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LETTER TO THE EDITOR

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Could fat distribution have a greater influence than BMI on the antibody titre after SARS-CoV-2 vaccine?

TO THE EDITOR: The impact of excessive adiposity on the development of antibody titre after mRNA-based SARS-CoV-2 vaccines remains an open question (1). Individuals with obesity, and particularly those with predominant visceral adipose tissue (VAT) accumulation, are at significant risk of developing a more severe case of COVID-19 (2). The excess of VAT is considered the main culprit in inflammatory diseases linked to obesity, and it is an indicator of increased ectopic fat, which might hinder and delay the immune response, as highlighted in COVID-19 (2). To date, the available clinical evidence demonstrates that the efficacy of mRNA vaccines against SARS-CoV-2 does not differ among individuals with obesity compared with those without obesity (1).

We read, with great interest, the article by Yamamoto et al. (3), which showed that anti-SARS-CoV-2 spike immunoglobin G (IgG) antibody levels after two doses of BNT162b2 vaccine tended to decrease significantly with increasing BMI in men, but not in women, among whom no significant difference was found between the different categories of BMI.

Furthermore, a recent study of more than 600 healthy Japanese cohorts (4) revealed sufficient antibody response after two doses of BNT162b2 vaccination, which was related to younger age, female sex, and adverse reactions after the second dose, suggesting that adverse reactions after the second dose might reflect acquisition of the immunity. Notably, no significant relationship was observed between BMI and post-vaccine antibody titre (4).

The authors based their analysis on anthropometric data reported by the participants via questionnaire, and this may cause a bias, as body weight and height are often under- or overestimated (3,4).

However, these analyses (3,4) focused on the definition of obesity assessed through BMI, despite it not being the best indicator of adiposity, as it does not take into account the amount and distribution of body fat, which can differ among people with the same BMI. In this regard, Asian populations have higher abdominal obesity for the same BMI, with a less-developed subcutaneous fat compartment compared with Caucasian counterparts, resulting in a preferential distribution of fat in abdominal visceral stores.

We recently showed a lower antibody response and a more significant decline over time after two doses of BNT162b2 mRNA vaccine in infection-naïve participants, without a previous SARS-CoV-2 infection, when classifying our population by abdominal obesity phenotype as defined by waist circumference cutoffs (5). Analysis of our data by multivariable linear regression showed evidence of interaction between abdominal obesity and SARS-CoV-2 infection, regardless of sex, age, or smoking, whereas no interaction was evinced using BMI classes in the same regression model (5).

As of today, people with obesity and particularly those with abdominal obesity should be encouraged to undergo vaccination with any one of the currently available vaccines. Therefore, we hope that the aforementioned comments can be taken into consideration to stimulate readers' critical sense and awareness.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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