Bleeding risk profile and heart failure hospitalizations in patients with atrial fibrillation according to FIB-4 index

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Introduction: Fibrosis-4 index (FIB-4 index), calculated by age, aspartate aminotransferase (AST), alanine aminotransferase (ALT), and platelet count, is a simple marker to evaluate liver fibrosis. The FIB-4 index is associated with higher all-cause mortality in patients with heart failure (HF). However, the relationship between liver stiffness and atrial fibrillation remains unclear.

Purpose: The present study explores the impact of the FIB-4 index in the bleeding risk and heart failure hospitalizations among a large cohort of AF patients.

Methods: The Fibrosis-4 index (FIB-4) was applied to 10,530 patients diagnosed with AF from our health area between January 2014 and April 2020. Patients were analyzed in three regions of the Fib-4 index based on the cutoff points (Group 1 F0 < 1.30, group 2 F1-F2: 1.30–2.67 and group 3 F3-F4: > 2.67). The outcome was a composite of major bleeding events and hospitalization for heart failure. The risk of the combined end-point was determined by competing risk regression.

Results: 4471 patients (42.5%) were included in Group 1, 5139 (48.8%) in Group 2 and 920 (7.4%) in Group 3.

During a mean follow-up of 3.78 ± 2.05 years, 1,834 patients died (17.49%), 2,359 had a heart failure hospitalization (22.42%) and 772 had a major bleeding (7.36%).

The incidence of major bleeding and heart failure hospitalizations was significantly higher amongst group 3. In the univariate analysis, group 2 and group 3 were associated with increased risk of the combined outcome (Figure 1).

Multivariate adjustment was developed including all those variables with clinical significance and those that had been associated in the univariate analysis. Group 3 was associated with higher increased risk of major bleeding and heart failure hospitalizations (sHR 1.21, 95% CI 1.05–1.39; P = 0.007), whilst Group 2 not (1.06, 95% CI 0.97–1.16; P = 0.169) in comparison with Group 1.

Conclusions: FIB4 index > 2.67 was associated with higher risk of major bleeding and heart failure hospitalizations. FIB-4 index may reflect venous congestion and it could be an useful tool for predicting HF and major bleeding events in patients with AF.

Figure 1