Body adiposity estimated with CUN-BAE predicts atrial fibrillation: the SUN cohort

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Background: Obesity is widely recognised as a strong risk factor for atrial fibrillation and recent interest has focused on epicardial fat. Although body mass index is commonly used in the clinical practice, it doesn’t precisely estimate adiposity. The Clínica Universidad de Navarra-Body Adiposity Estimator (CUN-BAE) is an equation developed for body fat calculation, that has been previously associated with cardiometabolic disease. Our objective was to assess the association between body fat, as captured by the CUN-BAE index, and the incidence of atrial fibrillation in a prospective cohort.

Methods: The SUN project is a dynamic, prospective cohort of Spanish university graduates. A total of 20,136 participants, free of atrial fibrillation at baseline, were followed-up for a median time of 12 years, with a retention proportion of 91%. CUN-BAE was calculated for each participant taking into account only sex, age and body mass index. Incident cases of atrial fibrillation were confirmed by a cardiologist according to a prespecified protocol. Multivariable Cox regression models were used to estimate hazard ratios (HR) of atrial fibrillation according to calculated body fat.

Results: During follow-up, we identified 128 incident cases of atrial fibrillation. There was a strong direct association between a higher CUN-BAE index at baseline and incident atrial fibrillation during follow-up. In comparison to participants with a lower body fat category (median 21.3%), those with a higher category of body fat (median 34.8%) exhibited a significant 118% higher relative risk of incident atrial fibrillation (adjusted HR=2.18; 95% CI: 1.22, 3.90). For each 2-unit increase in the CUN-BAE index, atrial fibrillation risk significantly increased by 10%. The risk of incident atrial fibrillation remained significantly associated with adiposity even after further adjustment for obesity (body mass index ≥30 kg/m²) and in repeated measures analysis of the CUN-BAE index every other year.

Conclusions: Increased body adiposity, as captured by CUN-BAE index, was strongly and independently associated with a higher risk of atrial fibrillation in a Spanish cohort. These findings support the hypothesis that adiposity is closely related with arrhythmogenic mechanisms that could lead to atrial fibrillation and may be predicted using an equation to estimate body fat.

Figure 1

Table 1

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