PO-614-03

ALTERED SUBCELLULAR CALCIUM RELEASE IN THE HEART FAILURE ATRIA
Charlotte Smith PhD; Lauren Toms PhD; George Madders PhD; Jessica Clarke PhD; Niall Macquaide PhD; Andrew Trafford PhD and Katharine Dibb PhD

Background: Transverse (t)-tubules enable close coupling between L-type calcium (Ca\(^{2+}\)) channels and ryanodine receptors (RyR) to facilitate triggered Ca\(^{2+}\) release throughout the cell. In heart failure (HF) there is disruption of the t-tubule network that contributes to dyssynchronous Ca\(^{2+}\) release. Despite the importance of t-tubules in triggering Ca\(^{2+}\) release in the atria of large mammals, little is known about Ca\(^{2+}\) release sites and how they are altered in HF.

Objective: To investigate Ca\(^{2+}\) release in the healthy and failing sheep atria and examine how this may be contributed to by t-tubule and RyR remodelling.

Methods: HF was induced in sheep by right ventricular tachypacing and left atrial myocytes isolated from control and HF animals. Cells were loaded with fluo-3 and stimulated under current clamp control. RyR structure was assessed using stochastic optical reconstruction microscopy (STORM).

Results: In control atrial myocytes, triggered Ca\(^{2+}\) release occurred at discrete sites on the surface and in the centre of the cell associated with t-tubules. In HF, t-tubule loss was accompanied by a reduction in central Ca\(^{2+}\) release sites. As such, triggered Ca\(^{2+}\) release was restricted to the cell surface with central Ca\(^{2+}\) release decreased and reliant on propagation. Ca\(^{2+}\) transient amplitude was decreased in both triggered and propagated sites in HF, and the difference between triggered and propagated release was exacerbated. The coefficient of variation for Ca\(^{2+}\) release was greater in HF indicating variable amplitude of release between beats. As RyR cluster properties can influence Ca\(^{2+}\) release, their structure was assessed. Atrial RyRs predominantly localise to the z-line but also to the cell surface. Compared to control, RyR clusters were smaller, more fragmented and further apart in HF which could perturb both triggered and propagated Ca\(^{2+}\) release.

Conclusion: Our data suggests loss of t-tubules, decreased Ca\(^{2+}\) release at triggered and propagated sites and RyR cluster remodelling all contribute to the decrease in the atrial systolic Ca\(^{2+}\) transient and dysynchrony observed in HF.

PO-614-04

STABILIZING CARDIAC RYANODINE RECEPTOR WITH DANTROLENE PREVENTS BINGE ALCOHOL AND CAFFEINE INDUCED VENTRICAL TACHYARRHYTHMIAS
Youhua Zhang MD, PhD

Background: Alcohol and caffeine are widely consumed worldwide. We have shown (Heart Rhythm 2021;18 [8 suppl]: S202) that binge alcohol and caffeine can synergistically induce spontaneous ventricular tachyarrhythmias in rats, yet the underlying mechanism is unclear.

Objective: We hypothesize that cardiac ryanodine receptor (RyR2) dysfunction may be responsible for alcohol and caffeine induced ventricular tachyarrhythmias. Thus, this study was designed to investigate whether stabilizing RyR2 with dantrolene treatment can prevent binge alcohol and caffeine induced ventricular tachyarrhythmias in rats.

Methods: A binge drinking model was established in adult rats (4-5 months old, both sexes) with alcohol injection (2g/kg, IP) every other day for 3 times. These binge drinking rats were divided into 2 groups: binge alcohol (A-group, n=8) and binge alcohol + dantrolene (A+D group, n=7). In A+D group, rats were pretreated with dantrolene (10mg/kg, IP) before each alcohol injection. Caffeine (60mg/kg, IP) was given 3 hours after the last alcohol injection in both groups. To investigate whether dantrolene can stabilize RyR2, ventricular myocytes were isolated and divided into control, alcohol (50mM) and alcohol + dantrolene (10\(\mu\)M) groups from 5 rats. The myocytes were treated for 24 hours and then underwent confocal microscopy with line scanning for Ca\(^{2+}\) sparks recording.

