OXIDATIVE STRESS INCREASES THE RISK OF INCIDENT ATRIAL FIBRILLATION BY INCREASING LEFT ATRIAL SIZE

ACC Poster Contributions
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Background: Left atrial (LA) size is a powerful predictor for the development of atrial fibrillation (AF). Oxidative stress (OS) appears to be a risk factor for AF in experimental models. We hypothesized that OS increases LA size and thus increases the risk of AF.

Methods: 629 subjects (age: 63 ± 11) were enrolled in the Emory Biobank, a registry of patients undergoing cardiac catheterization. All subjects had OS measured as plasma levels of the oxidized aminothiol, cystine and all were followed for 712 ± 414 days for incident AF. A subset of 378 patients had an echocardiogram for measurement of LA size.

Results: 38 patients developed AF. Cox regression analysis of time to incident AF showed cystine (HR: 2.4, p=0.04), significant mitral regurgitation (MR) (HR: 4.1, P=0.001), and gender (HR: 3.50, p=0.009) as significant predictors after adjustment for traditional variables including left ventricular ejection fraction (LVEF).

Plasma cystine correlated with LA size (r=0.14, p =0.006). After multivariate adjustment for traditional variables, statin use, beta-blocker use, MR, and LVEF, the independent predictors of LA size were cystine (β=0.10, p=0.04), male gender (β=0.22, p<0.001), LVEF (β= -0.13, p<0.017), and hypertension (β= 0.11, p=0.02).

Conclusions: OS measured as higher plasma cystine level is associated with increased LA size and future risk of AF. This suggests that increased OS, by promoting LA remodelling predisposes to AF. Treatment of OS needs to be explored as a strategy for reducing risk of AF.

![Graph showing time to AF analysis](image-url)