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LETTER TO THE EDITOR

Reply to: A key role for vitamin D binding protein in COVID-19?

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Dear Editor,

We appreciate the interest in our article investigating the association of vitamin D level with severity and outcome of COVID-19 [1]. Our primary goal was to evaluate the prognostic role of serum vitamin D concentration on the extent of lung involvement and final outcome in patients with COVID-19.

In patients with COVID-19 pneumonia, a hyperinflammatory syndrome with activation of the complements system may be involved in progression of the disease to acute respiratory distress syndrome (ARDS). The C5a–C5aR axis plays an important role in progression of the disease to ARDS. Vitamin D binding protein (DBP) release augments the chemotactic effect of complement derived C5a and C5a des Arg, leading to a cascade of inflammatory responses [2]. 25(OH)D3 and 1,25(OH)2D3 compete for the same binding site on DBP and so may inhibit this chemotaxis [3]. A recent study by Batur et al. [4] suggested that variations in the prevalence of COVID-19 and its mortality rates among countries may be explained by vitamin D metabolism differed by the DBP polymorphism of rs7041 and rs4588. Although our study did not investigate the role of DBP in COVID-19 severity, our results and those of other studies in other countries, such as Weir et al. in USA (5), confirmed the role of vitamin D level in COVID-19 severity and outcomes. These studies provided new evidence for clinicians and health policy makers to consider vitamin D supplementation for the improvement of clinical outcome of patients with COVID-19. However, currently we need to expand our knowledge on the mechanism of the association of vitamin D and COVID-19 especially by studying the role of DBP. Hence, further studies in this field are highly recommended.

References

1. Abrishami A, Dalili N, Torbati PM, Asgari R, Arab-Ahmadi M, Behnam B et al (2020) Possible association of vitamin D status with lung involvement and outcome in patients with COVID-19: a retrospective study. Eur J Nutr. https://doi.org/10.1007/s00394-020-02411-0
2. Raymond M-A, Désormeaux A, Labelle A, Soulez M, Soulez G, Langelier Y et al (2005) Endothelial stress induces the release of vitamin D-binding protein, a novel growth factor. BiochemBiophys Res Commun 338(3):1374–1382
3. Speeckaert MM, Speeckaert R, Delanghe JR (2020) Vitamin D binding protein in COVID-19. Clin Med 20(5):E136–E137
4. KarciogluBatur L, Hekim N (2020) The role of DBP gene polymorphisms in the prevalence of new coronavirus disease 2019 infection and mortality rate. J Med Virol. https://doi.org/10.1002/jmv.26409
5. Weir EK, Thenappan T, Bhargava M, Chen Y (2020) Does vitamin D deficiency increase the severity of COVID-19? Clin Med 20:e107–e108

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