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Specific Considerations in the Interpretation of the Relationship between Relative Handgrip Strength and Lipid Profile in Type 2 Diabetes

I read with great interest an elegant research paper ("Relative Handgrip Strength Positively Correlates with Low-Density Lipoprotein Cholesterol in Patients with Type 2 Diabetes: A Cross-Sectional Study") by Okada et al. that was published online on April 23, 2024 [1]. The authors reported a significant positive correlation between the serum levels of low-density lipoprotein cholesterol (LDL-C) and relative handgrip strength (RHGS). In this study, there are many points that strengthen it.

The authors attributed the muscle weakness to the sarcopenia that is commonly reported in T2D, while using lipid-lowering agents, particularly statins, can cause muscle weakness, thereby reducing the RHGS. In the Okada et al.'s study, 61.1% of the patients were currently using lipid lowering agents.

The authors measured the RHGS in both hands, but they did not specify that the RHGS of the left hand is less than that of the right hand. Furthermore, females showed a lower RHGS compared with males.

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The significant level of the positive correlation between LDL-C and RHGS is < 0.001, while the correct value is 0.0035, i.e., < 0.01. This finding is contrary to other studies that found an inverse association with LDL-C [2, 3]. The interpretation of this discrepancy is related to the normal levels of LDL-C as the median value was 104.8 mg/dL, which is related to the adverse effects of lipid lowering agents (e.g., using statins); and those who are not using statins, may have a higher LDL-C level and RHGS [4]. Moreover, a significant inverse correlation between triglyceride level and RHGS was reported in many studies, while the Okada study reported a non-significantly positive correlation ($r = 0.130$).

The authors expressed the RHGS per body mass index, but they did not adjust or normalize the values of the RHGS according to the body mass index, as such an adjustment would show the difference between males and females [4].

In Table 1, the authors mentioned the physical activity of the patients, but there is no evidence about their nutritional status, which is an important determinant of handgrip strength [5].

I would like to thank the authors for their study rationale, as it highlights important issues about the relationship between the RHGS and dyslipidemia that necessitate further research to settle their associations.

Conflict of interest

The author declare no conflict of interest.

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