Results: Binge alcohol + caffeine induced various ventricular tachyarrhythmias (premature ventricular contractions and VT, predominantly in the form of bidirectional VT, Figure-ECG) in 8/8 rats. Dantrolene pretreatment prevented ventricular arrhythmia induction in all 7 rats (0/7, A versus A+D, p<0.001). In isolated ventricular myocytes, alcohol treatment significantly increased Ca\(^{2+}\) sparks and dantrolene treatment reduced alcohol induced Ca\(^{2+}\) sparks (Figure).

Conclusion: Stabilizing RyR2 with dantrolene can prevent binge alcohol and caffeine induced ventricular tachyarrhythmias in rats in vivo. Dantrolene treatment can stabilize RyR2 and decrease alcohol enhanced Ca\(^{2+}\) sparks in isolated ventricular myocytes.
PO-614-05
A COMMUNITY HOSPITAL REVIEW OF WATCHMAN OUTCOMES TO DETERMINE SAFE DISCHARGE PROTOCOLS
Jill Boone Schaeffer MSN, CRNP, FHRS, CEPS, CCDS and Diane N. Bollinger MSN, RN

Background: Left atrial appendage occlusion (LAAO) devices are increasingly used to decrease the risk of stroke in atrial fibrillation patients with contraindication to oral anticoagulation. Discharge protocols after this procedure are variable, and same day discharge (SDD) may improve inpatient bed utilization.

Objective: To evaluate outcomes of Watchman FLX LAAO device (FLX) patients to determine if SDD would be feasible and safe in a community hospital setting.

Methods: Single center retrospective chart review of all FLX implants from March through August 2021. Reviewed patient demographics, procedure duration, complications, length of stay (LOS), 7-day readmissions, 30-day readmissions. Implants from March through August 2021. Reviewed patient demographics, procedure duration, complications, length of stay (LOS), 7-day readmissions, 30-day readmissions.

Results: 38 patients aged 77.11 ± 7.86 (47.4% female) received a FLX. CHADS2VASc score was 4.5 ± 1.19. Procedure time was 92.82 ± 21.59 minutes. Figure 8 sutures were removed at 4 hours post procedure in 84.21% of cases. LOS was 1.13 ± .66 days. Two patients accounted for a longer LOS; one due to drop in hemoglobin that was deemed shear blood loss and the other due to hypotension and atrial fibrillation. One patient required transfusion prior to discharge. Anticoagulation strategies post procedure were direct oral anticoagulant + aspirin 81.58%, warfarin + aspirin 15.79%, and dual antiplatelet 2.63%. There was one death due to stroke 4 months post procedure. One patient was re-admitted within 7 days with rapid atrial fibrillation. 5 patients (13.16%) were admitted within 30 days with a GI bleed. There were no significant pericardial effusions or device migrations. 97.4% of patients had oral anticoagulation discontinued at the time of chart review. No device related thromboses or significant leaks were seen on follow up transesophageal echocardiogram. The two patients that had longer LOS developed their symptoms within 24 hours post FLX placement.

Conclusion: During our 6-month evaluation period, placement of FLX in an elderly population with high CHADS2VASc score had a low LOS and few acute complications. With adequate risk assessment related to anemia, vital signs, and rhythm management, SDD seems feasible. These data will lead to an institutional SDD plan with protocols of careful follow up plus re-evaluation of post procedural anticoagulation strategies to limit bleeding in vulnerable patients.

PO-614-07
CONDUCTION SYSTEM PACING - A CHANGING LANDSCAPE BASED UPON BETTER IMPLANTATION PARAMETERS OF LEFT BUNDLE COMPARED TO HIS BUNDLE PACING
Daniel Hunnybun; Omar Hamid Mohamed Amin Riad MBChB, PhD; John P. Foran MBBS; Julian W.E. Jarman MBBS; Vias Markides MBBS, MD; Emily-Jane Cantor MBChB; Matthew O’Connor BChir, MA, MB and Tom Wong

Background: Conduction system pacing (CSP), including His bundle (HBP) and left bunding (LBP), is a rapidly emerging modality that facilitates single lead synchronous ventricular depolarisation. How best to choose between the two pacing method is not clear.

Objective: To compare the HBP and LBP of the first 72 cases performed in a single centre.

Methods: All cases of CSP implants from 2017 to 2021 at the Royal Brompton Hospital were analysed. Patient and procedural complications at 6 months were recorded.