1131-142 Predictors of Left Atrial Appendage Thrombogenesis in Patients Undergoing Transesophageal Echocardiography-Guided Cardioversion for Atrial Fibrillation and Flutter

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Background: The clinical and echocardiographic predictors of left atrial appendage (LAA) thrombogenesis in patients (pts) with non rheumatic atrial fibrillation (NRAF) or flutter AFL remain unclear.
Methods:. Between May 2000 and 2003 ,75 patients with LAA thrombi or dense spontaneous echo contrast (DSEC) prior to scheduled transesophageal echocardiography (TEE) guided cardioversion (group 1) were compared to a matched group (for age, gender, diabetes, type of arrhythmia, sedation during TEE) without LAA thrombi or DSEC (group2). pts with mitral valve stenosis, congenital heart disease, or prosthetic valve, were excluded..
Results:. Univariate predictors of LAA thrombi and DSEC are summarized in the table below.

covariate	Control N=75	Study N=75	P value
Duration of arrhythmia >4weeks %	41%	74%	<0.0001
New York heart association (NYHA) class III &IV %	12.5%	39.5%	0.0004
Prior history of transient ischemic attack or cerebrovascular accident %	1.3%	10.6%	0.016
LAA emptying velocity < 20cm \s %	1.5%	92.5%	<0.0001
Left ventricular ejection fraction, mean ± SD	53 ±13	41±16	<0.0001
systolic fraction of pulmonary flow velocity time integral (cm) mean ±SD	0.45 ± 0.12	0.3 ±1 0.08	<0.0001

On multivariate analysis only NYHA class III& IV and LAA emptying velocity < 20 cm \ s were independent predictors of LAA thrombi and \or LAA DSEC.
Conclusion: In patients scheduled to undergo TEE guided cardioversion., both advanced symptoms of heart failure and severe mechanical left atrial appendage dysfunction are independently predictive of a thrombogenic milieu within the LAA

1131-143 The Fate of Left Atrial Thrombi: A Prospective and Serial Follow-Up Over Three Years With Transesophageal Echocardiography and Cerebral Magnetic Resonance Imaging

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Background: Patients (pts) with atrial fibrillation (AF) and atrial thrombi are at a high risk for stroke. However, there are no prospective long-term data on the prognosis of pts available. The aims of this prospective study were (1) to assess the prognosis of pts with atrial thrombi and (2) to evaluate the incidence of cerebral embolism and death.
Methods: 21 consecutive pts with AF and atrial thrombi located in the left atrial appendage (LAA) were enrolled in our study. All pts received oral anticoagulation during the study period (INR>2 was regarded as effective anticoagulation). The pts underwent following examinations during the three years observation period: transthoracic (TTE) and transesophageal echocardiography (TEE), cerebral MRI, control of the anticoagulation status and neurological examination.
Results: 2 [10%] pts died due to cerebrovascular events during the follow-up period. 8 [38%] pts had cerebral embolism as documented with neuological deficits during the observation period. 15 [71%] thrombi dissolved under continued oral anticoagulation. Pts with and without embolism did not differ for age, sex, cardiovascular risk factors and history of embolism. Pts with thrombus resolution had significantly smaller thrombi (1.3 ± 0.6 cm vs. 1.7 ± 0.6 cm length and 0.6 ± 0.2 vs. 1.0 ± 0.5 width, p=0.03) and less often echogenic thrombi (8 [53%] vs. 6 [100%], p=0.02).
Conclusion: Pts with AF and LAA thrombi have a high long term risk for cerebral embolism and/or death [52%] (17% per year). A high percentage of thrombi disappear under continued oral anticoagulation therapy [71%]. Independent predictors for thrombus resolution are thrombus size and echogenicity.

1131-144 Significant Mitral Regurgitation Is Protective Against Left Atrial Spontaneous Echo Contrast and Thrombogenesis in Atrial Fibrillation: An ACUTE Trial Ancillary Study

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Background: The relationship between mitral regurgitation (MR) and left atrial spontaneous echo contrast (LA-SEC)/thrombus (THR) in atrial fibrillation (AF) remains controversial. We sought to determine if significant MR protects against the development of LA-SEC/THR in AF.
Methods: The Assessment of Cardioversion Using Transesophageal Echocardiography (ACUTE) Trial, randomized 1,222 patients with AF to TEE-guided cardioversion or conventional treatment. TEE with 6 month follow-up was available in 469 (38%) patients. TEEs were evaluated for LA-THR and LA-SEC was graded as absent, mild or severe. Patients were divided according to the presence of MR on TEE (MR $\geq$ 3+ was significant and MR $\leq$ 2+ was insignificant). Baseline clinical variables and TEE parameters were compared between these two groups.
Results: MR $\leq$ 2+ was found in 443 (94.5%) patients (mean age 66 ± 12 yrs) while 26 (5.5%) patients (mean age 64 ± 13 yrs) had MR $\geq$ 3+. There were no differences in baseline characteristics with the exception of increased AF duration in patients with MR $\leq$ 2+ (13 [5-48] days vs. 10 [5-34] days, p=0.03). On TEE, LA-SEC/THR was noted in 252 (59%) patients with MR $\leq$ 2+ compared to only 6 (27%) patients with MR $\geq$ 3+ (p=0.001) (Table 1). After adjusting for confounders MR $\geq$ 3+ was found to be protective against LA-SEC/THR.
Conclusions: In AF, significant MR is protective against the formation of LA-SEC/THR. These findings should be considered in the TEE risk stratification of AF patients.

