

Summaries of Articles

Clinical Investigations

Effect of Left Ventricular Hypertrophy on Late Potentials in Hypertensive Patients with Normal Coronary Angiograms

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Left ventricular hypertrophy (LVH) has an ominous sign on prognosis which is in part due to ventricular arrhythmias. To determine the incidence of ventricular arrhythmias and of late potentials in 51 hypertensive patients (25 male, 26 female, mean age: 56), those with normal coronary angiographic findings were categorized according to echocardiographic criteria into cases with LVH (group 1), and without LVH (group 2). For the evaluation of ventricular arrhythmias, 24-hour ambulatory electrocardiograms (ECG) were recorded in 51 patients and signal-averaged ECG in 44 patients for late potential analysis. Sixty percent of patients in group 1 had more than 1 ventricular extrasystole per hour, while this was in only 31 % of patients in group 2 ($p<0.05$). Furthermore, among patients in group 1, 44 % had more serious ventricular arrhythmias than grade I, whereas this was seen in 4 % of the patients in group 2 ($p<0.01$).

In late potential analysis, significant difference existed between the two groups: filtered QRS in group 1, 115 ± 13 msec versus 99 ± 12 msec in group 2; LAS40 in group 1, 39 ± 13 msec, versus 24 ± 11 msec in group 2; RMS40 in group 1, 22 ± 18 microvolt versus 37 ± 19 in group 2; $p<0.01$, respectively. We conclude that LVH increases the frequency and severity of ventricular arrhythmias and also prolongs filtered QRS and LAS40 duration while decreasing RMS40 voltage.

Changes of Blood Pressure and its Relation with Plasma Glucose and Insulin Concentration During Oral Glucose Tolerance Test in Patients with Essential Hypertension

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The blood pressure (BP), heart rate (HR), plasma

glucose (G) and insulin (I) concentration and their relation with each other during oral glucose tolerance test (OGTT) were studied in 54 patients aged 32-79 (mean 56.4 ± 10) with essential hypertension and in 21 normal subjects aged 31-70 (mean 51.7 ± 12.6). After a 2-week washout period without therapy, BP and HR were recorded in supine position. Blood samples were taken for G and I concentration. Then OGTT lasting 4 hours was performed with 75 g glucose. Blood samples for I were taken at first and third hour of OGTT and for G at every hour. BP and HR were recorded at every 30 minutes.

Systolic (SBP) and diastolic blood pressures (DBP) during OGTT significantly declined in hypertensive patients. There was no significant change in HR. BP and HR did not change significantly in normal subjects. The patients were evaluated in five age groups between ages 30 to 80, comprising 4,12,14,18 and 6 patients, respectively. The blood pressure decreased slightly in all groups during oral GTT. But the significant reduction in SBP was seen only in sixth and seventh decades while the DBP declined in the fifth, sixth and seventh decades. In these groups there was no significant difference between I and G concentrations during OGTT.

It is concluded that the reduction of BP in hypertensive patients after OGTT might be related to some factors associated with plasma glucose concentration.

The Relationship Between Coronary Artery Disease and Hyperinsulinemia in the Nonobese and Normotensive Patients

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The aim of our study was to determine the role of hyperinsulinemia as a risk factor of coronary artery disease (CAD). We studied 42 persons in 32 of whom a significant lesion was detected in one or more coronary arteries by coronary angiography, while 10 of them were angiographically normal. Plasma total cholesterol, high density lipoprotein (HDL) cholesterol and triglyceride values were

measured. A six-hour oral glucose tolerance test was performed and venous blood was drawn hourly for the determination of glucose and insulin. The group with CAD showed no difference from the control group with respect to total cholesterol and HDL-cholesterol levels. Plasma triglycerides were significantly higher in the group with CAD ($p<0.05$). The ratio of hyperinsulinemic patients was higher in the atherosclerotic group (47 % versus 10 %, $p<0.05$). In the group with CAD hyperinsulinemic patients' triglyceride levels were higher than in the group with normoinsulinemia (204.7 ± 100.6 mg/dl versus 170.3 ± 95.6 mg/dl). These results suggest that hyperinsulinemia is related to atherosclerosis.

Assessment of Cardiac Functions in Leprosy Patients by Echocardiography

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Cardiac and peripheral hemodynamics of 30 leprosy patients (22 men, 8 women, average 47 ± 2 years) were investigated by using B-mode, M-mode, and continuous Doppler echocardiograms and compared with a control group (CG) which consisted of 20 healthy individuals (15 men, 5 women, average 45 ± 2 years).

The patients had been admitted to a local lepra hospital but in whom the lepra treatment had been discontinued 1-20 years previously. They were considered by dermatologists as having lepra sequelaer.

