device deactivates SP and how best to manage this scenario, in a large, single centre.

**Methods:** A retrospective audit of all Emblem S-ICD devices (A209 & A219) implanted from 2016 to 2020 using data from electronic pacing & health records and latitude remote monitoring system. The baseline clinical characteristics and SICD programming were recorded at implant and throughout follow up.

**Results:** A total of 322 patients were reviewed with a follow up of 27 months ± 16.6 months. 234 were primary prevention (73%) and remaining 88 patients (27%) were secondary prevention. Thirty-eight (11.8%) of patients received total of 83 shocks. Twenty-four (7.5%) patients receiving IT, totalling 44 shocks. One IT was due to aberrant AF, the remaining 43 were due to oversensing. SP was a significant predictor of all therapy (p.00049) and IT (p.009). Table 1 shows rate of SP deactivation and IT rate. SP deactivation has an odds ratio of 6.45 (95% CI: 2.62 to 15.94) of IT. SP deactivation was due to low R waves in 19 patients, significant asystole in 1 patient and not available in 1 patient at the time of therapy.

**Conclusion:** SP deactivation is a significant predictor and marker of IT. If the SP filter is deactivated this is likely to suggest low amplitude sensing signals. To reduce the risk of IT the cause of the SP deactivation should be investigated and sensing vector changes should be strongly considered. If the SP algorithm continues to de-activate, lead reposition should be considered, similarly to a transvenous RV ICD lead would for poor sensing. An alert for SP deactivation, R wave size and raw S-EGMs would provide clinicians with appropriate decision making to prevent IT.

<table>
<thead>
<tr>
<th>SMART PASS status</th>
<th>Total patients</th>
<th>Patients with inappropriate therapy (IT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>300</td>
<td>10</td>
</tr>
<tr>
<td>Off</td>
<td>22</td>
<td>9</td>
</tr>
</tbody>
</table>

**AP-518-02**

**ATRIAL PACING INDUCED OVERSENSING IN SUBCUTANEOUS IMPLANTABLE CARDIOVERTER DEFIBRILLATOR**

Amy Louise Wharmby BSc; James Elliott; Christopher A. Monkhouse BS, CCDS; Charles Butcher MBBS, PhD and Pier D. Lambiase BCH, BM, MChB, PhD, FHRS

**Background:** A 23 year old male with hypertrophic cardiomyopathy, was implanted with a Subcutaneous Implantable Cardioverter Defibrillator (S-ICD) (Cameron Health SQ-RX 1010). Four years later the patient developed symptomatic bifascicular block and a dual chamber pacemaker (PPM) (Biotronik Epyra-6) was implanted.

**Objective:** To highlight the potential challenge of interactions between an S-ICD and atrial pacing.

**Methods:** N/A

**Results:** The PPM was programmed DDD with a lower rate of 60 bpm and an upper rate of 150 bpm. The S-ICD conditional and shock zones were set to 250 bpm, in the Secondary vector. Primary and Alternate vectors were not viable options due to oversensing of the patient’s intrinsic rhythm and smart pass filtering unavailable on this device model.

Two months post PPM insertion, an untreated episode was detected by the S-ICD displaying intermittent triple counting of the P, R and T-wave (figure 1). Consequently simultaneous interrogation of the PPM and S-ICD was performed. Upon conducting the atrial threshold test in AAI mode, the S-ICD P-wave oversensing was replicated (figure 2). The paced P-wave amplitude was similar to that of the intrinsic R-wave (figure 1 circled in red) resulting in sensing of both components. S-ICD sensing utilises auto gain control whereby the average amplitude of the last two sensed signals is taken and the decay to sensing floor begins at 75% of this calculated amplitude. As the interval between sensed beats decreases, the shorter the refractory period and more aggressive the decay to ensure appropriate sensing of small amplitude signals, typically seen during ventricular fibrillation. A fortuitous ventricular ectopic (figure 1 highlighted in green) resets the sensing profile as the amplitude is significantly greater and momentarily avoids further oversensing and inappropriate therapy.

Following this episode, the PPM was reprogrammed with a reduced lower rate limit of 40 bpm and atrial auto-capture turned off allowing intrinsic P-wave sensing. No further untreated episodes due to oversensing were seen for the remainder of the S-ICD battery longevity of approximately 2 years.
Conclusion: It is important to screen all possible paced morphologies from both the atrial and ventricular chambers to prevent S-ICD oversensing when concurrent devices are in situ.

AP-518-03

NO PAIN, ALL GAIN: S-ICD INSERTION WITH REGIONAL ANESTHESIA BLOCK SHOWS PERI-PROCEDURAL BENEFITS

Lauren Ashley Rousseau PAC, CCDS; Tiffany Andrade MS; Nicole Bourque BS, MS, PAC; Megan E. Brady PAC; Patrice Hoskins PA; Laura Ann Sifrig PAC; Laurel M. Taylor PA, PAC; Morgan Turner PAC and Sunil Kapur MD

Background: The subcutaneous implantable cardioverter defibrillator (S-ICD) was FDA approved in 2009 as the first extravascular device. Because the implant procedure includes creating a pocket along the latissimus dorsi muscle, tunneling of the defibrillator lead and DFT testing, intra and post-operative pain control is an important consideration.

