

Mitral regurgitation attenuates thrombotic risk in nonrheumatic atrial fibrillation: a new CHA2DS2-VASc score risk modifier?

Van Laer SL.; Winkler KM.; Verreyen S.; Miljoen H.; Sarkozy A.; Heuten H.; Saenen J.; Van Herck P.; Van De Heyning CM.; Heidebuchel H.; Claeys MJ.

Antwerp University Hospital, Department of Cardiology, Edegem, Belgium

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Background/Introduction: Atrial fibrillation (AF) carries a thrombotic risk related to left atrial blood stasis. Many risk scores, such as the CHA2DS2-VASc score, have been developed to guide physicians in initiating anticoagulant therapy. However, the risk prediction with these models is modest at best (C-statistic = 0.6). The presence of mitral regurgitation (MR) has been shown to reduce thrombotic risk in patients with rheumatic AF. In nonrheumatic AF, direct evidence of a lower thrombotic risk in patients with MR is still controversial.

Purpose: The current study assessed the effect of MR on thrombotic risk in nonrheumatic AF patients.

Methods: The prevalence of atrial thrombosis, defined as the presence of left atrial appendage thrombus (LAAT) and/or left atrial spontaneous echo contrast (LASEC) grade >2, was determined in 686 consecutive nonrheumatic AF patients without (adequate) anticoagulation scheduled for transoesophageal echocardiography before electrical cardioversion and was related to the severity of MR adjusted for the CHA2DS2-VASc score. The independent predictors of atrial thrombosis were assessed by stepwise multiple logistic regression analysis.

Results: A total of 103 (15%) patients had severe MR, 210 (31%) had moderate MR, and 373 (54%) had no-mild MR; the median CHA2DS2-VASc score was 3.0 (IQR 2.0-4.0). Atrial thrombosis (LAAT and/or LASEC grade >2) was observed in 118 patients (17%). The prevalence of atrial thrombosis decreased with increasing MR severity: 19.9% versus 15.2% versus 11.6% for no-mild, moderate, and severe MR, respectively (p for trend = 0.03) (Figure 1). Patients with moderate and severe MR had a lower risk of atrial thrombosis than patients with no-mild MR, with adjusted odds ratios (ORs) of 0.51 (95% CI 0.31-0.84) and 0.24 (95% CI 0.11-0.49), respectively. The other independent predictors of atrial thrombosis were: the CHA2DS2-VASc score with an adjusted OR of 1.25 (95% CI 1.10-1.42), poor left ventricular ejection fraction (LVEF, <40%) with an adjusted OR of 4.08 (95% CI 2.56-6.50), and large left atrial volume index (LAVI, >37 ml/m²) with an adjusted OR of 1.90 (95% CI 1.19-3.03) (Figure 1, upper right corner). The C-statistic of the regression model increased significantly (p = 0.0003) from 0.62 to 0.75 by adding MR grade, LVEF, and LAVI to the univariate CHA2DS2-VASc score model. The protective effect of MR was present across all levels of the CHA2DS2-VASc score and the presence of moderate-severe MR in patients with an intermediate CHA2DS2-VASc score (2-3) lowered the atrial thrombotic risk to the level of patients with a low CHA2DS2-VASc score (0-1).

Conclusion: Our data show that the presence of MR attenuated the atrial thrombotic risk by more than 50% in patients with nonrheumatic AF, independent of the CHA2DS2-VASc risk score. Moderate to severe MR can therefore be considered a new risk modifier of the CHA2DS2-VASc score, which might help refine the indication of anticoagulants in AF patients.

Abstract Figure 1. Thrombotic risk per MR grade.

