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Diabetes & Metabolic Syndrome: Clinical Research & Reviews 14 (2020) 777

Contents lists available at ScienceDirect

Diabetes & Metabolic Syndrome: Clinical Research & Reviews

journal homepage: www.elsevier.com/locate/dsx

Response to 'Vitamin D concentrations and COVID-19 infection in UK Biobank'

Dear Editor,

We read with great interest the study by Hastie and colleagues [1], which found there was not an independent association between vitamin D concentration and COVID-19. They suggest that vitamin D deficiency is unlikely to be an underlying mechanism for the disproportional incidence in ethnic minorities. Their study used data from 348,598 participants recruited by UK Biobank, whose baseline 25(OH)D was recorded between 2006 and 2010. This was linked with the results of COVID-19 tests of 1474 participants.

Although the vitamin D was measured over a decade ago, the authors suggest that it remains representative of the current level as concentrations 'generally track over time'. However, they cited the findings of a study [2] that measured intraindividual variation in 25(OH)D over a 5-year period in post-menopausal women. This assumption may not be valid for this 14-year difference with both male and female participants. Furthermore, we note that only 1474 out of the 348,598 were tested for COVID-19. It is possible that some COVID-19 positive participants were not tested due to having no or mild symptoms and reservation of tests for inpatients. This would result in an under-estimation of COVID-19 infection.

The authors conclude that vitamin D levels are unlikely to 'assess risk' of COVID-19 in clinical practice. Whilst deficiency may not be associated with risk of incidence, it may still be associated with risk of severity which this paper does not examine. For example, a study showed that vitamin D was an independent predictor of mortality in patients with pneumonia [3]. Additionally, the authors infer that vitamin D supplements are unlikely to be therapeutically effective. We wish to highlight that there have been many well-established studies supporting the anti-viral effects of vitamin D [4], through mechanisms affecting physical barriers and the modulation of innate and adaptive immunity [5]. Indeed, a large meta-analysis has shown a therapeutic role of its supplementation in acute respiratory tract infection [6], and we argue that similar interventional trials are required for COVID-19.

We thank the authors for sharing their findings, but for now, the association between vitamin D and COVID-19 remains unclear. Future observational studies should involve large cohorts with low selection bias, and short times between 25(OH)D measurement and COVID-19 testing. Similar to this study, the statistical analysis should also account for confounding factors. Additionally, well-designed randomised controlled trials may reveal the efficacy of vitamin D as an adjuvant therapy. Indeed, this is a low cost and readily available treatment, making it an appealing prospect.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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29 May 2020

https://doi.org/10.1016/j.dsx.2020.05.049
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