ABSTRACT CA-532:
Treatment Strategies for Atrial Fibrillation and Associated Outcomes
Saturday, April 30, 2022
8:00 AM - 9:00 AM

CA-532-01
RISK OF DEMENTIA AMONG PATIENTS WITH ATRIAL FIBRILLATION TREATED WITH CATHETER ABLATION VERSUS ANTI-ARRHYTHMIC DRUGS
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Background: Atrial fibrillation (AF) is associated with an increased risk of dementia. However, variation in dementia risk by AF rhythm treatment has not been well studied.

Objective: To compare the risk of dementia in patients with AF who underwent catheter ablation (CA) versus anti-arrhythmic drug (AAD) treatment.

Methods: The 2000-2021 Optum Clinformatics database was used and includes national administrative claims of commercially insured non-elderly adults and Medicare Advantage beneficiaries in the US. Patients with AF who underwent CA versus treatment with AADs (>1 prescription fill for >2 AADs) were identified. Patients with history of dementia, heart failure, surgical ablation, valvular procedure, or left atrial appendage occlusion were excluded. Propensity score matching was used to match patients in CA versus AAD groups. A cause-specific hazard model was performed to assess dementia risk overall and in sex subgroups.

Results: After matching, there were 15,441 patients per group. Patients treated with CA had 24% lower risk of dementia compared with those treated with AAD (1.8% vs 3.2%; hazard ratio [HR] 0.76, 95% confidence interval [CI] 0.66-0.88, p = 0.0003) (Figure). In males, the dementia risk did not differ significantly among CA versus AAD patients (1.5% vs 2.2%, HR 0.81, 95% CI 0.66-1.00, p = 0.0523). Among females, those treated with CA demonstrated a 27% lower risk of dementia compared with those treated with AAD (2.4% vs 4.4%, HR 0.73, 95% CI 0.59-0.90, p = 0.0038).

Conclusion: Patients with AF treated with CA had significantly lower risk of dementia compared with those treated with AADs. The lower risk of dementia in CA versus AAD treated patients was particularly prominent among females.

CA-532-02
ATRIAL UPTAKE OF TECHNETIUM-99M-PYROPHOSPHATE IS ASSOCIATED WITH INCREASED ARRHYTHMIA RECURRENCE FOLLOWING AF ABLATION
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Background: Atrial amyloidosis is an arrhythmogenic substrate for atrial fibrillation (AF). Technetium-99m-pyrophosphate (99mTc-Pyp), known to bind calcium, was originally developed as a bone tracer. It was subsequently demonstrated that 99mTc-Pyp correlated with areas of calcium deposition in injured and necrotic myocytes. Assessment of atrial uptake (AU) of 99mTc-Pyp is currently not utilized clinically but may provide important insights into the likelihood of success of rhythm control strategies among individuals with AF.

Objective: To examine the association between AU on 99mTc-Pyp scan and maintenance of normal sinus rhythm following AF ablation.

Methods: We studied 620 patients who were referred for a 99mTc-Pyp scan for suspected transthyretin cardiac amyloidosis between January 2012 and September 2019. Of these patients, 55 subsequently underwent AF ablation and were included in our final analyses. Presence or absence of AU was assessed using Corridor 4DM software and Syngo Via using fused/co-registered computed tomography single photon emission computed tomography imaging in all cases. AU was defined as qualitative uptake in the atrial walls distinct from the blood pool. A representative example of AU is shown in Figure 1b. A 2-sided p-value <0.05 was considered statistically significant.

Results: Baseline characteristics are shown in Figure 1a and were similar between those with and without AU. Following ablation, 34/55 (62%) developed recurrent arrhythmia and the mean time to recurrence was 28 months. Among those with AU on 99mTc-Pyp scan, 21/25 (84%) experienced arrhythmia recurrence, compared to 13/30 (43%) of those without AU (Figure 1c, log-rank 5.4, p = 0.02). On multivariable models adjusting for AF type, the presence or absence of cardiac amyloidosis, and left ventricular ejection fraction, AU was a significant predictor of recurrent arrhythmia (HR 2.6, 95% CI 1.2-5.3, p = 0.016).

