myocardial infarction, and 2.01 (95% CI, 1.50-2.71) for cardiovascular death. Discontinuation of oral anticoagulation after the bleeding event was observed in 22.6% of patients who had a major bleeding and in 11.2% who experienced a CRNMB.

**Conclusion:** Patients with AF who experience a major bleed during follow-up have a greatly increased risk of cardiovascular outcomes after the event. This excess risk was much lower in patients who had a CRNMB.

**HP-574-04**

**ASSOCIATIONS BETWEEN OBESITY PARAMETERS AND THE RISK OF INCIDENT ATRIAL FIBRILLATION AND ISCHEMIC STROKE IN DIFFERENT AGE GROUPS: A NATIONWIDE POPULATION-BASED STUDY**

Hyo-Jeong Ahn; So-Ryoung Lee MD; Eue-Keun Choi MD, PhD; Soonil Kwon MD; Sun-hwa Kim MD; Seil Oh MD, PhD, FHRS and Gregory Lip MD

**Background:** Atrial fibrillation (AF) and ischemic stroke (IS) are two representative cardiovascular diseases. They share common metabolic risk factors such as obesity and ageing is an important predisposing factor. Limited data comprehensively evaluated the relationship between obesity measurements - body mass index (BMI) and waist circumference (WC) - and incident AF and IS in the different age groups.

**Objective:** We investigated the risk of AF and IS according to body mass index (BMI) and waist circumference (WC) stratified by age.

**Methods:** We included 9,432,332 adults who underwent a health examination in 2009 from the Korean National Health Insurance Service database. The age of individuals was categorised into six subgroups by an increase in every decade from the twenties. In each age group, BMI (kg/m²) was categorised into five groups: underweight (<18.5), normal (18.5-22.9), overweight (23-24.9), obese class I (25-29.9), and obese class II (≥30). WC was categorised into six groups with distinctive points of 80, 85, 90, 95, and 100 cm for men and 75, 80, 85, 90, and 95 cm for women. Primary outcomes were incident AF and IS.

**Results:** Across age, BMI-AF presented a J-shaped association. The hazard ratio (HR) of obese class II was the highest in subjects aged 30-39 years (HR 1.80, 95% confidence interval (CI) 1.63 to 1.98, p<0.001). The increased risk of AF in the underweight group was only statistically significant in adults over 60 years of age. The risk of IS increased in those with a BMI over the normal range in early and midlife, but was not significant in adults aged ≥60 years. The highest HR of obese class II was observed in subjects aged 20-29 years (HR 3.00, 95% CI 2.34 to 3.84, p<0.001). Positive linear correlations of WC-AF and WC-IS were observed, but the WC-IS association was weak in the population aged ≥40 years.

**Conclusion:** There was a J-shaped association between BMI-AF and BMI-IS, and a positive linear correlations between WC-AF and WC-IS. The higher risks of AF and IS according to an increment of BMI and WC were most apparent among the young ages; hence, more attention should be directed to weight management in early life. The association between IS and obesity was not significant in the elderly, implicating that several other factors contribute to IS in this age group.

**ABSTRACT AP-518:**

Optimizing care of the SICD patient: Special programming and management strategies

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

**AP-518-01**

**SUBCUTANEOUS IMPLANTABLE CARDIOVERTER DEFIBRILLATOR SMART DEACTIVATION INCREASES INAPPROPRIATE SHOCKS, A REAL-WORLD SINGLE CENTRE EXPERIENCE**

Christopher A. Monkhouse BS, CCDS; Amy Louise Wharmby; Amal G. Muthumala BCH, BChir, MB, CCDS; Philip Moore MD, PhD; Syed Ahsan; Michele Orini PhD and Pier D. Lambiase BCH, BM, MChB, PhD, FHRS

**Background:** The SICD has been increasingly used with its addition to the HRS guidelines in 2017. A question mark remains around the burden of inappropriate therapy (IT), which, in PRETORIAN had an IT in 9.6% of patients over 4 years. Importantly, this trial was conducted using devices without the SMART pass (SP) algorithm installed. SP (Boston Scientific Corporation, Natick, MA) is a bandpass filter has been shown to reduce inappropriate therapy. However, a key area under-investigated is the algorithms’ ability to deactivate itself in community.

**Objective:** We aimed to assess: the effect of SP, with clinical variables, on inappropriate therapies and oversensing; why the
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=0.00049) and IT (p=0.009). 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 1

<table>
<thead>
<tr>
<th>SMART PASS status</th>
<th>Total patients</th>
<th>Patients with inappropriate therapy</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>

**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) result 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.**

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**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.