

Summaries of Articles

Effects of Plasma Homocysteine Level and MTHFR Genotype on Presence and Extent of Coronary Artery Disease

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The aim of this study was to determine the effects of plasma homocysteine levels and methylene tetrahydrofolate reductase (MTHFR) mutation on the presence and the extent of coronary atherosclerosis. 242 consecutive patients undergoing coronary angiography were prospectively evaluated for conventional risk factors, plasma homocysteine levels, B₁₂, folate levels and MTHFR genotype. The mean plasma homocysteine levels were 18.5±11 µmol/L in 151 patients with coronary artery disease and 15.6±10 µmol/L in 91 patients with normal coronary arteries (p>0.05). Plasma homocysteine levels above 15 µmol/L was a significant risk factor for coronary artery disease (p=0.03, RR 2.1, %95 CI 1.07-4.4), and levels above 15 µmol/L were also significantly correlated to the extent of atherosclerosis (p=0.04, RR 3.2 %95 CI 1.3-8.2). The folate levels were 7.0±3.2 ng/ml in controls and 5.1±1.3 ng/ml in patients with coronary artery disease. When the MTHFR genotype was determined, TT genotype was present in 7.4% of patients and 5.2% of controls (p>0.05). TT genotype was significantly correlated to plasma homocysteine levels (p=0.001) and also correlated with the extent of coronary atherosclerosis (p=0.03).

Our data indicate that a plasma homocysteine level above 15 µmol/L is a significant risk factor for the presence and extent of coronary artery disease. TT genotype was an important predictor of the homocysteine levels and the extent of coronary atherosclerosis.

Late Term Results of Coronary Artery Bypass Grafting in Patients with Severe Left Ventricular Dysfunction

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This study evaluates whether patients with coronary artery disease (CAD) and severely depressed ejection fraction (LVEF) benefit from coronary artery by-pass grafting (CABG). From February 1994 to December 1995, 37 patients (mean age 57.2; 20 male, 17 female) with LVEF ≤30% and with viable myocardium as demonstrated by thallium-201 stress and redistribution imaging (except for 6 patients undergoing emergency CABG) and suitable vessel lumen for CABG, underwent isolated CABG performed by the same staff. Total duration of hospital stay was 8.6 days. The hospital mortality rate which we estimated as 10.2% by Parsonnet scoring preoperatively, was found to be 5.4%. Postoperative LVEF which was assessed by MUGA, improved from 25.5±2.7 to 35.6±6.8. According to Kaplan-Meier analysis, the survival rate was found as 92% during the follow-up period. The 2 major complications recorded postoperatively were arrhythmia (25%) and low output syndrome (16.2%).

As a result, CABG in patients with severely impaired LV function appears beneficial if the vessels are operable and if there is salvageable myocardium; being performed with relative safety, CABG appears to be an alternative approach to transplantation or cardiomyoplasty in patients with CAD and poor LV.

Key words: CABG, left ventricular dysfunction transplantation

Relation of CMV Infection with an Inflammation Marker CRP in Coronary Heart Disease

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Whether the human cytomegalovirus plays a causal role in atherosclerosis etiology is controversial. We conducted a case-control study to investigate whether previous infection with cytomegalovirus is associated with coronary heart disease and markers of systemic inflammation, because systemic inflammation also may play a role in atherosclerosis. We also studied the correlation between anti-cytomegalovirus antibody titer and coronary artery disease. 150 cases (45 female, mean age, 58.7 ± 7.6 years) with a documented coronary heart disease and

160 volunteer control cases (50 female, mean age $57,82 \pm 8,1$ years) were studied. Cytomegalovirus serology was performed to determine presence of specific IgG antibodies and titers of the anti-cytomegalovirus antibodies. In addition, C-reactive protein levels were determined in each case. The prevalence of specific antibodies to cytomegalovirus was 57,3% in the patient groups, 56% among the controls ($p=0,39$). But high anti-cytomegalovirus titer ($\geq 1:800$) was seen in the patient group with a higher incidence (26,6% versus 10%, $p=0,000$). Mean value of C-reactive protein was higher in the patient group ($2,99 \pm 0,92$ mg/L, versus $1,79 \pm 0,51$ mg/L, $p=0,000$), and there was a linear correlation with the high antibody titer and the level of C-reactive protein ($r=0,35$, $p=0,000$).

These findings support that, instead of the seropositivity of the population, the titer of anti cytomegalovirus IgG antibody and the levels of C-reactive protein may predict coronary artery disease.