Conclusion: Atrial myopathy is the result of a variety of factors that lead to structural and electrical remodeling in the atrium and portends a poorer prognosis with respect to rhythm control among patients with AF. AU of 99mTc-Pyp may identify patients at higher risk for arrhythmia recurrence following AF ablation.
ASSOCIATION BETWEEN SLEEP APNEA, ATRIAL FIBRILLATION AND INCIDENT STROKE IN A VERY LARGE POPULATION OF YOUNG INDIVIDUALS
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Background: Sleep apnea (SA) worsens outcomes in patients with atrial fibrillation/flutter (AF), and both are common in young patients (20-50 years). However, it is unreported what proportion of young patients with SA have or will develop AF or stroke.

Objective: To define the relationships between AF, SA and stroke in a population, focused on the young (20-50 Y).


Results: We identified 1660860 patients aged 20-50Y, of whom 29930 had SA, 4025 had AF, and 2985 had stroke (Fig A). AF was more common in patients with SA than without (odds ratio, OR: 16.6 [15.4-17.9, p<0.0001]). AF was diagnosed prior to SA in 90% of patients. However, patients with SA were more likely to develop AF than patients without SA (OR: 4.54 [3.97-5.02, p<0.0001]), and were more likely to have a stroke with AF than without AF (OR: 6.9 [5.3-8.9], p<0.0001). Among all patients in the population with AF, stroke was more common in patients with than without SA (OR 1.89 [1.32-2.71, p=0.004]) (Fig B). Notably, among all patients without AF, incident stroke was significantly more common in patients with SA than those without (OR 7.74 [6.90-8.68, p<0.0001]), of which 67% of strokes occurred <1 year from the diagnosis of SA (Fig B). Among these patients with SA and incident stroke, oral anticoagulation was more common in patients with a diagnosis of AF than without (60% vs 19%).

Conclusion: We uncover a novel, strong association between sleep apnea, AF, and incident stroke in a population of >1.6 million young individuals. This may have implications for monitoring and anticoagulation therapy.

CA-532-04
HIGHER NEED FOR PACEMAKER IN WOMEN WITH SINUS NODE DYSFUNCTION DUE TO DELAY IN ATRIAL FIBRILLATION ABLATION
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Background: Atrial fibrillation (AF) is associated with anatomical and electrical remodeling. Some patients with AF have concomitant sick sinus syndrome (SSS) and may need pacemaker (PPM) implantation. Association between catheter ablation of AF (CA) timing and need for PPM in SSS has not been assessed.

Objective: The primary aim of this study was to look at the association between timing of catheter ablation after diagnosis of atrial fibrillation and the need for a pacemaker.

Methods: We used pooled electronic health data to perform retrospective cross sectional analysis of 66,595 patients with AF and SSS to assess the need of PPM implantation temporally with atrial fibrillation performed earlier within 5 years (group 1), 5-10 years (group 2), or beyond 10 years (group 3) of diagnosis.

Results: Pacemaker implantation was lowest amongst those with CA within 5 years; group 1 versus group 2 (18.15 % vs 27.21 %) and group 1 versus group 3 (18.15 % vs 27.22%). Interestingly, there was no difference in risk of PPM between group 2 and group 3 (27.21 % vs 27.22 %, OR 1.00 [0.85-1.20]). Even after controlling known risk factors of need for pacemaker implantation, timing of AF ablation was the strongest predictor for need for PPM. Women had delay in atrial fibrillation ablation (62.3% men versus 37.7% women in group 1) compared to men leading to significantly higher need for pacemaker implantation as shown in the forest plot showing the adjusted odd ratio of pacemaker in various groups (p<0.001). (The dots represent the odds ratio and the horizontal lines represents the 95% confidence intervals).

Conclusion: Earlier ablation of atrial fibrillation was associated with reduction in need for pacemaker implantation. Women received atrial fibrillation ablation later leading to higher need for pacemaker implantation.