Prognostic value of carotid intima-media thickness

To the Editor,

We found the paper by Elitok et al. (1) very interesting. In the study, the authors have investigated the effect of bariatric surgery on carotid intima-media thickness (CIMT). This novel study provides the 1-year follow-up data on the effects of pronounced weight loss following bariatric surgery on surrogate measures of atherosclerosis. The current study revealed that CIMT reduction was not significant from baseline to the 6th month, whereas it became significant at the 9th month of follow-up. The 1-year results could have improved the manuscript in terms of supporting the evidence for the relationship between CIMT reduction and risk of long-term cardiovascular events.

In a systematic review and meta-analysis of the individual data from 16 studies consisting of 36.984 patients without known cardiovascular diseases (CVD) who underwent serial CIMT measurements (mean follow-up of 7 years), it was revealed that when the yearly progression rate is recalculated for various CIMT measurements (mean and maximum CIMT values of the common, bifurcated, and internal carotid arteries), there was no association between CIMT progression and the risk of future cardiovascular events (2). These findings are supported by a more recent meta-analysis of data including 31 studies consisting of 89,070 patients showing a consistent association between CIMT value and the combined endpoint of myocardial infarction, stroke, and cardiovascular death. However, there was no association between CIMT change and the risk of cardiovascular events (3). Moreover, it was reported that CIMT is not an independent factor for CVD prognosis (4). Thus, there is no obvious proof of a relationship between CIMT progression and the risk of future cardiovascular events due to various potential methodological and biological reasons. Therefore, serial CIMT measurement for CVD risk assessment is not recommended.

Previously, repeated measurement of analysis of variance or nonparametric Friedman test was the approach to examine longitudinal data in terms of temporal changes. Currently, a linear mixed model (LMM) is more often recommended due to its potential to provide more suitable data in terms of temporal changes (5, 6). Therefore, in our opinion, using LMM instead of the Friedman test might provide more information for your study, which can be included in this letter.

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References

1. Elitok A, Emet S, Bayramov F, Karaayvaz E, Türker F, Barbaros U, et al. Effect of bariatric surgery on flow-mediated dilation and carotid intima-media thickness in patients with morbid obesity: 1-year follow-up study. Anatol J Cardiol 2020; 23: 218-22.
2. Lorenz MW, Polak JF, Kavousi M, Mathiesen EB, Völzke H, Tuomainen TP, et al.; PROG-IMT Study Group. Carotid intima-media thickness progression to predict cardiovascular events in the general population (the PROG-IMT collaborative project): a meta-analysis of individual participant data. Lancet 2012; 379: 2053-62.
3. Lorenz MW, Gao L, Ziegelbauer K, Norata GD, Empana JP, Schmidtmann I, et al.; PROG-IMT study group. Predictive value for cardiovascular events of common carotid intima media thickness and its rate of change in individuals at high cardiovascular risk - Results from the PROG-IMT collaboration. PLoS One 2018; 13: e0191172.
4. Timóteo AT, Mota Carmo M, Soares C, Ferreira RC. Has carotid intima-media thickness prognostic impact in patients with high cardiovascular risk? A long-term cohort study. Echocardiography 2019; 36: 125-32.
5. Harrell FE. Regression Modeling Strategies: With Applications to Linear Models, Logistic and Ordinal Regression, and Survival Analysis. 2nd ed. New York: Springer; 2015.
6. Hendriksen JM, Geersing GJ, Moons KG, de Groot JA. Diagnostic and prognostic prediction models. J Thromb Haemost 2013; 11 Suppl 1: 129-41.

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