THE MINIMUM LEFT ATRIUM VOLUME IS A SUPERIOR PREDICTOR OF FUTURE ATRIAL FIBRILLATION IN A LOW RISK GENERAL POPULATION: THE COPENHAGEN CITY HEART STUDY

Poster Contributions
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Background: The maximal left atrium (LA) size is a significant predictor of future atrial fibrillation (AF) however the minimal LA size, which better reflects LA function, may be superior in predicting future AF in the general population.

Methods: In a large general population study, 2,200 participants underwent a health examination with echocardiography. The maximal LA volume (LAV max) and the minimal LA volume (LAV min) were measured. Participants with known atrial fibrillation were excluded (n=48).

Results: During follow-up (median 11.0 years), 184 (9.4%) participants were diagnosed with AF. Participants who were diagnosed with AF during follow-up had both a significant larger LAV max and LAV min compared to participants without AF (LAV max: 23 mL/m² vs. 19 mL/m², p<0.0001; LAV min: 13 mL/m² vs. 9 mL/m², p<0.0001). The risk of AF increased significantly with increasing LAV max and LAV min, with a 10 % higher and 14 % higher risk per 1 mL/m² increase, respectively (LAV max: HR 1.10 (CI 1.08-1.12), p<0.001; LAV min: 1.14 (CI 1.08-1.12), p<0.001). In direct comparison, LAV min was a significantly stronger predictor of future AF than LAV max determined by a significantly higher Harrell’s C-statistics (0.70 vs. 0.65, p=0.001). After multivariable adjustment for all clinical and echocardiographic (ejection fraction (LVEF), deceleration time, left ventricular mass index, E/e’, left ventricular end-diastolic dimension) parameters, both the LAV max and the LAV min remained independent predictors of future AF (LAV max: HR 1.10 (CI 1.00-1.06), p=0.026; LAV min: 1.05 (CI 1.01-1.09), p=0.020). However, only LAV min (not LAV max) provided incremental prognostic information when added to a model already including significant predictors of AF (age, sex, BMI, eGFR, heart rate, systolic and diastolic BP, hypertension, cholesterol, diabetes, smoking status, ischemic heart disease, ischemic stroke, COPD and LVEF), determined by a significant increase in the Harrell’s C-statistics (0.85 vs 0.84, p=0.012).

Conclusion: The LAV min is not only an independent predictor of AF in the general population, but provides incremental prognostic information to well known risk factors for AF.