statistically significant (p=0.08). **Conclusions:** The prevalence of syncope is estimated at 19% in the general population. Females have a higher prevalence and tend to have more recurrences. The fact that prevalence is not greater in the older age groups may suggest a higher mortality rate in the elderly, but further investigations are needed. Results of this study can serve as bench mark information for future epidemiologic studies.

1185-106 Clinical Utility of an Adenosine-Nitroglycerin Tilt Test Protocol

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Background: We previously described the utility of adenosine (ADO) based tilt testing, whose advantage is that it can be completed within 3 minutes. To increase the yield of the tilt test, we initially incorporated an additional 15 min isoproterenol (ISO) tilt in ADO negative pts. However, the poor specificity (85% at our institution) of the ISO tilt limited the clinical utility of this approach. Recently, a nitroglycerin (NTG) based tilt protocol has gained acceptance. We, therefore, sought to evaluate the utility of a tilt protocol incorporating both ADO and NTG.
Methods: We evaluated 100 consecutive pts (44 M, 50 ± 17 yrs) who underwent an ADO-NTG tilt between Jan-July 2001. Patients were tilted at 60° and given 150 mcg/kg ADO (10 ± 3 mg) and observed for 3 min. After an initial period of sinus slowing and/or AV block, all pts developed a reflex sinus tachycardia. In pts prone to vasovagal syncope and a positive ADO tilt, sinus tachycardia was followed by symptomatic bradycardia and/or hypotension. If the ADO tilt was negative, the patient, while remaining upright, was given 400 mcg SL NTG and observed for an additional 15 minutes. To determine test specificity, 30 control pts (21 M, 30 ± 9 yrs) underwent an ADO tilt (12 ± 2 mg) and 15 control pts (11 M, 29 ± 8 yrs) underwent a NTG tilt.
Results: 20 (20%) pts had a positive ADO tilt. Of the 80 pts with a negative ADO tilt, 38 (48%) had a positive NTG tilt at 7±3 min. However, the specificity of the NTG tilt was only 47% (8/15 controls were positive). In contrast, the specificity of the ADO tilt was 100% (all 30 controls were negative).
Conclusions: The ADO tilt, which takes only 3 min to complete, provides a moderate diagnostic yield with very high test specificity. In contrast, although the NTG tilt has a high diagnostic yield, its poor specificity greatly limits its clinical utility.

1185-113 Demonstration of the Exact Anatomical Tachycardia Circuit of the Typical Atrial Flutter Using Entrainment Mapping

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Background;The precise reentrant pathway in typical atrial flutter (AF) has not been fully elucidated. Methods;To define the tachycardia circuit, entrainment mapping was performed during AF both around the crista terminalis (CT) and tricuspid annulus (TA) in 17 pts. Entrainment mapping was performed at the superior (S-ACT), middle (M-ACT) and inferior (I-ACT) third of the anterior CT (ACT), superior (S-PCT), middle (M-PCT) and inferior (I-PCT) third of the posterior CT (PCT) and the anterior (A-TA), lateral (L-TA), posterior (P-TA) and septal (S-TA) portions of the TA. The first post pacing interval (FPPI) was used as an index of proximity to the circuit. Results;The mean AF cycle length (AFCL) was 239±27 ms. Double potentials, indicating the conduction block at the CT, was observed along the CT in all pts. The FPPI at the A-, L-, P- and S-TA did not differ from the AFCL (239±27, 241±27, 240±27 and 239±27 ms, respectively) in all pts. The FPPI at the S-, M- and I- were signifiicantly longer than the AFCL (278±33, 273±32 and 269±33 ms, respectively, p<0.01) in all pts, however, the FPPI at the S-, M- and I-ACT were divided into two groups. The FPPI at the S-, M- and I-ACT did not differ from the AFCL in 9 pts (242±34, 242±34 and 241±34 ms, respectively)(Group 1) but were significantly longer than the AFCL in the remaining 8 pts (278±22, 269±22 and 262±18 ms, respectively, p<0.01)(Group 2). During entrainment from I-ACT, the first and the second components of the double potentials recorded at I-ACT were fused and thus the short cut conduction across the CT was observed both in Group 1 an 2. However, the FPPI was longer than the AFCL in group 2. These indicate that the presence of conduction block along the CT was not essential for the perpetuation of AF in Group 2. The CT and the TA were both an essential part of the reentry circuitn in Group 1, however, the CT was considered to be a bystander and the reentrant wavefront ciculated only around the TA in Group 2. Conclusion;Two types of reentrant circuit exist in typical AF. The CT and the TA are both an essential pathway of the reentry circuit in one group. However, the CT acts as a bystander during AF and the reentrant wavefront ciculates only around the TA in another group.