Table 1. Transesophageal Echocardiogram Findings According to Presence or Absence of Significant MR

	MR <= 2+(n = 443)	MR => 3+(n = 26)	p Value
Any LA-SEC	57%	23%	<0.001
Mild LA-SEC	40%	12%	0.007
Severe LA-SEC	15%	12%	0.830
LA-THR	13%	4%	0.18
LA-SEC/THR	59%	28%	0.001

1131-145 Impact of Percutaneous Left Atrial Appendage Transcatheter Occlusion Device on Left Atrial Structure and Function: Six-Month Echocardiographic Follow-Up

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Background: Percutaneous left atrial appendage transcatheter occlusion (PLAATO) is a novel device designed to seal the neck of the left atrial appendage with the purpose of reducing embolization in patients with atrial fibrillation intolerant of coumadin. The impact of deployment of this device on adjacent structures has not been reported.
Methods: Patients participating in the ongoing study for evaluation of PLAATO in stroke prevention at 2 hospitals were enrolled. Transesophageal echocardiograms at baseline, 1, and 6 months, were reviewed to measure left atrial (LA) and left upper pulmonary vein (LUPV) dimensions, degree of mitral regurgitation (MR), stability and flow around the device, peak mitral valve (MV) E-wave velocity, and peak systolic and diastolic flow velocities in the LUPV. Data were analyzed by a linear mixed model for repeated measures.
Results: 11 patients (mean age of 72 ± 7 years) completed 6 months of follow-up. LUPV diameter (mean: 1.55, 1.61, 1.54 cm, p=0.13), peak systolic (mean: 0.38, 0.34, 0.31 m/sec, p=0.72), and diastolic flow velocities (mean: 0.39, 0.40, 0.42 m/sec, p=0.46) did not differ over the follow-up period. LA size, degree of MR, and MV peak E-wave velocities (mean: 0.94, 0.94, 0.82 m/sec, p=0.58) showed no significant change from baseline. The devices remained stable with minimal residual flow around them.
Conclusion: PLAATO achieved an adequate seal of the neck of the left atrial appendage without significant effect on the structure or function of the LA and LUPV.

	Baseline mean ± sd (n)	***1 month mean ± sd (n)***	***6 months mean ± sd (n)***	***p value***
Heart rate (beats/mn)	78.5 ± 12.5 (11)	81.7 ±13.3 (10)	77.3 ± 13.2 (10)	0.584
LUPV diameter (cm)	1.55 ± 0.19 (11)	1.61 ± 0.16 (9)	1.54 ± 0.17 (10)	0.13
MV E wave* (m/sec)	0.94 ± 0.35 (10)	0.94 ± 0.20 (6)	0.82 ± 0.47 (8)	0.581
LUPV S-wave* (m/sec)	0.38 ± 0.22 (11)	0.34 ± 0.23 (8)	0.31 ± 0.14 (9)	0.716
LUPV D-wave* (b>m/sec)	0.39 ± 0.14 (10)	0.40 ± 0.19 (8)	0.42 ± 0.18 (9)	0.463

1131-146 Serial Echocardiographic Follow-Up of Percutaneous Left Atrial Appendage Transcatheter Occlusion (PLAATO^{TM}) in Patients With Atrial Fibrillation

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Background: In patients (pts) with non-rheumatic AF, over 90% of thrombi form in the left atrial appendage (LAA). For pts who cannot take warfarin, a novel transcather device was designed to mechanically occlude the LAA.
Methods: 101 pts (age = 71±7 yrs) with AF, high risk for thromboembolism, via clinical (CHF, DM, HTN, TIA/CVA) or TEE (dense spontaneous echo contrast or LAA emptying velocities <20 cm/sec) criteria were enrolled at 12 sites. Screening TEE ruled out LAA clot. A PLAATO device (ev3) was delivered under fluoroscopic and TEE guidance to the LAA through a 12 Fr transseptal sheath. TTEs were performed at baseline 1 week, 1 mo, 6 mos and 12 mos of follow-up. Color Doppler assessed mitral regurgitation and shunting.
Results: 64 pts had 151 TTEs evaluated by an independent core laboratory (AP). Baseline LVEF = 51.2±9.4% and LA diameter = 4.6±0.6 cm. Mitral regurgitation (MR) was trace-mild in 77%, moderate in 9%, severe in 1%. No pre-specified device complications were noted on f/u: worsening mitral regurgitation; device migration or perforation; mobile thrombus. Of 101 pts, 5 intra-procedural pericardial effusions were noted and treated;