Abstract: Predictors of thromboembolism in patients with atrial fibrillation and valvular heart disease according to the EHRA classification: beyond mitral stenosis and mechanical prosthetic heart valves

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Topic(s): Stroke in Atrial Fibrillation

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Background: Atrial fibrillation (AF) and valvular heart disease (VHD) often coexist. They are independent causes of mortality and morbidity, and both have been associated with risk of thromboembolic events. Historically, the definition of VHD in AF patients has been inconsistent, which led to the proposal of a new classification of AF patients with VHD: the ‘Evaluated Heartvalves, Rheumatic or Artificial’ (EHRA) valve classification, categorizing patients into: EHRA Type 1 VHD and EHRA Type 2 VHD. EHRA Type 1 VHD comprises AF patients with mitral stenosis (moderate-severe, of rheumatic origin) or a mechanical prosthetic valve replacement. EHRA Type 2 VHD includes AF patients with any other heart valve disease or a bioprosthetic valve replacement. The thromboembolic risk in this latter heterogeneous group is uncertain and, thus, identifying clinically relevant predictors of thromboembolism will facilitate more individualized risk stratification and identify high-risk subgroups, thereby, optimize prevention strategies.

Purpose: In a large nationwide cohort study, we aimed to identify clinically relevant predictors of thromboembolism in AF patients with EHRA Type 2 VHD.

Methods: We conducted a cohort study of AF patients with co-existing EHRA Type 2 VHD, identified by ICD-10 codes using record linkage between nationwide registries in Denmark from 2000 through 2018. Time-to-event analysis was applied to describe the association between EHRA Type 2 VHD and risk of thromboembolism. We used a multivariable Cox proportional hazards regression model with time since incident AF diagnosis as the underlying time axis to estimate predictors of the outcome at 5-years of follow-up. Parameters included were clinically relevant risk factors, statin therapy, antithrombotic therapy, and time since VHD diagnosis.

Results: A total of 27,254 patients with EHRA Type 2 VHD was identified. After 5 years of follow-up, the rate of thromboembolism was 3.27 per 100 person-years. History of thromboembolism (HR: 4.85, 95% CI: 4.43-5.31) and age =75 (HR: 1.97, 95% CI: 1.70-2.28) were the strongest predictors of thromboembolism, but age 65-74, female sex, vascular disease, diabetes mellitus, hyperlipidemia/hypercholesterolemia, history of bleeding, and increasing CHA2DS2-VASc score were also independent predictors [Figure].

Conclusion: Among AF patients with VHD beyond mitral stenosis and mechanical prosthetic heart valves, the rate of thromboembolism is high after 5 years of follow-up. The strongest clinically relevant predictors of thromboembolism are history of thromboembolism and age =75. Future studies examining the optimal antithrombotic prevention strategy for EHRA Type 2 VHD are encouraged.
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