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## CARDIAC ARRHYTHMIAS

## DOES PARASYMPATHETIC-MEDIATED CHANGE IN RESTITUTION AND ALTERNANS CHARACTERISTICS CONTRIBUTE TO VAGAL ATRIAL FIBRILLATION?

ACC Poster Contributions

Georgia World Congress Center, Hall B5

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Session Title: Clinical Electrophysiology--Ventricular Arrhythmias: Risk Stratification

Abstract Category: Electrophysiology--Basic

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**Background:** Steep restitution curves (RC) slopes and alternans have both been shown to be associated with arrhythmias, but it is not known if they are important contributors to vagal atrial fibrillation. The aim of the study was to test the effect of vagal stimulation (VS) on RC and alternans.

**Methods:** Monophasic action potentials (MAPs) were obtained from the left atrial appendage (LAA) and the posterior left atrium (PLA) in 16 dogs during a dynamic restitution protocol and repeated with 20 Hz cervical VS. Action potential duration was measured by MAPd90. The maximum slope of each RC was measured. Alternans measured by a spectral method were quantified for MAP amplitude (ALTamp) and MAP duration (ALTD) for cycle lengths of 400, 350, 300, 250, 200 ms.

**Results:** VS shortened MAPd90 in both the LAA ( $148 \pm 10$  to  $137 \pm 10$  ms,  $cl$  300,  $p < 0.0002$ ) and PLA ( $147 \pm 7$  to  $137 \pm 9$  ms,  $cl$  300,  $p < 0.05$ ). The maximum slopes without VS and during VS were  $2.1 \pm 0.3$  vs.  $1.8 \pm 0.3$  ( $p < 0.06$ ) for LAA respectively and  $2.0 \pm 0.3$  vs.  $1.7 \pm 0.2$  ( $p = ns$ ) for PLA respectively. An example of RCs with and without VS is shown below, fig. a. ALTamp and ALTD increased as the cycle was decremented ( $p < 0.0039$  for all conditions). See fig. b and c. VS did not significantly change ALTamp or ALTD in the LAA and PLA.

**Conclusions:** Vagal stimulation has limited impact on the maximum RC slopes and repolarization alternans in the atria. Therefore, increased atrial arrhythmogenicity with VS is more likely due to decreased action potential duration and increased repolarization heterogeneity.

