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Editorial commentary: The CHA₂DS₂-VASc score and its black and white items ^{☆,☆☆}



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Use of oral anticoagulant (OAC) therapy for stroke prevention is a main aspect of management for patients with atrial fibrillation (AF). Guidelines for the management of AF indicate that OAC is usually needed in patients with at least one stroke risk factor and the CHA₂DS₂-VASc score is now the risk stratification model recommended by most guidelines worldwide [1–4]. The review article by Liao et al. provides a nice overview on important risk factors of stroke in AF patients, focusing on the component of CHA₂DS₂-VASc score [5].

There were questions raised in recent years for some of the items included in the CHA₂DS₂-VASc score, for which the clinician sometimes hesitates to provide a definite yes or no answer, or for which one may question why the definite yes, because of the marked severity of a condition related to a given item, would not result in a higher risk and would maybe deserve more than one single point. We would like to clarify some points related to these matters in daily practice.

In the CHA₂DS₂-VASc score, the C represents congestive heart failure (HF), which also includes moderate to severe left ventricular systolic dysfunction with an ejection fraction < 40%, and recent decompensated HF irrespective of ejection fraction. There is currently no evidence that risk of thromboembolic events differs between different ejection fraction categories [6]. This means that 2 patients, one awaiting heart transplantation with EF < 20% and another one with preserved ejection fraction should similarly receive one point. While palpitations are the commonest symptoms expected for a patient with AF, many AF patients have dyspnea or at least some kind of exertional shortness of breath during arrhythmia. Most of these patients actually have criteria for HF based on recent guidelines (particularly left atrial volume index > 34 mL/m² by echocardiography, plasma concentrations of BNP > 35 pg/mL and/or NT-proBNP > 125 pg/mL) [7]. Our opinion is that this should be considered 1 point for C in case the patient has no other risk factor and oral anticoagulation is debated.

Hypertension is a risk factor of AF-related ischemic stroke, but there are slight variations in the definition and predictive value across different studies [8]. Some proposed a cut-off value of systolic blood pressure more than 160 mmHg, while a broader definition including use of antihypertensive agents or a history of hypertension was used in most recent studies [9]. Of note, this results in a different definition than hypertension in the HAS-BLED score (defined as actual systolic blood pressure > 160 mm Hg), which by contrast is a modifiable bleeding risk factor.

The severity of diabetes being possibly associated with a worse risk of thromboembolic events in AF also remains a debated issue. The presence of diabetic nephropathy, neuropathy and retinopathy are all associated with a subclinical vascular disease. However, it seems that complications of diabetes are not clearly and independently associated with higher risk of embolic stroke, which should deserve a different antithrombotic management. For example, diabetic retinopathy has been related to a higher prevalence of diabetes-related target organ damage [10,11] but the presence of retinopathy in diabetes does not further increase the risk of T/E risk in AF, beyond that already produced by diabetes alone [12]. Renal failure is included as a dichotomous variable in risk prediction tools for bleeding [13,14] but is less evident in guideline-recommended risk prediction tools for IS/TE since renal impairment does not independently improve IS/TE risk prediction [15]. This suggests that we may not need to give extra weighing to diabetes-related target organ damage (e.g., retinopathy, renal impairment, vascular disease, etc) when using the CHA₂DS₂-VASc score for stroke risk stratification in AF.

A history of stroke or transient ischemic attack is also a significant independent risk factor for secondary stroke (2 points for the S item of the CHA₂DS₂-VASc score). This does not include hemorrhagic stroke, but noticeably and for now weighs similarly any identified mechanism and etiological subclassification of ischemic stroke, whether it is considered to result from large-artery atherosclerosis, small-vessel occlusion, or cardioembolism [16].

In their review, Liao et al importantly point out that the risk of AF patients is not static and that the CHA₂DS₂-VASc score of patients should be reassessed regularly [5,17]. Uncertainty persists for other putative risk factors. Not hesitating and adjudicating properly points when calculating CHA₂DS₂-VASc score in clinical practice is a prerequisite and the first step for appropriate use of oral anticoagulation and optimal stroke prevention in patients with AF.

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