

949-98 Do Doppler Indices of Diastolic Dysfunction Provide Prognostic Information in Elderly Patients with Congestive Heart Failure?

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Congestive heart failure (CHF) due to left ventricular diastolic dysfunction (DDFXN) is common in the elderly, and Doppler echo indices are frequently used to characterize DDFXN, but the relationship between these parameters and clinical outcomes has not been well studied. We analyzed the relationship between echo indices of systolic and DDFXN and clinic outcomes (3-mo mortality and readmission rates) in 130 PTS \geq 70 yrs of age with CHF (mean age 79 yrs, 35% male, 47% white).

Results. Overall, neither deceleration time (DT) nor E:A ratio (E:A) correlated with 3-mo survival or readmissions. However, in PTS with reduced LV systolic function (ejection fraction $<45\%$, $N = 67$), DT was significantly lower in PTS who died within 3 months than in survivors (129 ± 27 msec vs. 186 ± 67 msec, $p < 0.001$). Moreover, on multivariate analysis, DT remained an independent predictor of 3-month mortality after adjusting for age, sex, ejection fraction, and NYHA class ($p = 0.05$). DT was not a significant predictor of readmission in PTS with reduced LV function, or of readmission or survival in PTS with normal LV function. The E:A ratio provided no prognostic information in any subgroup.

Conclusions. In elderly patients with CHF due to LV systolic dysfunction, DT provides important independent prognostic information. In particular, a shorter DT, suggestive of restrictive physiology, appears to be associated with a worse prognosis. These findings may have therapeutic implications for these PTS.

949-99 Age-Associated Changes in the Left Ventricular Outflow Geometry in Normal Subjects

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Whether anatomic or functional changes occur in left ventricular outflow tract (LVOT) geometry with normal aging, possibly contributing to age-associated LV hypertrophy, is not known. We therefore analyzed the resting echocardiogram of 65 normal subjects, aged 19 to 96 years (mean = 56 ± 20), screened for the absence of heart disease by history, physical exam and exercise ECG. The septo-aortic angle (SA) was defined as the open angle between the left ventricular edge of the septum and the axis of the aortic root in systole in the parasternal long axis view. A septal bulge (SB) was defined as a bulging morphology of the proximal septum and a proximal to mid-septal thickness ratio >1.5 . The SA decreased with age ($r = -0.64$, $p < 0.0001$) and was narrower in men than in women (Anova, $p = 0.01$). An inverse relationship between SA and LV mass was seen in women ($r = -0.48$, $p = 0.003$) but not in men. Multiple regression analysis disclosed SA as an independent determinant for LV mass ($p = 0.048$), after age ($p < 0.0001$), body surface area ($p = 0.003$), and gender ($p = 0.006$). A SB was observed in 10 subjects (15%) and associated with older age ($p < 0.02$), a sharper SA ($p < 0.001$) and male gender ($p < 0.01$), but not with higher LVOT velocities nor greater LV mass. Thus, anatomical changes in the LVOT geometry occur with normal aging as shown by the sharper SA and the higher frequency of SB observed in elderly. The age-associated decrease in SA appears to be an independent determinant of greater LV mass.

949-100 Sigmoid Interventricular Septum in the Aged Causes Hypotension During Dobutamine Stress Echocardiography

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Hypotension during dobutamine stress echocardiography is caused by ischemia as well as non-ischemic causes. To assess if sigmoid interventricular septum seen in the aged can cause hypotension during dobutamine echo, dobutamine echo was performed in 12 subjects with sigmoid interventricular septum (age: 53 to 76 yrs, 8 men and 4 women).

At peak dobutamine dose, 7 subjects (group H) showed a hypotensive response (>5 mmHg decrease in systolic blood pressure from the peak systolic blood pressure; mean = -17 ± 13 mmHg) while 5 subjects (group N) did not. No subject showed regional wall motion abnormalities. *At rest*, group H had smaller LV systolic dimension (LVDs) (26 ± 3 vs 30 ± 3 mm) than group N, but no difference was found in LV diastolic dimension (44 ± 3 vs 47 ± 4 mm), %FS (40 ± 6 vs $34 \pm 7\%$), aorto-septal angle (93 ± 10 vs $101 \pm 11^\circ$), or peak LV outflow velocity (1.3 ± 0.2 vs 1.2 ± 0.3 m/s) between group H and group N. *During dobutamine stress*, despite the lower peak dobutamine doses in group H than in group N (33 ± 8 vs 40 ± 7 $\mu\text{g/kg/min}$), group H showed smaller LVDs (20 ± 3 vs 26 ± 4 mm), mitral annulus diameter (19 ± 3 vs 23 ± 2 mm) and aorto-septal angle (84 ± 12 vs $100 \pm 6^\circ$), and higher

heart rate (114 ± 10 vs 79 ± 16 bpm), %FS (53 ± 8 vs $43 \pm 7\%$), and peak LV outflow pressure gradient (43 ± 23 vs 12 ± 5 mmHg). In addition, systolic anterior motion of the mitral valve (SAM) with septal contact developed in 86% of group H and 0% of group N.

