1127-105 Transient Left Ventricular Apical Ballooning Syndrome: A U.S. Case-Series
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Background: Transient left ventricular apical ballooning syndrome (TLVABS) is a distinct form of acute reversible left ventricular dysfunction which was initially described in Japan. It’s frequency and clinical presentation in the U.S. is unclear. This is one of the first descriptions of the syndrome in a U.S. population.
Methods: We identified 10 patients during the year 2002 who had: 1) apical LV ballooning with akinesia or dyskinesis extending beyond a single major coronary artery distribution; 2) a coronary angiogram revealing no stenosis greater than 70%; 3) new ST segment/T wave changes on the presenting electrocardiogram. We investigated the clinical characteristics and short-term outcome of these patients with TLVABS.
Results: All patients were white females; mean age 71.5±12.0 years. Presenting symptoms were chest pain in 5, dyspnea in 3, and chest pain and dyspnea in 2 patients. Eight had at least 1 mm of ST elevation in contiguous leads, typically V2-V5. The QTC was > 500ms in seven patients with a mean QTC of 519 ms±50 ms for all patients. All patients had troponin T and/or CK-MB elevations. The highest recorded median peak troponin T and CK-MB values were 0.59 ng/ml (25th-75th percentile 0.33-0.93 ng/ml) and 14.1ng/ml (9.7-26.9 ng/ml), respectively. An identifiable preceding acute emotional or physiologic stressor was present in 8 of 10 patients. All coronary stenosis in patients with CAD were < 50%, except for 1 patient with a chronic 60% mid-LAD lesion. The mean LVET at admission was 44.8±10.2%, which improved to 58.4±11.9% at follow-up (22±41 days); p<0.001. All 7 patients with available follow-up had resolution of wall motion abnormalities (29±45 days). Five patients developed left heart failure requiring treatment. All patients were alive at a median follow-up of 6.5 months (range 1-17 months). Conclusion: This is one of the first series reporting TLVABS in a US population. TLVABS can mimic AMI with ECG changes, elevation of cardiac biomarkers, associated left ventricular dysfunction and in some, clinical heart failure. The short-term prognosis appears favorable with resolution of LV dysfunction. Further studies including long-term follow-up are needed.

1127-106 Usefulness of Tissue Doppler Imaging for Evaluating Systolic and Diastolic Left Ventricular Function in Patients With Primary Cardiac Amyloidosis
Background: Cardiac amyloidosis is associated with increased left ventricular (LV) wall thickness, normal or decreased LV cavity size, and congestive heart failure (CHF) with normal or mildly reduced LV ejection fraction. Aim:To clarify whether tissue Doppler imaging at multiple left ventricular LV sites could help estimate LV systolic and diastolic function in patients with primary amyloidosis. Methods and Results: Standard 2-D, Doppler and tissue Doppler echocardiographic study was performed in 12 consecutive patients with primary amyloidosis confirmed by biopsy and 12 matched (age 62±14, 8 males in both groups) normal volunteers. The data were on-line or off-line analyzed using Vivid 7, GE and Echo Pac. The parameters are present average segmental values as mean±SD, T test was used for comparison. The diastolic functions of patients with primary amyloidosis were abnormal (6 were relaxation impaired; 3 were souteudromal; and 4 were echolastic). Tissue Doppler data were different between three types, but not significantly; which may due to limited cases number.

1127-107 Different Criteria of Cardiac Resynchronization Therapy Have Different Prognostic Value for Worsening Heart Failure or Major Arrhythmic Events in Idiopathic Dilated Cardiomyopathy
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Cardiac resynchronization therapy (CRT) with biventricular pacing (biv) improves cardiac symptoms in heart failure patients with dilated cardiomyopathy. There are still controversies about pertinent criteria for CRT and about prophylactic indications of biv/cardi- verte defibrillator.
Methods: 201 patients with idiopathic dilated cardiomyopathy (IDC) in sinus rhythm (WHO criteria; age 51±12 years; left ventricular ejection fraction 32±12%), the relative risk of 1) cardiac death due to heart failure or heart transplantation and 2) sudden death or sustained ventricular tachycardia (VT) or fibrillation (VF) were calculated separately according to the inclusion criteria in the MUSTIC, InSync, MIRACLE and CONTAK studies.
Results: The percentage of patients meeting the inclusion criteria was respectively 6% for MUSTIC, 7.5% for InSync, 10% for MIRACLE and 23% for CONTAK. With a follow- up of 55±25 months, 28% patients suffered cardiac death (15 progressive CHF, 13 sudden deaths), 20 underwent heart transplantation and 12 had sustained VT/VF. Relative risks of events are in table. Major arrhythmic events were 16% of all the cardiac events for the MUSTIC patients, 11% for InSync, 36% for MIRACLE and 42% for CONTAK.
Conclusion: In IDC, the patients with the less restrictive inclusion criteria of CRT had the highest risk of major arrhythmic events. By contrast, severe HF patients with the MUSTIC CRT criteria mainly had a risk of worsening heart failure and may not benefit from biv/cardiventer defibrillator.
Clinical and Pathologic Characteristics of Dilated Cardiomyopathy in Dialysis Patients

