

Correlation analysis of the triglyceride glucose index and heart failure with preserved ejection fraction in essential hypertensive patients

To the editor,

We read with great interest the recently published article by Liao et al.¹ which has concluded that the triglyceride-glucose index (TyG index) strongly associates with the occurrence of heart failure with preserved ejection fraction (HFpEF) in hypertensive patients. We would like to make a comment and provide our insights on other ideas for this article.

First of all, the article lacks the necessary subgroup analysis, so the results may be affected by several confounding factors. For example, in the analysis of the association between TyG index and the incidence of major adverse cardiovascular events, the statistical results could be observed among patients without diabetes mellitus.² However, in the article of Liao et al.¹ the prevalence of patients with diabetes was not reported and there were no adjustments for diabetes in the regression analysis, which may be an important confounder to the result. What's more, a study found that the risk of major adverse cardiovascular events increased in men with TyG index, where summary hazard ratio (HR) was 1.42 with 95% confidence interval (CI) was from 1.18 to 1.71 ($p = .02$) rather than in females (HR = 1.33; 95% CI, 0.97–1.82; $p = .0776$),³ suggesting that the factor of sex may be a confounder and further sex-specific analysis may be required.

Moreover, it has been reported that TyG index has a statistically significant association with various diseases, such as hypertension,⁴ diabetes,⁵ or others can lead to heart function and structural disorders,⁶ which are all risk factors of heart failure. Thus, it is still unclear whether the TyG index is directly related to heart failure, or is a potential intermediate factor. As a result, it is necessary to further discuss the influence of these risk factors on the relationship between TyG index and the HFpEF.

From the research by Zeng et al.⁷ the area under the curve (AUC) of the TyG index to predict the incidence of congestive heart failure was 0.675, which is much smaller as compared to the $auc = 0.778$ reported in the article by Liao et al.¹ A possible explanation for this is the mean age of the population old (70.76 years) in this article, while the older adults have a greater risk of developing into diabetes,⁸ thus exaggerating the diagnostic value of the TyG index for heart failure. Additionally, the population in this article were all essential

hypertensive patients, compared to the general population in the research by Zeng et al.⁷ suggesting that the TyG index may be better in diagnosing heart failure in hypertensive patients. So it could be better to discuss these questions in the future.

AUTHOR CONTRIBUTIONS

Under the directions of Zhiwei Yan, Kaibo Mei and Qin Ling drafted the first version of the manuscript. Zhiwei Yan revised prepared the final version of the manuscript.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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