Letter to the Editor

Novel biomarkers for atrial fibrillation: A recent update

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We applaud the efforts of Ramuschkat and colleagues in describing the association of L-arginine derivatives with electrocardiographic and echocardiographic variables in atrial fibrillation (AF) patients [1].

AF is the most common sustained cardiac arrhythmia and predisposes to thrombus formation. Risk assessment scores (like CHA_2DS_2-VASc and HAS-BLED) aid decision-making regarding anticoagulant therapy [2], but have modest predictive value. Identification of novel biomarkers may improve risk stratification of AF patients.

Asymmetric dimethylarginine (ADMA) and symmetric dimethylarginine (SDMA) are methylated derivatives of L-arginine that form due to oxidative damage. They interfere with nitric oxide synthesis, cause endothelial dysfunction and have been proposed to confer high cardiovascular risk. Previous research has elucidated the role of oxidative stress in the pathogenesis of AF [3]. Small trials have also reported higher levels of dimethylarginines and their relationship with adverse events in AF patients [4].

Recently, Horowitz et al. performed a prospective substudy of ARISTOTLE trial involving 5004 AF patients to analyze the association of ADMA and SDMA levels with outcomes. Over a median follow-up of 1.9 years, plasma ADMA levels were found to be associated with thromboembolic events ($p = 0.034$) and death ($p < 0.0001$). Plasma SDMA levels were significantly associated with major bleeding events and death ($p < 0.001$ for both). Moreover, incorporation of these biomarkers into risk scoring systems improved predictive value [5].

Based on these findings, L-arginine derivatives ADMA and SDMA appear to be promising biomarkers for prognostication and risk stratification of AF patients. However, further studies are required to confirm their exact role and clinical utility.

Conflict of interest

None. The authors report no relationships that could be construed as a conflict of interest.

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