Bone and Mineral Metabolism
VITAMIN D, DIABETES AND ENERGY METABOLISM

Low Levels of Vitamin D Are Associated With Markers of Immuno-Inflammatory Response and Clinical Outcome in Covid-19

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High prevalence of vitamin D (VD) deficiency in COVID-19 patients was reported by several studies. Since VD is a key regulating factor of both innate and adaptive immunity, it was hypothesized that VD deficiency may predispose to SARS-CoV-2 infection and lower levels of VD could be related to increased COVID-19 severity and worse outcome risks. However, to date, only few studies partially investigated the relationship between VD and inflammatory and immune response and clinical features of COVID-19 patients. The aim of this study is to evaluate the influence of vitamin D levels on COVID-19 inflammatory activity, clinical pattern and disease severity. Patients admitted to San Raffaele University Hospital for COVID-19 from February 2020 were enrolled in this study. We excluded patients with comorbidities and therapies influencing VD metabolism. 25OH-Vitamin D levels were evaluated at admission in hospital and VD insufficiency and deficiency were defined as VD level below 30 ng/mL and 20 ng/mL, respectively. A total of 88 patients were included in the study. Median (IQR) VD levels were 16.3 (11.2–23.9) ng/mL. VD insufficiency and deficiency were found in 88.6% and in 68.2% of patients, respectively. Linear regression analyses showed a positive correlation between VD levels and PaO2/FiO2 ratio (p=0.019; r=0.254), and negative correlations between VD levels and Neutrophil/Lymphocyte (N/L) ratio (p=0.04; r=-0.19), C-reactive protein (CRP) levels (p=0.047; r=-0.18) and Interleukin 6 (IL-6) levels (p=0.04; r=-0.22). Lower VD levels were found in patients affected by severe disease (needs for high-flow oxygen therapy and/or noninvasive mechanical ventilation, admitted to ICU and/or dead) than non-severe patients (13.4 ng/mL [10.37–19.15] vs 18.45 ng/mL [15.15–24.95]; p=0.007). Moreover, patients with VD deficiency had higher levels of CRP, LDH, IL-6, IFN-gamma (p=0.04, p=0.01, p=0.002, p=0.04; respectively), lower PaO2/FiO2 and higher N/L ratios (p=0.008, p=0.004; respectively), and higher rate of severe disease (65% vs 39%, p=0.02), as compared to VD non-deficient ones. In conclusion, low VD levels are widely found in hospitalized COVID-19 and may lead to increased disease severity through an excessive immune-inflammatory response. Our data suggest that reaching adequate vitamin D levels in risky population may contribute to prevention of COVID-19 occurrence and severity.

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Obesity, Dyslipidemia, Diabetes, and Vitamin D Levels

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Context: There are several studies that refer to an association between vitamin D levels and the prevalence of atherogenic dyslipidemia and diabetes 2, however these studies present different non-conclusive results. **Methods:** A cross-sectional study was carried out with a propositional sequential sample of 110 patients at Rio and San Juan Hospital Riobamba -Ecuador 2020. The sample was divided into three groups according to BMI and vitamin D levels; 25 hydroxycalciferol, by cluster analysis, the final groups G1(56), G2(59), and G3(16) had a similar BMI average of 27 kg/m2, and significant differences in the average of vitamin D: G1 = 13.6, G2 = 24.5 and G3 = 45.3 ng/dl. **Results:** The prevalence of dyslipidemia increased gradually as the average level of vitamin D of the group increased as follows: G1 = 12.5%, G2 = 18.6%, G3 = 18.8%, the same behavior was observed in the prevalence of type 2 diabetes per analysis group: G1 = 30.4%, G2 = 45.8% and G3 = 50%. The differences found in the prevalence of atherogenic dyslipidemia and diabetes 2 were not statistically significant p> 0.05. **Conclusion:** in the group of patients studied and divided by cluster analysis into three groups with different levels of vitamin D, there were no statistically significant differences with respect to the prevalence of atherogenic dyslipidemia and diabetes 2.

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Secondary Hyperparathyroidism, Bone Density and Bone Turnover After Bariatric Surgery: Differences Between Roux-en-Y Gastric Bypass and Sleeve Gastrectomy

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Introduction: Although malabsorption of nutrients and changes in intestinal adipokines and gut hormones induced by Roux-en-Y gastric bypass (RYGB) are considerably different than sleeve gastrectomy (SG), little is known about the consequences on bone health resulted by these two procedures. **Objective:** to compare the prevalence of secondary hyperparathyroidism (SHPT), bone mineral density (BMD), bone turnover markers and serum leptin in obese