In leprosy patients it was observed that, as compared to the CG, left ventricular diastolic dimension was higher (46.63 ± 0.59 mm, 44.35 ± 1.17 mm, $p<0.05$), early diastolic peak flow velocity (EVP) lower (62.86 ± 1.74 cm/sec, 67.90 ± 2.39 cm/sec, $p<0.05$), late diastolic peak flow velocity (AVP) was elevated (68.13 ± 2.52 cm/sec, 61.75 ± 2.33 cm/sec, $p<0.05$), E/A ratio diminished (0.95 ± 0.04 , 1.12 ± 0.05 , $p<0.01$), early diastolic mean flow velocity (EVM) was decreased (12.16 ± 0.54 cm/sec, 13.50 ± 0.51 cm/sec, $p<0.05$), late diastolic mean flow velocity (AVM) increased (13.73 ± 0.43 cm/sec, 11.45 ± 0.61 cm/sec, $p<0.005$), atrial index raised (0.53 ± 0.01 , 0.45 ± 0.01 , $p<0.0005$), EVM integral decreased (9.50 ± 0.48 cm, 11.21 ± 0.50 cm, $p<0.025$), AVM integral higher (10.71 ± 0.41 cm, 9.50 ± 0.55 cm, $p<0.05$), and EVM

integral/AVM integral ratio was decreased (0.89 ± 0.03 , 1.20 ± 0.03 , $p<0.0005$). Thus, left ventricular diastolic function parameters were impaired, but parameters of systolic and peripheral hemodynamics were not affected in leprosy patients.

Ischemia-dependent Elevation of Creatine Phosphokinase Myocardial Isoenzyme and Additive Effects to the Diagnostics of Exercise Testing

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Myocardial isoenzyme of creatine phosphokinase (CKMB) has been demonstrated to rise slightly due to myocardial ischemia without necrosis. In our study, it was aimed to scrutinize this claim and to search whether there were or not additive effects to the diagnostics of exercise testing.

For this purpose, 42 cases whose exercise test results for ischemia had been diagnosed as positive were studied before performing their coronary angiographies. The difference of CK-MB values (Δ CKMB), that was obtained just before testing and 6 hours later, in the group of 32 cases (52 ± 7 age, 25 male and 7 female) who had critical lesions on their coronary angiograms, were compared with those of 10 cases (42 ± 7 age - $p>0.3$ -, 9 male, 1 female) with normal coronary arteries (7.61 ± 5.5 , 1.75 ± 2.3 , $p<0.001$).

In view of the shorter exercising periods of the first group (7.24 ± 2.2 vs 9.53 ± 2.3 minutes, $p<0.02$), it is likely that the significant difference was due to ischemia. By means of Δ CKMB related results, a 60 % specificity and 84 % sensitivity have been obtained. These findings suggest that Δ CKMB of the sixth hour may be of additive value for the diagnostics of exercise testing.

The Course of Left Ventricular Potentials in the First 15 Months of Life. ECG Findings Based on Follow-up of Normal Newborns

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Follow-up of 56 newborns showed that, R amplitudes in V5 and V6 increased during infancy as a 2nd degree polynomial. The increase in left potentials in the first two months was significant when the age-dependent voltage factor derived from the stan-

dard leads was held constant. There was a synchronous decrease in the S amplitude which resulted from increasing rightward and posterior orientation of the late QRS-vector loop in the horizontal plane. The correlations, between amplitudes of left precordial R waves and right precordial S waves in different age groups were not significant, but they showed very high correlations between them selves. The upper normal limit of R in V5 increased from 17mm in newborns to 32-34 mm after the age of 4 months. Corresponding values in V6 were lower, i.e., 8 and 25 mm.

A left precordial rS pattern in newborns, was not observed after the second month. Adult type of QRS pattern started to be observed after 9 months in only 4 % and at 15 months in 12 %. The incidence of left precordial Q-wave was 10 % in newborns, and increased later. Upper voltage limit for depth of Q in V5 was 3 mm in newborns, 5 mm at 2 months and 6 mm at 15 months. These data aid in a better delineation of pathologic states in this early phase of life.

The Role of the Diameters of Pulmonary Arteries Measured by Echocardiography in Total Correction of Tetralogy of Fallot

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Poorly developed pulmonary arteries will not accommodate the total cardiac output following total correction of tetralogy of Fallot (TOF). In this context, the role of the index of pulmonary arteries (IPA) calculated by dividing the combined diameters of right and left pulmonary arteries to the diameters of descending thoracic aorta at the diaphragmatic level was investigated from the standpoint of mortality in total correction of 120 patients with TOF. Three patients who died because of hemorrhage or ventricular fibrillation were excluded from evaluation. Of 68 patients whose IPA measured 1.5 and above, none died; of 49 patients whose IPA measured below 1.5, six patients died (% 12.2) because of low cardiac output ($p<0.05$). Though in the latter group the index in those who died did not differ significantly from that in the survivors, it was concluded that the palliative surgical treatment might be preferred initially for those patients whose IPA is below 1.5.

