4th World Congress on
Congestive Heart Failure & Angina
August 13-14, 2024 | Webinar
Volume : 15

The association of Glycemic Variability and Atrial Fibrillation and Its Prognosis

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Background: Atrial fibrillation (AF) is the most common sustained arrhythmia encountered in clinical practice and is associated with significant morbidity and mortality. In recent years, there has been growing interest in the association between glycemic variability and AF, as well as its impact on the prognosis of AF patients. Glycemic variability, characterized by fluctuations in blood glucose levels, has been recognized as an important factor in the pathophysiology of various cardiovascular diseases. Emerging evidence suggests that glycemic variability may contribute to the development and progression of AF through mechanisms involving oxidative stress, inflammation, and endothelial dysfunction. This study aimed to explore the association between glycemic variability and AF, and its implications for the prognosis of individuals with AF.

Methods: A total of 5,341 T2DM AF patients from 2014 and 2021 in our hospital were enrolled for analysis, according to age and gender, the propensity score matching was applied, and 2670 no-AF T2DM patients were included in a ratio of 2 to 1. Each individual was assessed to determine the coefficients of variability of fasting glucose (FGCV) and HbA1c variability score (HVS). The GV parameters were categorized into quartiles. Multivariate logistic regression models were set up to assess that glycemic variability was a the risk factors for AF. Multivariate Cox regression models were employed to estimate the relationship between the glycemic variability parameters and the risk of transient ischemic accident/ischemic stroke and mortality in patients with AF.

Results: The glycemic variability was higher in the AF T2DM patients than in the control group ($P<0.05$). High level of glycemic variability is an independent risk factor for AF ($P<0.05$). The medium follow-up period was 81.2 months. In Cox regression model with full adjustment, the highest quartile of FGCV was not associated with increased risk of TIA/ischemic stroke (HR: 1.02, 95% CI 0.813–1.351, $P = 0.765$), but was associated with increased risk of total mortality (HR: 1.431, 95% CI 1.123–1.729, $P< 0.001$) and non-cardiac mortality (HR: 1.391, 95% CI 1.145–1.651, pP= 0.011). The highest HVS was significantly associated with increased risk of total mortality (HR: 2.143, 95% CI 1.903–2.930, $P < 0.001$), cardiac mortality (HR: 1.502, 95% CI 1.061–2.214, $P = 0.014$) and non-cardiac mortality (HR: 2.280, 95% CI 1.828–3.142, $P < 0.001$) The Kaplan–Meier analysis showed significantly higher risk of cardiac and non-cardiac mortality according to the magnitude of GV (log-rank test, $P < 0.001$).

Conclusion: High level of glycemic variability is an independent risk factor for AF, and independently associated with the development of transient ischemic accident/ischemic stroke and mortality in patients with AF. The results may provide insights into novel therapeutic strategies for improving the management and outcomes of AF.

Biography

Yao Tan, born in October 1987, majored in cardiovascular medicine, and has rich clinical experienc.

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Abstract received : March 14, 2024 | Abstract accepted : March 16, 2024 | Abstract published : 20-08-2024