Key Words: Coronary artery disease, infections, cytomegalovirus, C-reactive protein

Relationship Between Late Systolic Wave in Brachial Artery Doppler Blood Flow Pattern and Cardiovascular Risk Factors in Patients with Hypertension

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Earlier appearance of arterial wave reflections due to increased arterial stiffness may cause late systolic wave in the brachial artery Doppler study. In this study, we investigated the relationship between late systolic wave and cardiovascular risk factors such as hypertension, diabetes, gender, age, hyperlipidemia and smoking. Blood flow profile and velocity of the brachial artery were determined noninvasively by ultrasound pulsed Doppler technique under the guidance of a B-mode ultrasound image in 56 patients with hypertension. In 23 patients (38.6%) with hypertension, a late systolic wave was observed in the brachial artery Doppler study. There was no significant stenosis along the brachial artery on the B-mode images. In patients with hypertension hyperlipidemia ($p<0.05$), cigarette smoking ($p<0.05$), diabetes mellitus ($p<0.05$) and advanced

age ($p<0.05$) were found to be independent risk factors for late systolic wave. Thus stiffness of the arterial system induced by certain cardiovascular risk factors may produce alterations in regional wave reflections and changes peripheral arterial Doppler signs.

Key words: Brachial artery, duplex Doppler ultrasonography, late systolic wave, cardiovascular risk factors

Contribution of Systolo-Diastolic Myocardial Video Intensity Variations to Diagnosis of Coronary Artery Disease

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Contraction and relaxation of the heart causes decrease and increase in myocardial video intensity (MVI) recorded from echocardiographic images, respectively. Some studies suggest that this physiological cyclic variation of MVI diminishes in ischemic conditions.

The present study was planned to compare the cyclic variations of MVI recorded from patients with coronary artery disease (CAD) and healthy subjects and to define its contribution to the diagnostic accuracy of dipyridamole stress echocardiography (DSE). DSE was performed to 34 patients with CAD (56 ± 7 years) and 20 age matched controls (52 ± 12 -years). In all patients, the end-diastolic and end-systolic 2D echocardiographic images of 3 consecutive beats recorded on video tapes during peak stress and rest were digitized. The mean MVI values of end-systolic and end-diastolic frames of both ischemic and non-ischemic segments during rest and peak exercise were obtained using a special software for analyzing medical images (Image Tool 2.0). The MVI index was defined as $(\text{end-diastolic MVI}) - (\text{end-systolic MVI}) / \text{end-diastolic MVI} \times 100$.

In our study, the sensitivity, specificity and diagnostic accuracy of DSE were 70%, 85% and 77.5% by using conventional wall motion scoring method, respectively. During DSE, the mean and end-systolic MVI values of ischemic segments were significantly increased when compared with non-is-

chemic segments (mean: 48 ± 8 - 40 ± 6 ; $p < 0.01$, end-systolic: 46 ± 10 - 31 ± 5 ; $p < 0.0001$), whereas MVI index values were significantly decreased (33 ± 10 - 10 ± 6 ; $p < 0.0001$). When the cut-off point for MVI index was determined as 20 and apical-lateral segments were excluded by this method, the sensitivity, specificity and diagnostic accuracy values increased to 91%, 85% and 88%, respectively ($p < 0.05$).

Hence, MVI method increases the diagnostic accuracy of DSE and contributes to the diagnosis of CAD.

Key words: Coronary artery disease, dipyridamole stress echocardiography, myocardial video intensity

Echocardiographic Evaluation of Right Ventricular Involvement and Left Ventricular Diastolic Filling in Patients with Pure Restrictive Ventilatory Impairment

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Right ventricular abnormalities in patients with pure restrictive ventilatory impairment (PRVI) has not been extensively studied up to date. The purpose of this study was to evaluate the left ventricular diastolic function and the right ventricular involvement in patients with PRVI by Doppler echocardiography.

Methods: Two-dimensional, M-mode, and Doppler echocardiography were performed on 24 patients, 21 men and 3 women, with PRVI due to several etiologies, and 23 healthy subjects as the control group. Patients with any disease that affect the left ventricular functions were not included in the study. All subjects underwent respiratory tests and arterial blood gas assessment. Patients were grouped according to the severity of restrictive ventilatory impairment. An echo-Doppler examination was made to measure left ventricular ejection fraction and diastolic filling parameters and right ventricular end-diastolic wall thickness, end-diastolic area, and diastolic filling parameters, and pulmonary acceleration time and mean arterial pulmonary pressure ($[mPAP = 78 - (0.52 \times \text{pulmonary acceleration time})]$).

