Class III-IV. Pretreatment was started three weeks before surgery with trimetazidine (60 mg orally per day) or placebo. In the TMZ group, there were 2 women and 13 men with a mean age of 57.1±2.2 and mean cross clamping time of 44±1.8 minutes. The placebo group, comprised 5 women and 10 men with a mean age of 58,4±1.2 and a mean cross clamping time of 42±2.4 minutes. Serial blood samples were collected before and after surgery for measure of serum concentrations of cardiac troponin-T.

The preoperative serum concentration of TnT was measured 0-0.04 ng/ml in all patients whereas mean Troponin T levels were measured at 5 minutes after reperfusion (1.5 ± 0.3 ng/ml), 12h after surgery (1.4 ± 0.1 ng/ml) and 24h after surgery (0.9 ± 0.1 ng/ml) and 48h. after surgery (0.1 ± 0.1 ng/ml) in the TMZ group. TnT levels of the placebo group measured at the same time periods were 4.4 ± 0.4 ng/ml, 4.8 ± 0.7 ng/ml, 2.8 ± 0.4 ng/ml and 0.7 ± 0.1 ng/ml, respectively. In the TMZ group, TnT levels were significantly lower than those in the placebo group ($p < 0.001$). Myocardial ischemic reperfusion conditions were monitored by CK-MB levels in both groups, and the results supported the measurements of TnT. Mean cardiac index was evaluated in all patients before and after surgery. There was no significant difference in perioperative haemodynamics of both groups.

In conclusion, the results of this study suggested that pretreatment with TMZ protects the contractile protein Troponin-T from destruction the human myocardium during ischemia and reperfusion.

Key words : Trimetazidine, cardiac troponin T, reperfusion injury, myocardial protection

Review

Can the Life Span of Invasive Cardiologists be Shortened by Their Radiation Exposure?

Ü. T. Aker

This review was presented in a panel discussion on the potential risks to which invasive cardiologists are exposed in their working environment. First, the biological effects of ionizing radiation were described and the units of radiation were defined to help understand and quantify the magnitude of potential somati and genetic risks involved.

Next, the level of radiation invasive cardiologists are generally exposed to was reviewed. In the light of this information the probabilities of cancer, cataract and genetic risks were discussed. If proper measures of protection are followed, it is unlikely that invasive

cardiologists will receive cumulative Effective Dose Equivalent to significantly affect their life span; however, in the case of very busy interventional cardiologists, in the course of a 30-year career cumulative doses may theoretically reach a level to cause an additional cancer risk of 2-4%. Considering the fact that there is no safe lower limit for ionizing radiation, the cumulative effects and the long latency period, every precaution should be taken to keep the exposure as low as reasonably achievable (ALARA principle). To help to achieve this goal, suggested protective measures are listed at the end.

Key words: Radiation risks, invasive cardiology, radiation protection.

Case Reports

Isolated Cardiac Hydatid Cyst in a Child

A. Dinar, B. Tath, R. Beşikçi, E. Onursal, T. Cantez

Human hydatid disease caused by the larval stage of echinococcus granulosus is endemic in Turkey. Primary cardiac echinococcosis is rare due to natural resistance to the presence of viable hydatid cyst provided by contractions of the heart. Its incidence is about 0.5 to 2 % of patients with echinococcosis. In this study, we report a child with primary cardiac hydatidosis without visceral involvement diagnosed by echocardiography. Urgent surgical intervention combined with medical therapy resulted in a successful outcome with no recurrence at the end of one year of follow-up period.

Key words: Hydatid cyst, echocardiography

Polymorphic Ventricular Tachycardia due to Renal Artery Stenosis: A case report

A. D. Demir, U. K. Tezcan, H. Tıkız, M. Soylu, Y. Balbay, E. Küçük

Atherosclerotic renal artery disease is common among patients with hypertension resistant to medical treatment over the age 50; it may lead to renal

failure if the disease is bilateral. There may be severe hypertension in patients with unilateral disease, but hypokalemia is a very rare laboratory finding. A 55-year old female was admitted to hospital due to severe hypertension resistant to medical treatment and a history of recurrent cardiac arrest. Biochemistry investigation revealed hypokalemia and surface ECG showed QT prolongation and increased QT dispersion. The patient had an episode of polymorphic ventricular tachycardia (torsades de pointes) during hospitalization which degenerated to ventricular fibrillation and was defibrillated immediately. Renal angiography showed a proximal right renal artery stenosis. This stenosis was dilated with a percutaneous angioplasty technique. After the dilatation procedure, patient stayed normotensive and normokalemic without medication. During the 3 months of follow-up period, a ventricular tachycardia episode did not recur.

Key words: Hypokalemia, polymorphic ventricular tachycardia, renal artery stenosis

Can Reatine Kinase-MB Be Greater Than Total Creatine Kinase? A case report

Z. Gölbaşı, S. Aydoğdu, M. Sakallı, D. Kaya, C. Özen

Immunoinhibition method, one of the most commonly used methods to measure creatine kinase-MB (CK-MB) activity in clinical laboratories for the diagnosis of acute myocardial infarction, is not specific to the CK-MB isoenzyme. Some malignant and benign conditions may lead interferences with this method. In this case report, we presented a patient with small-cell lung cancer in when CK-MB activity has been found greater than total CK activity. It has been accepted that high CK-MB activity measured by the method mentioned may demonstrate false elevations which are actually due to CK-BB elevation. In conclusion, when acute myocardial infarction is suspected, CK-MB activity measured by immunoinhibition, especially in coexisting diseases that might increase CK-BB, may be misleading so methods specific to CK-MB should be used.

Key words: Creatine kinase, malignancy, immunoinhibition