Total Correction of Tetralogy of Fallot Without "Routine" Preoperative Cardiac Catheterization: Management of 99 Patients

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Between January 1989 and April 1993 total correction was performed in 99 patients with tetralogy of Fallot without cardiac catheterization. Age of the patients ranged from 1.33 to 18 years (mean 5.33 ± 3.77). After complete echocardiographic examination the diameters of the right and left pulmonary arteries at the prebranching point and descending thoracic aorta at the diaphragm were measured by 2-D echocardiography and the McGoon ratio was calculated. Total correction was performed in the patients with McGoon ratio greater than 1.7. In none of the patients the pulmonary artery sizes measured by echocardiography was smaller than the measurements obtained during surgery. Transannular patching was performed in 76 patients. 2 patients with coronary artery anomaly had right ventricular to pulmonary artery extracardiac conduit. Postrepair right ventricular to left ventricular systolic pressure ratio (RVP/LVP) was between 0.25 and 0.85 (mean 0.54 ± 0.13).

There were two hospital deaths, both were not related to the diagnostic method and indication criteria. We conclude that, diagnosis of tetralogy of Fallot and measurements of pulmonary arteries and descending thoracic aorta by echocardiography is reliable. McGoon ratio can be adapted to echocardiography and total correction can successfully be performed based on echocardiographic examination.

Circadian, Circaheptan and Circannual Rhythms in Acute Myocardial Infarction

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Circadian rhythm may have a significant role on the development of cardiovascular diseases such as acute myocardial infarction (AMI) and transient myocardial ischaemia. In addition, circaheptan and circannual rhythms in cardiovascular diseases have been recognized for some. With this purpose we studied 374 cases with AMI admitted to a coronary care unit in whom the time of onset of typical chest

pain was not obscure. There was a significant morning peak between 6 a.m-noon in AMI. There was no significant difference in the distribution of cases by months, seasons and days of the week ($p>0.05$). Yet a circadian variation with a morning peak was observed for the onset of AMI. Possible triggers of onset of AMI were reviewed.

The Antidepressant Agent Moclobemide Has No Adverse Effect on the Diseased Heart

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The effects of moclobemide were investigated in depressive patients (pts) (17 males and 30 females) aged between 20-73 years. Twenty four patients had congestive heart failure and depression (Group I) and twenty three had depression without cardiac disease (Group II). Depression was diagnosed by a psychiatrist according to the DSM-3 (R) criteria and was evaluated by means of Hamilton and Zung scales. The patients were examined before and on the 7th, 15th, 30th days of the treatment. M-mode, 2-dimensional and Doppler echocardiography were performed before and on the 31st day of the treatment. No differences were found before and after treatment in systolic and diastolic left ventricular parameters in both groups. There were some transient side effects: sixteen pts had dry mouth, 9 had an increased appetite, 7 had sleepiness, 6 pts had nausea, 5 had trembling and paresthesia, 5 had visual turbidity, 5 had headache and 4 pts had constipation.

Our study showed that moclobemide as an antidepressant agent, lacked adverse effects on cardiac systolic and diastolic function.

Review

Hypertension, Obesity, Glucose Intolerance, Dyslipidemia and Insulin Resistance

S. M. Karcier

Epidemiological and clinical evidence suggesting an association between hypertension, diabetes mellitus, obesity and dyslipidemia existed for a long time. Recently it was concluded that this association was related with insulin resistance and hyperinsulinemia. It was suggested that the primary defect in hypertension is peripheral insulin resistance. It was also

shown that insulin itself is a risk factor for ischemic heart disease.

Glucose intolerance and insulin resistance have been described in most of the old hypertensives with upper obesity. Syndrome X consisting of hypertension, upper obesity, glucose intolerance with hyperinsulinemia, and hypertriglyceridemia have been defined and this quartet was called "deadly quartet". Keeping in mind a possible insulin resistance in the therapy of obese hypertensives with coronary heart disease is important in attempting to reduce the cardiovascular risk.

Case Reports

Spontaneously Closed Ventricular Septal Defect Accompanied by Bicuspid Stenotic Aortic Valve

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The septal leaflet of the tricuspid valve covering a perimembranous ventricular septal defect (VSD) forms a saclike structure that adheres to the margins of defects. A case with bicuspid aortic valve, valvular aortic stenosis, and malalignment VSD which showed an angiographically irregular cauliflower-like sac of interventricular septum was reported along with a review of the literature.

Myocardial Ischemia Simulated by Cardiac Hydatid Cyst: Case Report

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Two-dimensional echocardiography, computed tomography, left ventriculography and coronary arteriography were performed in a 37-year-old man who had substernal chest pain at rest and ischemic type ST-T changes on the ECG. A diagnosis of cardiac hydatid cyst was made. The cyst had a diameter of 38 mm and was located within the lateral free wall of the left ventricle. Coronary arteriography detected that the lumina of the arteries were patent, and we suggested that the "ischemic type" ECG and clinical findings were due to the cyst compressing the adjacent heart muscle. After surgical excision of the cyst the patient was free from chest pain, and ECG changes regressed partially.