Prognostic Utility of Baseline 25-Hydroxy Vitamin D Levels in Hospitalised COVID-19 Patients: Hope or Hype?

Sir,

Coronavirus disease 2019 (COVID-19) has caused more than 745,000 deaths globally.¹ A vital challenge for healthcare providers amidst the pandemic is the absence of scientific evidence signifying effective pharmacologic interventions for prevention and cure.² The 25-Hydroxy Vitamin D (25-OH-D) has been widely utilised as a potential strategy to prevent or treat COVID-19 disease. A review of randomised controlled trials from 2007 to 2020 has shown protective role of 25-OH-D against acute respiratory infections; however, considerable limitations and heterogeneity exist.³

The "sunny" vitamin's deficiency affects over one billion people worldwide, and a population-based study from Pakistan reported 53.5% deficiency along with 31.2% insufficiency.⁴ Currently, there is no clear evidence especially from Pakistan, with a high prevalence of deficiency, on the prognostic utility of 25-OH-D. After approval from the Ethical Review Committee (ERC#2020-5168-14099), we retrospectively reviewed the data from the electronic health records of polymerase chain reaction-proven COVID-19 patients, to evaluate the association of 25-OH-D with severity of infection and mortality from March to August, 2020.

Table I: Distribution of age and 25-hydroxy vitamin D levels in the two studygroups.

	Severe cases (n=4)	Non-severe cases (n=7)	p-value*
Age	65 +/- 3.6	44.3 +/- 17.9	0.05
(mean +/- SD)	years	years	
25-OH-vitamin D	19.5 (13.9-21.3)	18.7 (15-45)	0.788
(median IQR)	ng/ml	ng/ml	
	Non-survivors (n=2)	Survivors (n=9)	
Age	64.5 +/- 4.5	49 +/- 18	0.27
(mean +/- SD)	years	years	
25-OH-vitamin D	21.1 (20.8-21.1)	18.1 (13.8-37.5)	0.582
(median IQR)	ng/ml	ng/ml	
*p-value <0.05 considered significant.			

The 25-OH-D test was undertaken within 24 hours of admission in only 11/239 COVID-19 in-patients (4.7%), with a male predominance (n=7). Taking 30 ng/ml as the cut off for 25-OH-D deficiency, 8 (73%) were found deficient. Furthermore, the data was split into two categories based on severity and survival. The two quantitative variables *i.e.* age and 25-OH-D levels were compared between groups using t-test and Mann-Whitney U-test, respectively, as depicted in Table I. Increasing age was the only variable associated with severity of infection (p = 0.05); whereas, no significant differences were noted for 25-OH-D in the two categories.

From a laboratory test requisition perspective, only 4.7% had baseline test requested amongst 239 COVID-19 cases. This further reflects that the clinicians were also not inclined towards its evaluation, in spite of the fact that Vitamin D metabolites have long been known to support innate immunity and antiviral effector mechanisms.

Despite limitations of a small subgroup with available 25-OH-D levels, this study concludes that contrary to the claims that 25-OH-D deficiency is associated with disease progression, including some recommending potentially toxic doses, no significant utility of 25-OH-D exists. However, large-scale longitudinal studies are required to establish its role; it is too early to recommend its inclusion in the standard biochemical workup of COVID-19 cases.

CONFLICT OF INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

SA: Devised the idea, analysed the data, literature review and penned the letter.

LJ: Involved in letter writing review of literature and analyses.

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