1185-114 Symptomatic Status Does Not Predict Mortality in Atrial Flutter

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Background: Atrial flutter (Afltr) is associated with an increased mortality risk. Despite its proven safety and efficacy in Afltr, radiofrequency ablation (RFA) is typically reserved for highly symptomatic patients (pts) with drug refractory disease. To evaluate the appropriateness of the current emphasis placed of symptoms as a determinant of RFA, we determined the impact of symptomatic status on the mortality risk of pts diagnosed with Afltr in the general population. **Methods:** We used the resources of the Marshfield Epidemiologic Study Area, a database that captures nearly all medical care and deaths among its 58,820 residents, to identify all incident cases of Afltr diagnosed from 1991 to 1995. The only exclusion criteria were the presence of medical conditions precluding ascertainment of symptoms at the time of initial Afltr diagnosis. Using death from any cause as the primary endpoint, we compared the mortality risk of symptom status (symptomatic *versus* asymptomatic) after adjusting for age, gender, heart failure, chronic obstructive pulmonary disease, diabetes mellitus, myocardial infarction, smoking history, cerebral embolism, hypertension, rheumatic heart disease, thyroid abnormality and concurrent atrial fibrillation. **Results:** Among a total of 170 incident cases of Afltr; 92 (54%) were symptomatic and 78 (46%) were asymptomatic. There were no significant differences between the two groups in their respective prevalence of preexisting conditions. Follow-up was completed in 100% of cases (mean, 3.7 yr., max. 6.9 yr.). At last follow-up, 84 (49%) of all Afltr patients had died. These included 50% of symptomatic and 43% of asymptomatic cases (P=NS). After adjusting for baseline characteristics, a multivariate analysis showed no differences in the mortality risk of the two groups (RR 1.18, 95 percent CI, 0.73 to 1.91, P=0.503). **Conclusions:** 1) Symptomatic status does not predict mortality risk in Afltr. 2) Our data challenge the validity of using symptoms as a primary indication of RFA in Afltr. 3) These findings provide additional support for the need of further research to determine optimal utilization of curative technologies in all cardiac arrhythmias.

1185-115 Anatomical Characteristics of the Pulmonary Vein Ending Into the Left Atrium: Relevance for Radiofrequency Ablation of Atrial Fibrillation

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Background: Radiofrequency pulses applied circumferencially around the orifices of the pulmonary veins (PV) has been reported to prevent recurrences in patients with paroxysmal and permanent atrial fibrillation (AF). This study is aimed at examining the PV-atrial junction in 35 normal human autopsied hearts from adults (52±18 years, 24 males).
Results: In 29 (83%) hearts there were 4 PV. Two hearts (6%) had a single left PV (branching at the hilium level) and in 4 hearts (11%) we found 5 PV. Only 57% of the hearts have four individualized endings of the PV into the left atrium. Nine hearts (26%) had a common ending for the 2 left PV (8) or the 2 right PV (1) into a "vestibule" in the left atrium. The diameter of the vestibule was 19.5±3 mm (range 18-24 mm) and the length was between 5 to 14 mm. In hearts with 4 PV orifices, the diameter of the ostium at the PV-atrial junction was 12.5±3 mm (range 7-17 mm) and in the two hearts with a single left PV was 26 and 28 mmm respectively. In 18 hearts the separation between one of the superior and inferior PV ostia was < 3 mm wide. The distances between the orifices of the right PV ranged from 2 to 11 mm (mean 6.5±2 mm) and 2 to 16 mm (mean 8.4±2 mm) for the left PV respectively.
Conclusions: The PV-atrial junction is more than a simple presence of 4 PV orifices. A common ending into the left atrium (26% of hearts), the existence of a large vestibule and the presence of a thin inter-orifice left atrial rim (in 53% of our specimens) are relevant anatomic features for radiofrequency procedures around the PV ostia in patients with AF.

1185-116 Noncontact Mapping of Right Atrial Activation During Pulmonary Vein Pacing

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When the posterior left atrium is paced, right atrial activation has previously been described over three breakthrough points: Bachman's bundle (BB), Fossa (FO) and Coronary sinus os (CS). We used a noncontact mapping system using a balloon catheter to record the right atrial activation patterns during right and left pulmonary vein (PV) pacing in six patients (WPW 3, Left Atrial tachycardia 1, AF 1, AVNRT 1). Twenty-six PV were paced at threshold from the distal PV where PV potentials were recorded. Anatomy was confirmed by PV angiography.
RESULTS: Sites of earliest right atrial activation are tabulated below:

Patient	LUPV	LLPV	RUPV	RLPV	RMPV
1	BB-CS	BB-CS	BB	FO	
2	BB	BB	FO	FO-BB	FO-BB
3	BB-CS	CS-BB	BB	PRA*	PRA
4	CS	CS	PRA	PRA	
5	CS	CS	PRA	PRA	
6	BB	CS-BB	PRA	PRA	
Pacing threshold	11.6 mA @ 0.8 ms	11.5 mA @ 0.6 ms	15 mA @ 0.8 ms	12.6 mA @ 0.8 ms	8 mA @ 0.8 ms

*PRA: Posterior Right Atrium
CONCLUSIONS: The earliest right atrial activation can occur nearly simultaneously over two discrete points when the pulmonary veins are paced. Direct posterior right atrial capture can occur when pacing distal right but not left pulmonary veins. No pattern of right atrial activation predicts the PV being paced. This could have implications in the therapy of atrial fibrillation arising from the PV.