Results: Right ventricular area index was higher in patients with PRVI than that in healthy subjects (9.4 ± 2.1 cm^2/m^2 , 7.9 ± 1.6 cm^2/m^2 , respectively, $p < 0.05$). Right ventricular wall thickness was higher in patients with mild-moderate and severe PRVI than that in the control group (3.8 ± 0.6 mm, 4.1 ± 1.1 mm, 2.8 ± 0.4 mm, respectively, $p < 0.001$). Mean pulmonary artery pressure was higher in patients with severe PRVI than in patients with mild-moderate PRVI and healthy subjects (19.8 ± 4.3 mmHg, 12.9 ± 7.1 mmHg, 10.2 ± 5.1 mmHg, respectively, $p < 0.05$). On the transtricuspid Doppler flow, E/A ratio was lower in patients with PRVI than in healthy subjects (0.81 ± 0.40 , 1.35 ± 0.28 , respectively $p < 0.01$). Left ventricular isovolumetric relaxation time was longer in patients with PRVI than in the control patients (93 ± 21 ms, 74 ± 9 ms, respectively $p < 0.05$). On transmitral Doppler flow, E/A ratio was significantly lower in patients with PRVI than in the control group.

In conclusion, an increased right ventricular wall thickness, right ventricular dilatation, and right ventricular diastolic filling impairment induced by an increased mean pulmonary artery pressure and left ventricular relaxation abnormalities were found in patients with PRVI.

Key words: Restrictive pulmonary impairment, echocardiography, pulmonary hypertension

Reviews

Coronary Endovascular Brachytherapy

H. F. Töre, H. Kurşaklıoğlu, E. Demirtaş

Currently, revascularization procedures like PTCA or coronary stenting have been used in numerous cardiology centers. Although these methods are very successful in early term, their initial success are surpassed by the late term restenosis. Not maintaining early term success of these methods have led the researchers to study the prevention of the restenosis problem.

Pharmacological interventions used to prevent have not reached very successful results. But, studies pertinent to this issue are continuing. Therefore, it is pointed out that new clinical research and

endovascular brachytherapy and the effects of ionizing radiation over restenosis area have been investigated.

Different issues in the area of endovascular brachytherapy which is a relatively new technique are still debatable or not clear enough. In this article, general principles of brachytherapy, the systems existing at present, and the literature related to this topic are reviewed.

Vasovagal Syncope

Ö. Aslan, S. Güneri

"Vasovagal syncope" is both the most prevalent form of neuro-cardiogenic syncope and the most common cause of syncope. Many clinical situations may predispose to vasovagal syncope. Identification of various circumstances as "trigger" of syncopal attack is important not only for the diagnosis but also for the treatment and prevention of recurrent episodes. In many cases, prodromal symptoms occurring several seconds before the syncope are often observed, and these may be considered as the signals of danger. Prognosis of vasovagal syncope is generally benign. However, physical injury may result from syncopal episodes in patients without prodromal symptoms or in particular situations that individuals are working in a risky environment. Recurrence rate of vasovagal syncope is quite variable, correlated with the number of syncopal episodes reported. Pathophysiologic basis of vasovagal syncope has not been precisely understood. It can be summarized that in patients susceptible to vasovagal syncope, continuity of the adaptive mechanisms maintaining the normal systemic pressure and the cerebral perfusion are impaired, and this impairment leads to an unexpected vasodilation and/or bradycardia which cause a decrease in cerebral perfusion and syncope. In the last decade, head-up tilt table testing has been the preferred

diagnostic test for the differential diagnosis of vasovagal syncope. Therapeutic options for this clinical situation may be classified as acute interventions during the syncopal episodes, treatment strategies for the recurrences and finally the preventive approaches.

Key words: Head-up tilt table testing, vasovagal syncope

Case Reports

Single Coronary Artery: A Case Report

Ö. Gödeli, Ö. Badak, Ö. Kıvrımlı, Ö. Aslan

The incidence of coronary artery anomalies from angiographic series ranges from 0.6 % to 1.6 %. Single coronary artery is a rare congenital anomaly of the coronary arteries where only one coronary artery arises from the aortic trunk by a single coronary ostium. It occurs in approximately 0.024 % to 0.044 % of the population. The angiographic features of a case of isolated single coronary artery without narrowing are presented.

Key words: Coronary angiography, coronary artery anomaly, single coronary artery

Double Aortic Arch: Evaluation with Different Radiological Modalities

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In this paper, a two-year-old child and a twenty-year old adult with isolated double aortic arch have been described. Radiological findings of both cases are discussed.

Key words: Double aortic arch, magnetic resonance imaging, computed tomography, angiography