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AF Screening, Risk Factors, and Diagnosis: What's New?

Announcer:
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Dr. Chung:
Hi, I'm Mina Chung from the Cleveland Clinic, and I'll be talking about atrial fibrillation screening, risk factors, and diagnosis, what's new from the atrial fibrillation guidelines. So there have been many mechanisms and pathways that lead to atrial fibrillation. And as you can see from the top row, AF is associated with many conditions, including hypertension, valve disease, coronary disease, obesity, alcohol use, and sleep disordered breathing. Many of these lead to various derangements that are interrelated among themselves, and they are as you see on the slide, and they all can act together to increase propensity to increased ectopy in atrial fibrillation.

So it's not surprising that there are a number of risk factors for patients who are diagnosed with atrial fibrillation. There are a number of demographic, anthropomorphic, and cardiovascular risk factors, including advancing age, smoking, low physical activity, elevated resting heart rate, obesity is a big one, increasing height, hypertension, and diabetes. There are a number of cardiovascular diseases that are associated with AF, including heart failure, coronary disease, inflammation from pericarditis or myocarditis, and we saw this with the COVID pandemic, cardiac surgery in the post-op state, valvular disease, hypertension, and structural heart diseases.

In addition, there are a number of cardiac conditions, including chronic kidney disease, sleep apnea, sepsis, pulmonary disease, metabolic disturbances, and I mentioned alcohol use already in the post-op state.

There have been a number of biological markers that have been associated with AF. Some ECG markers include prolonged PR and LVH. Some biomarkers include elevated BNP, some inflammatory markers, including IL-6 and TNF-alpha, and also Lp(a). Some imaging markers include increased left atrial size and increased LV wall thickness.

Now, there have also been a lot of studies looking at the genetics in atrial fibrillation. We know that AF tends to run in families and has high heritability. There have been a number of genome-wide association studies that have associated over 100 or 200 loci with risk for atrial fibrillation.

In addition, there are socioeconomic determinants of health that have been associated with A-fib: educational level, income level, and socioeconomic status.

So this slide summarizes the studies that we have that look at the effect of lifestyle risk factor modification or LRFM on AF. In green are risk factors that have been tested in randomized trials for AF, with evidence supporting reduction in AF with interventions for obesity, low physical activity, hypertension, alcohol abstinence, and amiodarone, beta-blockers, or pericardiotomy for post-op AF. In red are observational studies that support better glucose control, treatment of sleep apnea, and surgical reduction of left atrial size in reducing atrial fibrillation.

Accordingly, there's a focus on adding lifestyle risk factor modification, or LRFM, to optimize all modifiable risk factors as an important

pillar of AF management along with addressing stroke risk and symptom management and AF burden with rate and rhythm control.

So the guideline includes several recommendations for AF LRFM, which I hope will take off as an acronym as GDMT [guideline-directed medical therapy] has for heart failure. For primary prevention of AF in patients at increased risk of AF there's a Class 1 recommendation to address LRFM for AF targeting obesity, physical activity, alcohol consumption, smoking, diabetes, and hypertension.

For secondary prevention, once AF is manifest, we have Class 1 recommendations that are more prescriptive, based on studies, many of which arise from Professor Prash Sanders' group in Australia. There's a Class 1 recommendation that in overweight or obese patients with BMI over 27, that 10% weight loss can reduce AF symptoms, burden, recurrence, and progression to persistent AF.

There's also a Class 1 recommendation that moderate to vigorous exercise training to a target of 210 minutes per week reduces AF symptoms, burden, increases maintenance of sinus rhythm, increases functional capacity, and improves quality of life. In addition, there's a class 1 indication for cigarette smokers to quit smoking, and there's a 2b recommendation where it's reasonable to screen for sleep apnea given the high prevalence of sleep apnea in patients with AF, though the role of treatment of sleep-disordered breathing to maintain sinus rhythm is uncertain.

We also have a Class 1 recommendation for minimizing or abstaining from alcohol consumption to reduce AF recurrence and burden. This is based on studies that show increased risk of AF with alcohol, as well as for interventions, a randomized trial of alcohol abstinence and an N-of-1 trial of alcohol as a trigger of A-fib. In contrast, there's a Class 3 recommendation of no benefit on caffeine abstention, although it may reduce symptoms in patients who report caffeine as triggers or that worsens AF symptoms.

We also have Class 1 recommendations for blood pressure control based on randomized studies and advise comprehensive care. Also, use of clinical care pathways may be helpful to increase adherence.

On screening for AF, there are over 20 risk prediction models for incident AF. The most widely replicated risk prediction model for newly diagnosed AF is the CHARGE-AF score. The C2HEST risk score is also there and derived in validation in Asian cohorts. Studies and screening for AF which mostly focus on patients over 65 have used one-time ECGs or recurrent intermittent ECGs, including consumer-based devices or continuous ECG external monitors. Most do show higher AF detection with intermittent or continuous ECGs, or patients at higher predicted risk of AF. But mass population screening with smartwatch apps only rarely detects new AF. And so to be useful, risk stratification models and screening programs do need to show improvement of outcomes and cost effectiveness. They have not yet established that patients at high risk of developing AF by a validated risk score benefit from screening and interventions to improve rates of stroke, systemic embolism, and survival.

Finally, some points on the diagnosis of AF. In this day and age of multiple wearable devices that can potentially detect AF based on ECG [electrocardiography] or PPG [photoplethysmography], it's important that you lay eyes on AF to make the diagnosis. There's a Class 1 recommendation that diagnosis should be made with visual interpretation of the ECG or intracardiac signals. If the patient has been diagnosed with AF, then assessments of AF burden or detection of recurrences can be done with devices, but it's important to be certain about the diagnosis.

So thank you very much for your attention. And thanks to Dr. Jose Joglar, chair of the writing committee, and the entire writing committee, HA staff, and I also want to acknowledge the group on the left who created a slide deck that I modified for this talk. Thank you very much.

Announcer:
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