Association of Pre-Infection Vitamin D status with COVID-19 severity

Ifra Eeman Ahmed, Azhar Ali, Abdullah Humayun

Madam, Vitamin D is a fat-soluble vitamin, well known for regulating serum calcium and phosphate levels by stimulating intestinal absorption, renal reabsorption of calcium in the distal convoluted tubule and bone calcium mobilization. As an important modulator of innate immunity, reduced vitamin D levels have been linked to the development of different autoimmune disorders and increased susceptibility to infectious diseases[1]. Vitamin D has a pivotal role in inhibiting cytokine storm and inflammation reactions[1]. It is reported that the active form of vitamin D enhances the antimicrobial effect of macrophages and monocytes[1]. It is also involved in the stimulation and production of lymphocyte function and it also supports the differentiation and function of natural killer cells[1].

Since December 2019, COVID-19 caused by SARS-CoV-2 has spread all over the globe causing unparalleled health, social and economic crises. Initially, an association of vitamin D status with SARS-CoV-2 infection was observed which has sparked debate over the advantages of vitamin D in preventing and treating this disease. A greater risk of COVID-19 was substantially related with low serum 25-(OH) Vitamin D levels. It also suggests that the patients with Vitamin D deficiency had poorer outcomes leading to comparatively longer stays in the Intensive Care Unit (ICU), and had a higher fatality rate[2].

There is much debate about whether infections caused the low D3 levels or whether a deficiency adversely affects the immune system. Recently, Dror et. al.[3] discussed that among hospitalized COVID-19 patients, pre-infection vitamin D insufficiency was linked to increased disease severity and mortality in hospitalized COVID-19 patients[3]. This study presents convincing evidence that low D3 levels are a predictor rather than a side effect of infection[3]. The study by Lorenz et. al. suggested that 50ng/mL of 25-(OH)D3 might potentially result in a mortality rate close to zero[4].

According to a systematic review and meta-analysis of the incidence of vitamin D deficiency among South Asian adults, about seven out of ten individuals in this region are vitamin D deficient[5]. It would be reasonable to encourage daily sun exposure and fortification of food items with vitamin D. Recommendation for vitamin D screening and vitamin D supplementation would be a good initiative to maintain optimum levels of calcitriol. With this letter to the editor, we address the medical community of Pakistan to urgently consider spreading awareness for maintaining optimum vitamin D levels as a prophylactic measure to avoid poorer COVID-19 clinical disease course and mortality.

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2nd Year MBBS Student, Federal Medical College, Islamabad, Pakistan.
Correspondence: Ifra Eeman Ahmed. Email: abbasiifra55@gmail.com
ORCID ID. 0000-0002-9222-7661

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