Hormones (2021) 20:207–208
https://doi.org/10.1007/s42000-020-00231-9

COMMENTARY

Vitamin D and COVID-19

George Trovas[1] · Symeon Tournis[1]

Received: 23 June 2020 / Accepted: 6 July 2020 / Published online: 14 July 2020

Abstract

Epidemiological data report that several countries with a high prevalence of hypovitaminosis D may have increased susceptibility to complications and mortality due to COVID-19 infection. These reports, however, have limitations given that they derive from observational studies. Nevertheless, while awaiting more robust data, clinicians should treat patients with vitamin D deficiency irrespective of whether or not it has a link with respiratory infections.

Keywords Vitamin D · COVID-19 · Bone and muscle health · Clinical trials

The impact of vitamin D on COVID-19 infection, hospitalization, and mortality rate has been much discussed recently, not only in the scientific community but also in the mainstream media. A large body of data, including known COVID-19 immunity pathways, vitamin D physiology and its effects on the immune system, and population-based studies linking vitamin D levels to respiratory infections, suggests that vitamin D deficiency is likely to be a significant factor in COVID-19 transmission and complications [1].

Observational data comparing outcomes from various countries report inverse association links between vitamin D levels and the severity of COVID-19 disease and resultant mortality, pointing to a possible effect of vitamin D on the immune response to infection [2]. Specifically, Spain and Italy have high rates of vitamin D deficiency and also some of the highest COVID-19 infection and mortality rates worldwide. Conversely, the Nordic countries have higher vitamin D levels as a result of formal food fortification and also lower rates of COVID-19 infection and mortality.

However, other data question such a link. For example, Greece, a country with a prevalence of vitamin D deficiency (25(OH)D < 20 ng/ml) of at least 50% over a wide age range [3], is among the countries with the lowest numbers of confirmed COVID-19 cases and deaths, while Brazil, a country on the equator, has high rates of both cases and mortality from COVID-19.

Clearly, observational data have many confounding factors and, until now, there have been no randomized controlled studies (RCTs) to test whether there is a specific role of vitamin D in COVID-19 susceptibility and complications.

The global community should await the results of well-powered randomized controlled trials showing the effect of vitamin D on COVID-19 clinical outcomes. Meanwhile, although there is currently not sufficient evidence to support recommending vitamin D to reduce the risk of COVID-19, given that many people are spending more time indoors and may not get the vitamin D they need for bone and muscle health, we consider that vitamin D–deficient patients, and, in fact, the population in general, should be advised to take a daily supplement containing 800–1000 UI: it can confer a benefit and certainly not do any harm.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

✉ George Trovas
trovas1@otenet.gr

[1] Laboratory for Research of the Musculoskeletal System, "Th. Garofalidis" Medical School, National and Kapodistrian University of Athens, 10 Athinas Str., 14561 Athens, Greece

References

1. Martineau AR, Jolliffe DA, Hooper RL et al (2017) Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. BMJ 356: i6583

2. Daneshkhah A, Agrawal V, Eshein A et al (2020) The possible role of vitamin D in suppressing cytokine storm and associated mortality in COVID-19 patients, medRxiv preprint. https://doi.org/10.1101/2020.04.08.20058578
3. Grigoriou EV, Trovas G, Papaioannou N (2018) Serum 25-hydroxyvitamin D status, quantitative ultrasound parameters, and their determinants in Greek population. Arch Osteoporos 13(1):111