

HR = heart rate; DT = deceleration time; TVI = time velocity integral; Vmax = peak velocity
 Conclusion: Keeping other factors constant, AF by itself shortens deceleration time and decreases systolic-to-diastolic pulmonary flow ratios. These data may serve to define a "normal" range of Doppler indexes for patients in AF.

9:30 a.m.

846-5

Is the Ratio of Transmitral Peak E Wave Velocity to Color Flow Propagation Velocity Useful for Evaluating Severity of Heart Failure in Atrial Fibrillation?

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Background: Analysis of transmitral inflow (TMF) pattern is widely used for evaluating LV diastolic function and provide valuable information for management of heart failure (HF) in sinus rhythm. However, utilization of TMF in patients with atrial fibrillation (AF) is not established. Recently, usefulness of the ratio of early transmitral peak E-wave velocity (E:cm/s) to flow propagation velocity (Vp:cm/s) for evaluating the severity of HF in sinus rhythm was reported. To evaluate the clinical utility of the ratio of E to Vp (E/Vp) in patients with HF in AF, we assessed the relation between E/Vp and severity of HF. **Methods:** E and Vp were recorded simultaneously in the same cardiac cycle with dual Doppler system in 46 consecutive patients with AF. E/Vp was calculated and averaged for 10 cardiac cycles and compared with NYHA functional class or plasma BNP level as a neurohormonal marker of cardiac dysfunction. **Results:** Neither E nor Vp was correlated with NYHA functional class. In patients with moderate to severe heart failure (NYHA III-IV), the values of E/Vp were significantly higher than that in patients with mild heart failure (NYHA I-II) (2.1±0.7 vs 1.2±0.4, p<0.0001). If the optimal cut off value of E/Vp defined as E/Vp≥1.5, moderate to severe heart failure (NYHA III-IV) could be predicted with a sensitivity of 88% and a specificity of 87%. The level of plasma BNP was significantly higher in patients with E/Vp≥1.5 than in E/Vp<1.5 (299.6±143.0 vs 78.0±28.5 pg/ml, p<0.05). **Conclusions:** E/Vp was well associated with NYHA functional class and plasma BNP level. Analysis of Doppler-derived TMF combined with the measurement of Vp was useful for evaluating severity of HF even in patients with AF.

9:45 a.m.

846-3

Early Diastolic Mitral Annular Tissue Doppler Velocities Predicts the Degree of Left Atrial Appendage Stunning Following Conversion to Sinus Rhythm After Short Duration Atrial Fibrillation in a Canine Model

Erwan Donal, Hirotsugu Yamada, Yong Jin Kim, Neil L. Greenberg, Deborah A. Agler, Shaowei Zhuang, Youhua Zhang, Don W. Wallick, Kent A. Mowrey, Todor N. Mazgalev, James D. Thomas, Richard A. Grimm, *Department of Cardiovascular Medicine, The Cleveland Clinic Foundation, Cleveland, Pennsylvania.*

Background: It has been well documented that atrial stunning post cardioversion occurs in patients with atrial fibrillation (AF) which could be responsible for thrombus formation. Unfortunately, it is currently not possible to reliably predict those patients likely to manifest atrial stunning. The aim of this study was to evaluate the relationship between mitral annular motion and flow in the left atrial appendage (LAA) in an attempt to predict atrial stunning post AF. **Methods:** AF was induced by atrial burst stimulation and perpetuated with vagal nerve stimulation for 2 hours in 10 healthy open chest mongrel dogs. LAA flows and mitral annular DTI were obtained by transesophageal echocardiography. Mitral annular DTI was obtained from a color DTI cine loop. **Results:** 1) Peak diastolic LAA emptying flow velocity decreased significantly immediately after cessation of AF (p=0.003 vs baseline sinus rhythm and p=0.04 vs AF). 2) Peak Ea [early diastolic] mitral annular DTI before (0.56±0.24) and during AF (0.36 ± 0.38) significantly correlated (table) with LAA emptying flow velocity after cessation of AF. 3) Peak Aa [late diastolic] DTI however revealed no correlation to LAA emptying post conversion to sinus rhythm. **Conclusion:** Early diastolic mitral annular motion by DTI before and during AF correlated with the degree of stunning after a short duration of atrial fibrillation. The routine assessment of this parameter may prove useful in identifying patients at risk for post cardioversion thromboembolism.

	Baseline	AF	SR- immediate	SR-recovery 15'-25'	SR-recovery 30'-40'
LAAF(cm/s)	62.1+/-7.5	46.5+/-8.9	31.5+/-5.7	44.4+/-8.3	45+/-8.28
Ea correlation	sinus rhythm		r=0.77 p=0.008	r=0.68 p=0.03	r=0.67 p=0.03
Ea correlation	AF		r=0.9 p<0.01	r=0.9 p<0.01	r=0.9 p<0.01

9:15 a.m.

