

EDITORIAL

Stature, obesity, and atrial fibrillation: Does appearance matter?

1 | EXTERNAL APPEARANCE AND AF

Observation studies showed that body weight, height, and body mass index (BMI) have significant impacts on the occurrence of atrial fibrillation (AF). It has been firstly in the Manitoba Follow-up Study identified that the obesity as a risk factor for AF. BMI is a surrogate of obesity and it has been found that every 1-unit of increment in BMI is associated with a 4% increase in risk of AF in both men and women.¹ In addition, other aspects of body habitus have also been associated with AF. Hanna et al reported the increasing stature portends a higher risk of AF in patients with left ventricular dysfunction.² A cross-sectional study through generations in Denmark showed the height was consistently a risk factor of incident AF, and a 35%-65% higher risk of AF per 10-cm increase in body height. Since then, numerous observational cohort literatures also demonstrated the similar findings.

2 | WHY EXTERNAL APPEARANCE AFFECTS THE INCIDENCE OF AF?

There are several hypotheses for the predilection of body habitus to incidence of AF. The most commonly accepted factor that reported by studies is the left atrial dimension. Left atrial dimension is a universal predictor of AF and also AF recurrence after rhythm control treatment. Larger left atrial size may harbor multiple reentrant wavelets and thus lead to a sustained AF after a trigger developed in the atrium. Once AF sustained, it could result in further electrical and structural remodeling and contribute to a subsequent left atrial enlargement, which brings to a vicious cycle. In addition to the left atrial size, obesity and higher BMI may also cause high blood pressure, sleep apnea, ventricular diastolic dysfunction, etc. Those factors also predispose to left atrial dilation and mediate the AF promotion. Our recent basic study also revealed that the obesity can contribute to left atrial fibrosis and increase catecholamine spillover, which also related to the effect of autonomic remodeling that prone to cause AF initiation and maintenance.³

3 | CAN ANTHROPOMETRIC FACTOR A MODIFIABLE RISK FOR INCIDENT AF?

In this issue of *Journal of Arrhythmia*, Johansson and colleagues reported on results from Västerbotten Intervention Programme (VIP) participants in the health examination follow-ups.⁴ This is a large population-based study cohort with more than 100,100 participants, with a total follow-up of near 1.5 million person-years, across the age between 30 and 60 years old when enrolled. Not surprisingly that height, weight, BMI, and body surface area were positively associated with the risk of incident AF in both genders.

The key point from this study is whether the changes of those anthropometric factors affect the risk of incident of AF in men and women. The height is relatively fixed in adult, but body weight can be adjusted individually. Unfortunately, in this study, the risk of incident AF was not significantly associated with the body weight changes (either gain or loss) during the past 10 years among the middle-age men or women. The possible explanations of no difference in AF incidence after gain or loss of body weight might because of the age of the study population. Some studies reported that the weight gain earlier in life (ex: 20-25 years old) affects the incident AF. As the age gets older, more confounding factors may interfere with the incidence of AF (ex: blood pressure, metabolic factors, myocardial ischemia etc). Therefore, the changes might not be that evident if we investigate the mid-life population. Second, the study sampled the body weight and AF diagnosis in a frequency of every 10 years. The fluctuation of the body weight may occur within months or years. If the follow-ups are more frequent, the result might be different. Third, medications or other AF risk factors (valvular heart disease or obstructive lung disease) may influence the result. Therefore, a more rigorous prospective follow-up design is required in the future to ascertain the effect of body weight fluctuation to AF.

4 | EXTERNAL APPEARANCE AND EFFICACY OF RHYTHM CONTROL STRATEGY

Antiarrhythmic medications and catheter ablation are important rhythm control strategies for the treatment of symptomatic AF. How about the

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effects of body weight, height, and BMI to the treatment response? It has been reported in some studies with a limited patient population.⁵ The AF recurrence after catheter ablation is higher in overweight, obese patients comparing to normal-weight controls. Recent abstract report also demonstrated that the height was independently associated with AF recurrence in patients with paroxysmal AF undergoing catheter ablation, especially in the women above 160 cm.⁵

Based on those preliminary findings, if we can predict the efficacy of rhythm control strategy from the anthropometric factors in patients with symptomatic AF, modify those factors before application of catheter ablation, we may possibly achieve a better treatment outcome. Therefore, further large population-based designs are required to provide the answer for the anthropometric factors to the efficacy in the AF patients who are going to receive rhythm control treatment.

CONFLICT OF INTEREST

The author declares that he has no conflict of interest.

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