Methods: In 31 patients undergoing clinically-indicated AF ablation, standard mapping catheters (Navistar™, Tactichrome™) were used to deliver HFS to the left atrial endocardium from either the Tau20 or Grass S88 with SIU5. AV dissociation (AVD-GP) and atrial ectopy (ET-GP) in response to HFS were tagged on 3D electroanatomic mapping systems (CARTO™ & Precision™) to assess current output threshold for GP detection, reproducibility of the Tau20, creation of high density GP maps and efficacy of RF ablation in abolishing the GP effect.

Results: Mean output to identify GP was 29 mA (n = 12). Reproducibility comparing the two stimulators was 100% for AVD-GP (n = 6) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1) and 100% for ET-GP (n = 16) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1). Reproducibility using the Tau20 was 95% for AVD-GP (n = 38) (Kappa = 0.64, SE of kappa = 0.23, 95% CI 0.19 to 1) and 100% for ET-GP (n = 13) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1). Figure 1 shows a high-density GP map. Ablation abolished autonomic effects at 166 AVD-GP and 118 ET-GP (n = 11).

Conclusion: A novel current-controlled high frequency stimulator appears to be a reproducible method for locating GP sites through physiological effect within the human left atrium.

CE-521-03
LONG TERM OUTCOMES OF LEFT CARDIAC SYMPATHETIC DENERVATION FOR LONG QT SYNDROME AND CATCHELOMERIC POLYMORPHIC VENTRICULAR TACHYCARDIA
Johan Martijn Bos MD, PhD; Stephanie F. Politis MD; Christopher Morr MD and Michael John Ackerman MD, PhD

Background: Left cardiac sympathetic denervation (LCSD) is an effective anti-fibrillatory, minimally invasive therapy for patients with cardiac channelopathies such as long QT syndrome (LQTS) and catecholaminergic polymorphic ventricular tachycardia (CPVT). While performed for a few decades, only now are cohorts getting large enough to evaluate long term outcomes.

Methods: In 31 patients undergoing clinically-indicated AF ablation, standard mapping catheters (Navistar™, Tactichrome™) were used to deliver HFS to the left atrial endocardium from either the Tau20 or Grass S88 with SIU5. AV dissociation (AVD-GP) and atrial ectopy (ET-GP) in response to HFS were tagged on 3D electroanatomic mapping systems (CARTO™ & Precision™) to assess current output threshold for GP detection, reproducibility of the Tau20, creation of high density GP maps and efficacy of RF ablation in abolishing the GP effect.

Results: Mean output to identify GP was 29 mA (n = 12). Reproducibility comparing the two stimulators was 100% for AVD-GP (n = 6) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1) and 100% for ET-GP (n = 16) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1). Reproducibility using the Tau20 was 95% for AVD-GP (n = 38) (Kappa = 0.64, SE of kappa = 0.23, 95% CI 0.19 to 1) and 100% for ET-GP (n = 13) (Kappa = 1, SE of kappa = 0, 95% CI 1 to 1). Figure 1 shows a high-density GP map. Ablation abolished autonomic effects at 166 AVD-GP and 118 ET-GP (n = 11).

Conclusion: A novel current-controlled high frequency stimulator appears to be a reproducible method for locating GP sites through physiological effect within the human left atrium.

CE-521-04
VASOVAGAL SYNCOPE WITH ISOLATED ATRIOVENTRICULAR BLOCK FOLLOWING CARDIONEURAL ABLATION DEMONSTRATING DISTINCT INNERVATION OF THE SINUS AND ATRIOVENTRICULAR NODES
Timothy Richard Maher MD; Andrew H. Locke MD; Andre d’Avila MD, PhD and Alexei Shvilkin MD, PhD

Background: Radiofrequency ablation (RFA) of cardiac parasympathetic ganglionated plexi (GPs), termed cardioneural ablation (CNA), has been shown to successfully treat vasovagal syncope (VVS). Sinus (SN) and atrioventricular (AVN) nodes are innervated by distinct GPs in the epicardial fat pads of both atria. We present a case of CNA of SN-specific GPs for VVS eliminating sinus arrest, but recurrent syncope with AV block.

Objective: To demonstrate the potential need to target both SN and AVN GPs in cardioinhibitory VVS.

Methods: NA

Results: A 36 year-old man with frequent VVS with sinus arrest documented on implantable loop recorder (ILR) was referred for CNA. Intervals at baseline: PR 208 ms, AH 137 ms, HV 50 ms. Bi-atrial mapping was followed by RFA at the anatomic sites of the Marshall Tract, left superior, right superior, and Aortic-SVC GPs. Vagal responses (sinus arrest and AV block) were seen during ablation of the left-sided GPs while his sinus rate increase observed during ablation of the right sided GPs. The posterioromedial GP and right inferior GP were not ablated. Follow up ILR recordings showed reduced heart rate variability and increased sinus rates. Five months post-ablation another syncopal event occurred. ILR revealed 11 seconds of ventricular asystole due to complete AV block at unchanged sinus rate. Repeat CNA with RFA of the right inferior and posteromedial GPs resulted in decrease in PR from 213 to 176ms, AVN Wenckebach cycle length from 500 ms to 450 ms, AVN effective refractory period from 600/450 ms to 600/370 ms, and progressive decrease in AH interval with decreasing pacing cycle length (700 ms: from 101-129 ms, 600 ms: 142-120ms, 550 ms: 193-142 ms) with no further change after atropine challenge. The patient has had no further syncopal events.

Conclusion: CNA can reduce VVS burden. Isolated ablation of the GPs providing SN innervation does not prevent VVS caused by AV block due to the distinct GP innervation of the AV node. Patients with VVS due to a SN cardioinhibitory response should be considered for CNA of AVN-innervating GPs since vagal AVN response can be initially masked by SN arrest. Changes in AH interval response curves at different paced cycle lengths provide a clearer endpoint for AVN modification than comparing intervals during sinus rhythm before and after ablation.