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Background: Some dialysis patients have impaired left ventricular (LV) function without coronary artery disease. The pathologic changes of these patients have not been well described. This study evaluated the clinical and pathologic characteristics of dialysis patients with dilated cardiomyopathy (DCM).

Methods: We performed LV endomyocardial biopsy on 40 dialysis patients with DCM. After LV biopsy, the patients were followed up for mean 2.3±1.9 years. Results: The pathologic characteristics were severe myocyte hypertrophy (the mean myocyte diameter across the nucleus was 37.6±10.5 µm), myocyte disarray (30%), and extensive fibrosis (the mean percent area of left ventricular fibrosis was 22.3±18.4%). These pathologic characteristics resembled the dilated phase of hypertrophic cardiomyopathy. Their two-year survival rate was 72%. A high percent area of LV fibrosis was the only significant predictor of cardiac death by multivariate analysis (p=0.03). The two-year event-free survival rate for cardiac death in patients with severe fibrosis (more than 30%) was 42%, while that for patients without severe fibrosis was 92%. Conclusion: The pathologic characteristics of the heart in dialysis patients with DCM are severe myocyte hypertrophy occasionally with disarray and a high percent area of fibrosis. The prognosis of these patients was poor and the extent of LV fibrosis was a strong predictor of cardiac death.

Noninvasive Determination of Central Venous Pressure With a Bedside Ultrasound Device

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Background: In patients with heart failure, clinical signs may not accurately reflect hemodynamic abnormalities. To improve clinical assessment of central venous pressure (CVP), we used a bedside ultrasound device to measure internal jugular (IJ) distention.

Methods: Forty-five subjects referred for right heart catheterization underwent cross-sectional IJ imaging with a Site-Rite ultrasonic device (Dymax, Pittsburgh, PA). Echadias pulsatile distention (BiP) of an IJ, corresponding to a and v wave venuses, was examined in 36 patients. If present [(+) BiP], the maximal vertical height of the IJ fluid column was measured from the clavicle to where the BiP disappeared while sitting upright. CVP was measured directly by right heart catheterization and compared to the IJ ultrasound data.

Results: In patients with a measured CVP >7 mmHg, IJ BiP was not observed. In those with a CVP >7 mmHg, BiP was present in most, but not all patients. Sensitivity for CVP measurement by ultrasound was 61% and specificity was 100%. The ultrasound-measured vertical height of IJ BiP was statistically related to CVP (p=0.006), but the correlation was poor (R²=0.41).

Conclusions: The absence of IJ BiP distention by cross-sectional ultrasonography while sitting upright is the only specific predictor of low CVP (p>7 mmHg). In patients with elevated CVP ultrasound assessment of IJ vertical distension correlates poorly with measured CVP. This demonstrates a novel, non-invasive, and readily available method for estimation of right-sided filling pressures.

POSTER SESSION 118 Elderly Cardiovascular Disease: Estimating Prognosis

Tuesday, March 3, 2004, 9:00 a.m.-11:00 a.m.

Morial Convention Center, Hall G
Presentation Hour: 10:00 a.m.-11:00 a.m.

Coronary Flow Velocity Reserve and Asymmetric Dimethylarginine in Patients With Type 2 Diabetes Mellitus

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Background: Endogenous nitric oxide synthase inhibitor, asymmetric dimethylarginine (ADMA) is elevated and coronary flow velocity reserve (CFVR) is attenuated in patients with diabetes mellitus. Although ADMA has been considered as a novel marker of atherosclerosis, no clinical report has yet examined the relation between ADMA and coronary microcirculation in patients with type 2 diabetes mellitus, using CFVR measurements with noninvasive transathoracic Doppler echocardiography (TTDE).

