**124A ABSTRACTS - Cardiac Arrhythmias**

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**1090-218 Randomized Comparison of Anatomical Versus Voltage-Guided Ablation of the Cavo-tricuspid Isthmus for Atrial Flutter**

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**Background:** It is not clear whether local atrial electrogram amplitude influences the achievement of complete cavo-tricuspid isthmus (CTI) block during radiofrequency ablation for atrial flutter. The purpose of this study was to prospectively compare the technical aspects and efficacy of CTI ablation using a strictly anatomic approach and an approach guided by a bipolar voltage map to avoid high voltage zones in the CTI.

**Methods:** Thirty-two patients with atrial flutter were randomized to CTI ablation with an anatomical approach (Group I, 16 patients) or guided by a bipolar voltage map (Group II, 16 patients). A 3-D electroanatomical mapping system and an 8-mm tip ablation catheter (temperature target 55°C, power 70W) were used in all patients. With the anatomical approach, a line was created at a 6 o'clock position (LAO 45°) in the CTI isthmus without detailed reconstruction of the CTI geometry. During voltage-guided ablation, a high-density bipolar voltage map of the CTI was created, then contiguous applications of radiofrequency energy were delivered at CTI sites with the lowest bipolar voltage.

**Results:** Complete CTI conduction block was achieved in 100% of patients in each group. The mean of the maximum voltages along the line were 3.3 ± 1.7 mV in Group I, compared to 1.4 ± 0.6 mV in Group II (p<0.001). Creating a high-density voltage map was associated with a 21 ± 11% increase in the total procedure time (p<0.02). During a mean follow-up of 59 ± 44 days, there was no recurrence of atrial flutter in either group. There were no complications in either group.

**Conclusions:** When CTI ablation for atrial flutter is performed with an 8-mm-tip catheter, complete block can be achieved in all patients regardless of local voltage. Ablation of high voltage zones is not associated with a higher incidence of recurrence. Therefore anatomical ablation without detailed mapping may be preferred initial approach for CTI ablation.

**1090-219 Cryoablation of Atrial Flutter: Results of a Multicenter Clinical Study**

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**Background:** Inadequate contact, catheter tip instability, and pain stimulus during radiofrequency (RF) ablation may pose difficulties when creating the linear lesion needed for cure of typical cavo-tricuspid isthmus-dependent atrial flutter (AFL). We evaluated the acute efficacy of cryoablation (cryo) for the treatment of isthmus-dependent AFL. We cored 30 patients with clinical AFL (23 males, mean age 66±9 yrs) underwent electrophysiology study with multipolar catheters positioned in the right atrium (RA) and coronary sinus. AFL was induced and entrained from the isthmus. Cryoablation was performed with a novel 10 Fr bipolar steerable cryo-catheter and console (CryoCor, Inc.). Contiguous 4 minute cryo applications using a freeze-thaw cycle were delivered across the isthmus from the tricuspid valve annulus to the inferior vena cava-RA junction. Results: A mean of 16±6 applications were delivered to the isthmus. Average cooling of the cryo tip was 29±2°C, a 11 degree increase in the total procedure time (p=0.2). During a mean follow-up of 59±44 days, there was no recurrence of atrial flutter in either group. There were no complications in either group.

**Conclusions:** When AFL ablation for atrial flutter is performed with a 8-mm-tip catheter, complete block can be achieved in all patients regardless of local voltage. Ablation of high voltage zones is not associated with a higher incidence of recurrence. Therefore anatomical ablation without detailed mapping may be the preferred initial approach for CTI ablation.

**1090-220 A Randomized Study of Prophylactic Catheter Ablation in High-Risk Children With Asymptomatic Wolff-Parkinson-White Syndrome**

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**Background** – Adults with asymptomatic ventricular preexcitation that prophylactic radiofrequency catheter ablation of accessory pathways is of benefit in preventing life-threatening arrhythmic events and ventricular fibrillation.

**Objective** – A randomized comparison of prophylactic radiofrequency catheter ablation of accessory pathways versus no ablation in high-risk children.

**Methods** – The subjects were asymptomatic high-risk children of ages 5 to 17 years with Wolff-Parkinson-White syndrome. An increased risk was defined as inducibility of sustained atrioventricular reciprocating tachycardia and/or sustained atrial fibrillation at electrophysiologic testing. The main endpoint was the occurrence of arrhythmic events over a 5-year follow-up period.

**Results** – Of the 127 enrolled children, 47 patients (27%) completed the study (20 received prophylactic ablation). The baseline clinical and electrophysiologic characteristics including at least 30 min observation of ablation, with fluoroscopy time 43±22 min. Patients reported no discomfort during application of cryo. There were no procedure related adverse events. Conclusion: Clinical results from this study demonstrate that when lower temperatures are achieved, trans-catheter cryoablation is highly effective in the treatment of isthmus-dependent AFL. Catheter stability and patient comfort with cryo appears superior to that observed with RF ablation, whereas efficacy is comparable.

**1090-221 Radiation Skin Exposure, Effective Organ Doses, and Estimated Cancer Risk for Pulmonary Vein and Cavo-tricuspid Isthmus Ablation Using a Low Frame Pulsed Fluoroscopy System**

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**Background:** Catheter ablation of the pulmonary veins (PV) represents a new treatment option for atrial fibrillation (AF). The procedure is complex and requires prolonged fluoroscopy exposure. Pulsed fluoroscopy with very low frame rate (7.5 fps) can reduce radiation exposure by greater than 50%. The purpose of this study was to measure radiation exposure during PV ablation procedures using a state of the art, pulsed fluoroscopy system and to compare it with ablation of the cavo-tricuspid isthmus.

**Methods:** 15 patients (pt) referred for PV isolation and 5 pt referred for cavo-tricuspid isthmus ablation for atrial flutter (AFL) were studied. A bипolar pulsed (7.5/sec) fluoroscopy system (Siemens Bicor HS) was used. Pts skin exposure was measured by 60 thermo-luminous dosimeters positioned on the pts back, corresponding to the location of the fluoroscopy tubes.

**Results:** Mean fluoroscopy time for AF was 68±21 min in RAO and 62±17 min in LAO projection. Mean fluoroscopy time for AFL was 18±5 min in RAO and 12±7 min in LAO projection. Mean peak skin dose for AF was 1.0±0.5 Gy in RAO and 1.5±0.4 Gy in LAO projection. Mean peak skin dose for AFL was 4.0±2.0 Gy in RAO and 0.5±0.3 Gy in LAO projection. For AF pts the effective organ dose was 27.3 mSv for males and 18.7 mSv for females, resulting in an excess risk of fatal malignancy of 2099 per 1 million pts in males and 1518 per 1 million pts in females. For AFL pts, the effective organ dose was 3.79 mSv, resulting in an excess risk of fatal malignancy of 292 per 1 million pts.

**Conclusion:** Even though catheter ablation of AF using a PV approach is associated with prolonged fluoroscopy duration, the skin exposure to pts was below the threshold for skin damage (<2Gy) for low frame rate pulsed fluoroscopy. The excess risk of fatal malignancy was similar to what has been reported in the past for catheter ablation of regular supraventricular tachyarhythmias using conventional fluoroscopy systems.