Atrial Fibrillation (AF) - Clinical

A validation of the 4S-AF scheme in Spanish and French patients from the EORP-AF Long-Term General Registry

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Background: The 4S-AF scheme (Stroke risk, Symptom severity, Severity of atrial fibrillation [AF] burden, Substrate severity) has recently been described as a novel approach to in-depth characterization of AF, and included in the 2020 European Society of Cardiology guidelines for the management of AF.

Purpose: In the present study, we validated for the first time the 4S-AF scheme in the Spanish and French cohorts of the EurObservational Research Programme (EORP)-AF Long-Term General Registry.

Methods: The Spanish and French cohorts of the EORP-AF Long-Term General Registry, were merged and included. The baseline 4S-AF scheme was calculated as follows: Symptom severity (according to EHRA symptom score: 0-2 points), Severity of AF burden (according to AF type: 0-3 points), Substrate severity (according to comorbidities/cardiovascular risk factors: 0-7 points); and related to the primary management strategy (rhythm or rate control). According to the results for these 3 domains, four code colors have been defined. Patients with all domains in "green" should be managed by rhythm control. In patients with one domain in "yellow" or two domains in "green" categories, rhythm control can be attempted. On contrary, for patients with "red" color category, the 4S-AF scheme suggests a rate control strategy. All-cause mortality and the composite of ischemic stroke/transient ischemic attack/systemic embolism, major bleeding and all-cause death, were the primary endpoints. These outcomes were recorded during 1-year of follow-up.

Results: 1479 patients (36.9% females, median age of 72 [IQR 64-80] years) were included (Table 1). The median 4S-AF scheme score was 5 (IQR 4-7). The 4S-AF scheme, as continuous and as categorical, was associated with the management strategy decided for the patient (both $p < 0.001$). The predictive performances of the 4S-AF scheme for the actual management strategy were appropriate in its continuous (C-index: 0.77, 95% CI 0.75-0.80) and categorical (C-index: 0.75, 95% CI 0.72-0.78) forms (Figure 1A). Cox regression analyses showed that patients classified as "red" category in the 4S-AF scheme had higher risk of all-cause death (adjusted HR 1.75, 95% CI 1.02-2.99) and composite outcomes (adjusted HR 1.60, 95% CI 1.05-2.44) (Figure 1B). Thus, patients for who the 4S-AF scheme suggests that may be managed by rhythm control (recommended or considered) had a significantly lower risk of these events.

Conclusion: Characterization of AF by using the 4S-AF scheme may aid in identifying AF patients that would be managed by rhythm or rate control, and could also help in identifying high-risk AF patients for worse clinical outcomes in a ‘real-world’ setting.

Abstract Table 1 and Figures 1A-1B

Table 1. Baseline clinical characteristics at inclusion.

	N = 1479
Demographic	
Male sex, n (%)	933 (63.1)
Age (years), median (IQR)	72 (64-80)
AF-related conditions	
Type of AF	
First-onset/Paroxysmal	596 (40.3)
Persistent	310 (20.9)
Long-standing persistent	54 (3.6)
Permanent	500 (33.8)
Comorbidities, n (%)	
Hypertension	790 (53.4)
Diabetes mellitus	357 (24.1)
Heart failure	527 (35.6)
History of stroke/TIA/thromboembolism	200 (13.5)
Peripheral vascular disease	104 (7.0)
Renal impairment	155 (10.5)
Coronary artery disease	344 (23.3)
Hypercholesterolemia	643 (43.5)
Current smoking habit	143 (9.7)
History of previous bleeding	101 (6.8)
Concomitant malignant disease	147 (9.9)
COPD	135 (9.1)
Concomitant treatment, n (%)	
Oral anticoagulation	1330 (89.9)
Any VKA	673 (45.5)
Any DOAC	648 (43.8)
Antiarrhythmics	522 (35.3)
Digoxin	111 (7.5)
Calcium antagonist	171 (11.6)
Beta-blockers	905 (61.2)
Statins	609 (41.2)
Diuretics	717 (48.5)
Angiotensin-converting enzyme inhibitors	484 (32.7)
Angiotensin-renin blockers	316 (21.4)
Oral antidiabetics	273 (18.5)
CHA_2DS_2-VASc score, median (IQR)	3 (2-4)
HAS-BLED score, median (IQR)	1 (1-2)

COPD = chronic obstructive pulmonary disease; DOAC = direct-acting oral anticoagulant; IQR = interquartile range; TIA = transient ischemic attack; VKA = vitamin K antagonist.

Figure 1A

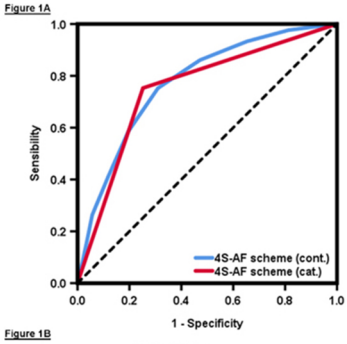

Figure 1B