Is pre-diabetes a predictor of events in patients with atrial fibrillation?

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Introduction: Diabetes mellitus (DM) not only increases the probability of presenting atrial fibrillation (AF), but it is also a predictor of ischemic stroke included in scales such as CHA2DS2VASc. However, there is limited information on the association between glycated hemoglobin (HbA1c) levels and ischemic, embolic or hemorrhagic events in patients with pre-diabetes and AF.

Objectives: This study aimed to investigate whether the presence of pre-diabetes in patients with AF increases the risk of ischemic events, hemorrhagic events, myocardial infarction or death.

Methods: We used data from the CardioCHUVI-AF registry, which included 18,285 patients with AF from a Galician health area between January 2014 and December 2019. Patients with valvular AF (n=376), with loss of follow-up (n=97), without information on baseline characteristics (n=48) and without data on HbA1c (12,473) were excluded. The final cohort consisted of 5,291 patients, 2,993 were non-diabetics (56.6%) and 2,298 with known diabetes (43.4%). This final cohort was classified according to HbA1c in diabetics if HbA1c is more than 6.5% (n=1,546; 29.2%), pre-diabetics when HbA1c is between 5.7 and 6.4% (n=2,233; 42.2%) and non-diabetics if HbA1c was less than 5.7% (n=1,512; 28.6%). Competing hazards regression analysis for non-fatal events (with death as the competing event) and conventional Cox regression for mortality were performed.

Results: 2,993 non-diabetic patients with AF and HbA1c data were followed for 4.1 ± 1.6 years. The mean age was 73.0 ± 9.9 years, 47.4% were women, the mean CHA2DS2VASc score was 2.9 ± 1.4 points, the mean HASBLED score was 2.5 ± 1.2 points, and 2,407 (80.4%) patients were under treatment with oral anticoagulants. In the Kaplan Meier curves, no was observed a higher rate of events in pre-diabetes patients in comparison with patients with normal glycemia. In the multivariate analysis, after adjusting for the CHA2DS2VASc and HASBLED scales, as well as for anticoagulant therapy, it was observed that pre-diabetes was not associated with an increased risk of mortality (HR= 0.80; 95% CI, 0.60-1.08), ischemic stroke (HR= 0.99; 95% CI, 0.71-1.38), major hemorrhage (HR= 0.78; 95% CI, 0.60-1.02) or myocardial infarction (HR= 1.08; 95% CI, 0.65-1.79), compared with patients with normal glycemia.

Conclusions: In our registry, non-diabetic patients with atrial fibrillation do not have a higher risk of events when their glycated hemoglobin is in the pre-diabetes range.