846-4

Left Atrial Reservoir and Active Pump Function After Brief Duration of Atrial Fibrillation: An Acute Animal Study

Yong Jin Kim, Hirotsugu Yamada, Tomotsugu Tabata, Junko Watanabe, Erwan Donal, Deborah A. Agler, Shaowei Zhuang, Youhua Zhang, Don W. Wallick, Kent A. Mowrey, Todor N. Mazgalev, James D. Thomas, Richard A. Grimm, *The Cleveland Clinic Foundation, Cleveland, Ohio.*

Impairment of atrial pump function after cardioversion of atrial fibrillation (AF) is believed to be a key factor in the risk for thromboembolism. However, the relative role and importance of left atrial (LA) reservoir function has not been fully evaluated. This study was performed to evaluate the LA reservoir and pump function after a brief duration of AF. **Methods:** AF was induced and maintained for 2-4 hours in 10 open chest dogs. We obtained pulmonary venous flow systolic and diastolic velocities (Sv, Dv and Av) and VTI (Svti and Dvti) as well as LA appendage emptying flow (LAAF) and tissue velocity (LAAT) using transesophageal or intracardiac echocardiography. LA pressure-area loop (P-A loop) was determined by simultaneous recording of epicardial echocardiography and LA pressure. **Results:** LAAF and LAAT decreased immediately after cessation of AF and partially improved after 30 minutes. Similarly, Sv, Dv, Av, Svti and S/Dvti decreased immediately and partially improved. LA stiffness increased immediately and partially recovered after 30 minutes.

	LA appendage		PVF				P-A loop		
	LAAF (cm/s)	LAAT (cm/s)	Sv (cm/s)	Dv (cm/s)	Av (cm/s)	Svti (cm)	Dvti (cm)	S/Dvti	stiffness (mmHg/cm ²)
Baseline	40 ± 19	6 ± 2	31 ± 10	45 ± 11	15 ± 4	5 ± 3	6 ± 2	0.8 ± 0.7	4 ± 2
SR-I	20 ± 8*	4 ± 2*	19 ± 11*	39 ± 12*	6 ± 4*	2 ± 2*	6 ± 2	0.4 ± 0.3*	13 ± 14*
SR-30	35 ± 12#	4 ± 1	31 ± 13	49 ± 13	9 ± 4#	4 ± 3	7 ± 2	0.8 ± 0.7	8 ± 8#

* : p < 0.05 vs baseline, # : p < 0.05 vs SR-I, SR-I= immediately after, SR-30= 30 minutes after the cessation of AF

Conclusion: Similar to atrial pump function, LA reservoir function was also impaired immediately following the cessation of AF and recovered toward baseline after 30 minutes. This transient increase in stiffness along with impaired pump function may contribute to stasis of flow following termination of AF. These data will help to advance our insights into mechanisms for, and prevention, of thromboembolism.

846-6

Comparison of Cardiac Three-Dimensional Computed Tomography With Transesophageal Echocardiography in the Evaluation of the Left Atrial Appendage in Patients With Atrial Fibrillation

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Background: Transesophageal echocardiography (TEE) is the gold standard for assessment of the left atrium (LA) and the left atrial appendage (LAA). However, TEE is occasionally not feasible in patients (pts) with esophageal disease, hiatal hernia and other pts where it is poorly tolerated. We sought to determine the potential use of 3-D contrast enhanced multidetector computed tomography with retrospective gating (3D-CT), as an alternative to TEE. **Methods:** We prospectively evaluated 28 pts in atrial fibrillation (AF) undergoing TEE (mean age 54.1±10.1 years, 6 females) to exclude LA or LAA thrombi. Standard protocol for TEE assessment of the LA and LAA was used. All pts underwent a 3D-CT focusing on the LA and LAA. Reviewers of the 3D-CT were blinded to the result of the TEE. **Results:** TEE identified 2 LAA thrombi and 1 LA thrombus all of which were visualized by 3D-CT. No false positive identification of LA or LAA thrombus was reported by 3D-CT. Comparison of maximal LA and LAA dimensions is shown in table. The LAA area was statistically significantly larger measured by 3D-CT. **Conclusion:** This initial observation demonstrates the potential utility of cardiac 3-D contrast enhanced multidetector CT with retrospective gating as an alternative modality for exclusion of LA and LAA thrombi. Identifying comparable tomographic views between the 2 imaging techniques requires further evaluation.

	LA Diameter	LAA Area(45°) (cm ²)
TEE	5.0 ± 0.9	4.0 ± 1.0
3D-CT	5.2 ± 0.6	5.9 ± 1.4
p	0.236	0.0002

FEATURED ORAL PRESENTATION
848FO Featured Oral Session...Stress Echocardiography and Diabetes Mellitus

Tuesday, March 19, 2002, 8:30 a.m.-10:00 a.m.
 Georgia World Congress Center, Room 364W

8:45 a.m.

848FO-2

Predicting 30-Day Cardiovascular Outcomes in Diabetic Renal Transplant Recipients Using Dobutamine Echo

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Background: In patients undergoing vascular surgery, dobutamine echocardiography (DE) has demonstrated a negative predictive value (NPV) of over 99% in predicting 30-day cardiovascular outcomes. Diabetic patients who have received renal transplants represent another group at very high risk for postoperative cardiac events.

Methods: To determine if the NPV of DE is accurate in this group, data was collected by retrospective chart review on 157 consecutive diabetics who underwent renal transplantation between 1995 and 1999. The patients were stratified by type and outcome of stress test prior to transplantation. Primary end-point was 30 day cardiac outcome (cardiac death