

Proximal Aorta Circumference Visualized by Real-Time Three-Dimensional Echocardiography

	Not Visualized	<50% of Aortic Circumference Visualized	50-75% of Aortic Circumference Visualized	>75% of Aortic Circumference Visualized
Proximal Ascending	7%	48%	41%	4%
Distal Ascending	7%	30%	56%	7%
<b>Proximal Arch</b>	-	-	<b>33%</b>	<b>67%</b>
Distal Arch	-	-	7%	93%
Proximal Descending	4%	33%	52%	11%

ORAL CONTRIBUTIONS

**823 Prognostic Significance of Diastolic Function Abnormalities**

Monday, March 08, 2004, 4:00 p.m.-5:30 p.m.  
Morial Convention Center, La Louisiane A

4:00 p.m.

**823-1 Tissue Doppler Echocardiography and B-Type Natriuretic Peptide in the Prognosis of Congestive Heart Failure**

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**Background:** B-type natriuretic peptide (BNP) and tissue Doppler (TD) derived E/Ea (transmitral early diastolic velocity/TD annular early diastolic velocity) have not been directly compared in the prognosis of patients with congestive heart failure (CHF).

**Methods:** Patients admitted to hospital for suspected CHF had simultaneous clinical examination, comprehensive Doppler echocardiography (CDE) and BNP once stable and ready for discharge. CDE evidence of HF was defined as Doppler evidence of elevated left ventricular filling pressures or depressed EF (<50%). The primary endpoint was a combination of death and rehospitalization for CHF.

**Results:** In the 81 patients studied, the mean time to follow-up was 245.5 ± 40.6 days. There were 28 patients (35%) who reached the primary endpoint (8 deaths, 20 readmissions for CHF). There were no differences in baseline characteristics (age, gender, diabetes, hypertension, smoking) between patients who reached the primary endpoint and those who did not. Univariate predictors of the primary endpoint are shown in Table. In multiple logistic regression including Framingham criteria for CHF, BNP, E/Ea and CDE, CDE was the only significant predictor of outcome (odds ratio=15.9, p=0.019).

**Conclusion:** BNP and E/Ea both predict prognosis in CHF, but a comprehensive Doppler echocardiogram performed the best overall in this study.

Univariate Predictors of Outcome in CHF

	CHF by Framingham criteria	Ejection Fraction (%)	LA volume index (ml/m <sup>2</sup> )	E/A	Mitral Deceleration Time (ms)	Sa-Systolic annular velocity (cm/s)	Aa-Late diastolic velocity (cm/s)	E/Ea	BNP (pg/ml)
Endpoint (N=28)	20/43 (47%)	32.8 ± 13.4	43.5 ± 11.9	1.5 ± 0.7	182.9 ± 68.6	4.2 ± 1.5	5.1 ± 2.6	19.0 ± 7.3	513.6 ± 355.4
No Endpoint (N=53)	8/38 (21%) p=0.03	46.1 ± 20.7 p=0.005	33.6 ± 17.7 p<0.001	1.2 ± 0.8 p=0.04	207.7 ± 46.6 p=0.07	5.1 ± 1.5 p=0.01	6.8 ± 2.2 p=0.006	14.6 ± 6.4 p=0.008	254.5 ± 324.8 p<0.001

4:15 p.m.

**823-2 The Ratio of Early Diastolic Mitral Flow Velocity to Early Diastolic Mitral Annular Velocity Predicts Prognosis in Patients With Chronic Congestive Heart Failure**

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**Background:** The prognostic value of tissue Doppler imaging (TDI) in patients with chronic congestive heart failure (CHF) has not been compared against conventional measures of systolic, diastolic and overall left ventricular LV performance. The aim of this study was to assess the prognostic value of TDI-derived parameters in patients with CHF.

**Methods:** One hundred thirty-two subjects with chronic CHF [due to ischemic (n=82) or dilated (n=50) cardiomyopathy, 101 males, mean age 57±11 years] underwent conventional two-dimensional/Doppler echocardiography and assessment of the Tei-Index (iso-

volumic contraction time and isovolumic relaxation time divided by ejection time). Systolic, early and late diastolic mitral annular velocities (S', E' and A', respectively) were derived from pulsed TDI. A cardiac event (cardiac death or hospitalization due to decompen- sated CHF) was defined as the combined study endpoint.

