Investigation of the prevalence of vitamin D deficiency in hospitalized Covid-19 patients and its association with disease severity, outcome, and mortality

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Abstract

Background: In this study, we aimed to assess the prevalence of vitamin D deficiency in hospitalized Covid-19 patients and demonstrate its association with severity and mortality of the disease. Methods: This observational study at Ziaeian Hospital, Tehran, Iran. Of all confirmed Covid-19 patients who were admitted to this hospital 276 patients were enrolled in this study and divided into two groups; 145 patients in group1 with a serum 25(OH)D level >20 ng/ml and 131 patients in group 2 with a serum 25 (OH)D level =<20 ng/ml. The severity, outcome, and mortality of Covid-19 disease were compared in these two groups, based on chest CT scans findings, laboratory data, and patient' vital signs on admission day, and the duration of hospitalization, requirement to ICU admission, need for intubation, and mortality. Results: The prevalence of vitamin D deficiency was 22.1 %, and vitamin D insufficiency by definition of serum 25(OH)D levels 12-20 ng/ml was 25.4%. Despite, an increase in serum levels of CPK, Ferritin, LDH, CRP, D-dimer, AST, and ALT, there was not any significant relationship between serum level of 25(OH)D with laboratory tests, chest CT scan scores, and patient's vital signs on admission day by univariate and multivariate analysis. The odds of incidence of ICU admission, mechanical ventilation, and mortality were higher in group 2 which was not statistically significant by univariate and multivariate analysis, but the mortality was significantly higher in subgroup 2 by multivariate regression analysis. Conclusions: This study showed that vitamin D deficiency was associated with a higher mortality rate, while could not show any significant association between serum 25(OH)D levels with the incidence of ICU admission, need for mechanical ventilation, and length of hospital stay, also we did not find any significant relationship with laboratory tests, radiologic findings, and patient's vital signs on admission day.

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Vitamin D — Percent vs Mortality of patients, paneled by Sufficiency and Defficiency