Thus, about half of the subjects with sigmoid interventricular septum show hyper-response to dobutamine and develop dynamic LV outflow tract obstruction as well as systemic arterial hypotension even without regional LV wall motion abnormalities.

949-101 Circadian Variation of Ventricular Arrhythmias is Abolished by Propranolol

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A prospective study investigated whether there is a circadian variation of ventricular arrhythmias in elderly patients (pts) with heart disease before and after propranolol and no antiarrhythmic (AA) drug. Follow-up 24-hour ambulatory electrocardiograms were obtained at a median of 6 months (range 2 to 12) in 221 elderly pts, mean age 81 ± 8 years, with heart disease (64% with prior myocardial infarction and 36% with hypertensive heart disease) and complex ventricular arrhythmias randomized to propranolol 85 ± 28 mg daily (112 pts) or to no AA drug (109 pts). The average number of premature ventricular complexes (PVCs)/hour was reduced $>70\%$ in 80 of 112 pts (71%) treated with propranolol and in 27 of 109 pts (25%) treated with no AA drug ($p < 0.001$). Double harmonic regression models showed a significant circadian variation of the maximal number of PVCs before no AA drug ($p = 0.002$, $R^2 = 57\%$, adjusted $R^2 = 49\%$), after no AA drug ($p < 0.0001$, $R^2 = 76\%$, adjusted $R^2 = 71\%$), and before propranolol ($p = 0.002$, $R^2 = 57\%$, adjusted $R^2 = 48\%$), but not after propranolol ($p = 0.073$, $R^2 = 35\%$, adjusted $R^2 = 21\%$). The primary peak incidence of PVCs in pts before and after no AA drug and before propranolol occurred between 7 a.m. and 12 p.m. The secondary peak incidence of PVCs in pts before and after no AA drug occurred between 6 p.m. and 9 p.m. The secondary peak incidence of PVCs in pts before propranolol occurred between 7 p.m. and 8 p.m. These data show that there is a circadian variation of the maximal number of PVCs in elderly pts with heart disease which is abolished by propranolol.

949-102 High Prevalence of Silent Cerebral Infarction in Patients with Lone Atrial Fibrillation

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The risk of stroke in patients with lone atrial fibrillation (Af) is low, however, incidence of silent cerebral infarction (SCI) is unclear. To study the risk of SCI in patients with lone Af, 119 patients without history of cerebrovascular accident underwent clinical evaluation, ECG, 2D and M mode Echo/Doppler-cardiography, and brain magnetic resonance imaging (T1, T2, and P). 79 patients (57 male, 22 female; 40 continuous, 39 paroxysmal; age, 62.4 ± 1.0 , mean \pm SE) were determined as a group of lone Af. None of these patients had received anticoagulant or antiplatelet therapy. Left ventricular wall motion were within normal range (%FS: $38 \pm 5.5\%$) and no significant valvular regurgitation were observed. SCI were detected in 88% of patients (age 50': 77%, 60': 96%, 70': 100%). There was no significant difference in the prevalence of SCI between paroxysmal and continuous Af. The average number of infarcted foci was 31.1 ± 5.5 (range: 0 to 193) per patient. Locations of infarcted foci were in the white-matter (64%), the deep white-matter (95%), basal ganglion (70%), thalamus (11%), brain stem (9%) and cerebellum (2%).

Conclusions: SCI is quite common in patients with lone Af. Anticoagulant or antiplatelet therapy may be necessary to prevent SCI.

950 Computers in Echocardiography

Tuesday, March 21, 1995, 9:00 a.m.–11:00 a.m.
Ernest N. Morial Convention Center, Hall E
Presentation Hour: 10:00 a.m.–11:00 a.m.

950-92 Prediction of Successful Reperfusion After Acute Myocardial Infarction Using Computer Program for Myocardial Tissue Characterisation

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Animal studies have shown that acoustic properties of the reperfused, viable