Methods: We studied 21 patients with type 2 diabetes mellitus (mean age 62±10 years; 12 men and 9 women, body mass index 23±5). Coronary flow velocities in the left anterior descending artery were recorded with TTDE at rest and during hyperemia induced by intravenous infusion of adenosine triphosphate. CFVR was calculated as the mean hyperemic to basal mean velocity ratio. We analyzed relationship between CFVR and venous blood samples. Results: Obtained data were as follows: CFVR 2.78±0.56, Fastig blood sugar 171±37 mg/dL, HDL-cholesterol 53±15 mg/dL, and ADMA 0.56±0.86 nmol/L. Only serum ADMA of all CFVR had significant inverse correlation (r=-0.55, p<0.01). Moreover, multiple regression analysis showed serum ADMA level was independently associated with CFVR (β=−0.69, p<0.01). Conclusion: The result suggests that CFVR related to a serum level of ADMA. Measurement of ADMA is useful to speculate coronary microcirculation in patients with type 2 diabetes mellitus.

Importance of an Oral Glucose Tolerance Test in Identifying High Prevalence of Dysglycemia in Individuals at High Cardiovascular Risk

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Background: Diabetes mellitus (DM) is an important cardiovascular risk factor, but impaired glucose metabolism short of frank DM also carries excess risk. Dysglycemia comprises (a) DM - fasting plasma glucose level ≥7.0 mmol/L or 2-hour glucose level >11.1 mmol/L, after a 75 gm glucose load during an oral glucose tolerance test (OGTT), (b) impaired glucose tolerance (IGT) - fasting plasma glucose ≤7.0 mmol/L but 2-hour glucose level between 7.8 to 11.0 mmol/L during a routine OGTT, and (c) impaired fasting glucose (IFG) - between 6.1 and 6.9 mmol/L.

Methods: In this study a 2-hour 75 gm glucose load OGTT was performed, at baseline, in a clinic a battery of DM who do not have a history of DM, enrolled into a large clinical trial. The TRANSCEND trial includes patients, 55 years or older, at high risk for cardiovascular events who are intolerant to ACE inhibitors, and who had been randomized to an angiotensin II receptor blocker, telmisartan or placebo.

Results: Of 1327 patients studied, 121 (9.3%) patients had a history of DM, an additional 121 (9.3%) patients were diagnosed to have DM during the routine baseline OGTT, 208 (15.7%) patients had IGT, 58 (4.4%) patients had IFG and 54 (4.1%) patients refused the OGTT. Thus, at least 52.2% of the 1327 subjects have dysglycemia. History of DM has exceeded less than half of these cases whereas a routine OGTT has been found useful in identifying a substantial additional number of these high risk middle-aged individuals who did not know that they had abnormal glucose metabolism.

Conclusion: The prevalence of dysglycemia in high-risk middle-aged individuals is higher than generally believed and can only be identified with a routine OGTT. The identification of dysglycemia and management of these individuals by appropriate preventive measures should contribute to a reduction of their risks.

Manganese Superoxide Dismutase Alaniine/Valine Polymorphism is Associated With Coronary Artery Disease

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Background: Oxidative stress plays an important role in atherogenesis. Manganese superoxide dismutase (MnSOD) is an antioxidative enzyme localized in the mitochondria. Today, two MnSOD genotypes are known: GTT (valine) to GCT (alanine) substitution in an amino acid codon in the signal peptide. This substitution is thought to affect the transport of MnSOD into the mitochondrion, and its efficacy in fighting oxidative stress. We investigated the association between MnSOD genotype and coronary artery disease (CAD). Methods and Results: Blood samples were collected from 616 healthy subjects and 442 CAD patients (those who had >75 percent diametric stenosis in their coronary arteries) diagnosed by coronary angiography. MnSOD genotype was analyzed by fluorescent-based allele-specific polymerase chain reaction and melting curve analysis (LightCycler). The valine allele frequency was higher in the CAD patients (0.89) than in the healthy subjects (0.84) (odds ratio=1.54, P=0.0006, Table). MnSOD polymorphism (alanine/alanine, alanine/valine, or valine/valine) was closely related with CAD (P=0.001 by chi-square analysis, Table), but had no association with other coronary risk factors. From multivariate logistic regression analysis, valine/valine genotype was shown to be a coronary risk factor independent of other risk factors (odds ratio=1.76, P=0.003). Conclusion: Valine allele is closely related to the susceptibility of CAD. The valine/valine genotype of MnSOD is a genetic risk factor for CAD.