Objective: To assess the anesthetic requirement, post-operative opiate use, hospital length of stay (LOS) and effect on DFT testing with S-ICD implantation done with a serratus anterior and subpectoral parasternal regional pain block (RPB) and systemic anesthesia versus those done with systemic anesthesia alone.

Methods: We performed a serratus anterior and subpectoral parasternal RPB on 20 patients (pts) presenting for a S-ICD implantation or generator change over the last 17 months. We monitored the pts post-operative opiate requirement, hospital LOS and shock impedance/defibrillation threshold test success.

Results: Between June 2020 and Nov 2021, a total of 52 pts underwent S-ICD implant or generator change. Of these pts, 20 underwent a RPB in conjunction with the procedure. The patients who underwent RPB were more likely to be done under monitored anesthesia than pts in the non-RPB arm (75% vs 13%). In addition, less post operative opiate use was seen in the RPB group, 40% requiring PO opiates vs 53% in the non-RPB group and 20% requiring IV opiates vs 38%, respectively. The total procedural time for both groups were similar at 2:33 (+/-3) in the RPB group and 2:25 (+/-3) in the non-RPB group. The same day discharge (SDD) success was higher in the RPB group with 40% success vs 13% in the non-RPB group. DFT testing in the RPB arm was performed on 15 pts and successful in 93%. One patient failed DFT testing which led to subsequent placement of the ICD generator more posterior. The hospital LOS on non-inpatients was similar in the RPB group and non-RPB group 0.63 days (+/- 0.59) vs 0.82 days (+/-0.86).

Conclusion: Regional pain blocks used concomitantly with S-ICD implantation or generator change showed less anesthetic requirement, decreased pain and opiate requirement in the postoperative period, improved SDD success and unchanged DFT testing and impedances. This approach has shown favorable effects on patient experience while maintaining patient safety.

AP-518-04

INCIDENCE OF INAPPROPRIATE SHOCK IN PATIENTS WITH SUBCUTANEOUS IMPLANTABLE CARDIOVERTER-DEFIBRILLATORS WITH CONCOMITANT CARDIAC IMPLANTABLE ELECTRONIC DEVICES: A SINGLE-CENTER COHORT STUDY

Makiko Okazaki; Takahiko Nagase MD; Kanki Inoue MD; Harumi Yamada and Kei Mabuchi MD

Background: The subcutaneous implantable cardioverter-defibrillator (S-ICD) system does not require the placement of intracardiac instrumentation. Therefore, S-ICDs avoid adverse events related to the implantation of a transvenous implantable cardioverter-defibrillator system. However, as S-ICDs do not have a pacing function, an additional implanted device is required for patients who are clinically indicated for a S-ICD and require pacing therapy. It is unclear whether the incidence of inappropriate shock is increased in patients with S-ICDs with concomitant cardiac implantable electronic devices (CIEDs).

Objective: This study aimed to compare the incidence of inappropriate shock in patients with S-ICDs with and without concomitant CIEDs.

Methods: The study cohort comprised 127 patients who underwent S-ICD implantation at our institution between February 2016 and October 2020. Patients were classified as the combined group who simultaneously received S-ICDs and other CIEDs, and the non-combined group who received only S-ICDs. Some patients changed groups during the study because they received CIEDs after S-ICD implantation. To account for these group changes, we used a time-varying Kaplan-Meier curve and Cox proportional hazards model to compare the incidence of inappropriate shock between the two groups.

Results: There were 21 patients in the combined group and 106 patients in the non-combined group at the time of S-ICD implantation. Five patients received other CIEDs after S-ICD implantation. The median follow-up period was 935 days in the combined group and 798 days in the non-combined group. The number of events was three in the combined group and 12 in the non-combined group. The incidence of inappropriate shock did not differ between the two groups. The incidence of inappropriate shock was slightly increased in patients with S-ICDs and other CIEDs versus those with S-ICDs alone, but this intergroup difference was not significant.

Conclusion: The incidence of inappropriate shock did not differ between the two groups (hazard ratio 1.17, 95% confidence interval 0.31-4.32, P = 0.81).

ABSTRACT CA-534:

Effects of Pulse Field Ablation on Ventricular Myocardium and Coronary Arteries

Saturday, April 30, 2022
3:30 PM - 4:30 PM

CA-534-01

PULSED FIELD ABLATION COMPARED TO RADIOFREQUENCY ABLATION OF LEFT VENTRICULAR MYOCARDIUM IN A SWINE INFARCT MODEL

Sung Il Im MD; Satoshi Higuchi MD and Edward P. Gerstenfeld MD, FHRS