**Results:** The patients were followed for a mean of 224±123 days. Thirty-one patients suffered an event (cardiac death, n=5; hospitalization due to CHF, n=26). In patients with an event, ejection fraction was lower (25±10 vs. 32±9 %), mitral deceleration time was shorter (138±58 vs. 193±72 ms), and the peak mitral early flow to E'-ratio (E/E') (16.1±6.6 vs. 10.6±5.0) was significantly elevated as compared to event-free patients (p<0.001 for all comparisons). Also, in patients with the combined study endpoint, the Tei-Index was elevated (1.09 ± 0.39 vs. 0.86 ± 0.26, p<0.01), and a restrictive mitral filling pattern was more frequent (51.6 vs. 17.5%, p<0.001). However, stepwise multivariate analysis identified the mitral E/E'-ratio (p<0.0001) and the Tei-Index (p=0.019) as the only independent predictors of an event. In patients with mitral E/E'-ratio >12.5 or Tei-Index >0.90, outcome was poor.

**Conclusion:** In subjects with chronic CHF, the mitral E/E'-ratio is a stronger predictor of future cardiac events than conventional parameters of systolic, diastolic or overall LV performance. The E/E'-ratio may be a useful addition in the routine follow-up of such patients.

4:30 p.m.

**823-3 Incremental Prognostic Value of the Doppler Echocardiographic Tei Index After Acute Myocardial Infarction: Comparison With N-Terminal Pro Brain Natriuretic Peptide**

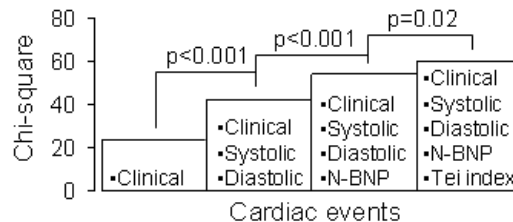
Betina Norager, Mirza Husic, Jacob Moller, Kenneth Egstrup, Svendborg Hospital, Svendborg, Denmark, Odense University Hospital, Odense, Denmark

**Background:** The prognostic value of N-terminal pro brain natriuretic peptide (N-BNP) in relation to combined systolic and diastolic left ventricular function is unknown. We investigated the prognostic value of the Doppler Tei index of combined systolic and diastolic performance in relation to N-BNP levels after acute myocardial infarction (AMI).

**Methods:** Doppler echocardiography and N-BNP were assessed in 127 consecutive patients with first AMI in the subacute phase. Tei index was calculated as the sum of isovolumic relaxation and contraction time divided by ejection time. Primary end point was a composite of cardiac death or readmission due to congestive heart failure or reinfarction.

**Results:** During follow-up of 26 ± 9 months, 14 patients died from cardiac causes, and 18 patients were readmitted due to reinfarction or congestive heart failure. Log N-BNP correlated with Tei index (r = 0.41, p < 0.0001). The incremental value of Tei index in predicting cardiac events was assessed in four modeling steps (Figure). Tei index improved the multivariate model including clinical variables (age, Killip class ≥ II on admission), systolic and diastolic variables (ejection fraction and mitral deceleration time ≤ 140 ms), and log N-BNP (change in chi-square from 54.1 to 59.5, p = 0.02).

**Conclusions:** Tei index is a potent predictor of cardiac events after AMI and provides prognostic information incremental to conventional measures of left ventricular systolic and diastolic function and N-BNP levels.



4:45 p.m.

**823-4 Short Deceleration Time of Mitral Inflow E Velocity: Prognostic Implication With Atrial Fibrillation Versus Sinus Rhythm in Patients With Left Ventricular Systolic Dysfunction**

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**Background.** Previous studies have demonstrated that a restrictive transmitral flow is strongly related to the prognosis in patients in sinus rhythm (SR) who have a broad spectrum of cardiac diseases. However, the prognostic value of mitral Doppler profile is unknown in patients with atrial fibrillation (AF), particularly in presence of left ventricular (LV) systolic dysfunction. The aim of this prospective study was to evaluate the contribution of an initially short deceleration time of mitral inflow E velocity (EDT) for predicting survival in patients with LV systolic dysfunction in AF and in SR.

**Methods.** The follow-up outcome of 140 consecutive patients with LV ejection fraction <40% was analyzed. Complete history, physical examination, and echocardiography were performed.

**Results.** Chronic AF was present in 40 patients (29%). During a mean follow-up of 26 ± 11 months, 54 patients died, 18 in the AF group and 36 in SR group. Mitral Doppler tracings of sufficient quality were obtained in all patients. LV ejection fraction was similar in the 2 groups (33% vs 31%) whereas EDT were shorter in AF group (150 ± 49 ms versus 176 ± 69 ms in SR group; p=0.033). At 2 years, estimated survival rates were similarly in both groups (74% in the AF group vs 75% in the SR group; p=0.89). Survival curves generated for different thresholds of EDT indicated significant worsening of prognosis for short-