



Contribution on the topic of hypovitaminosis D in chronic hepatitis C

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Dear Editor:

We read with great interest the article by Melo-Villar, *et al.*¹ The authors demonstrated that there was an increased incidence of hypovitaminosis D in chronic hepatitis C patients. The authors also indicated that vitamin D deficiency has been associated with multiple diseases, especially with infections. We agree with the authors that there is a high prevalence of vitamin D deficiency associated with the following infections: mycobacterial, influenza, hepatitis B and C, and human immunodeficiency virus (HIV). Additionally, vitamin D has been used as a treatment for tuberculosis.²⁻⁴

The clinical impact of vitamin D in infectious disease is associated with its role in immune system modulation. Vitamin D boosts innate immunity by modulating production of anti-microbial peptides and affecting cytokine response. Nearly all cells display a specific vitamin D receptor (VDR), including B and T lymphocytes (both resting and activated), monocytes, and dendritic cells. Vitamin D exerts its immunomodulatory activity on both mononuclear and polynuclear cell lines through its effects on the VDR. Vitamin D tends to favour a mononuclear phenotype, increasing VDR expression on monocytes and macrophages. Circulating vitamin D levels have a direct influence on macrophages, increase their "oxidative burst" potential (maturation and production of cytokines, acid phosphatase and hydrogen peroxide), and prevent excessive expression of inflammatory cytokines.² Hypovitaminosis D has been shown to be associated with high interleukin-6 levels in HIV infected patients.³ Furthermore, vitamin D also facilitates both neutrophil motility and phagocyte function.²

Vitamin D requires 25-hydroxylation in the liver and subsequent 1-hydroxylation in the kidney to become biologically active. VDR polymorphisms have been associated with liver diseases such as primary biliary cirrhosis, autoimmune hepatitis, alcohol-related hepatocarcinoma, and hepatitis B virus.⁵

Furthermore, hypovitaminosis D in infections may cause malnutrition in patients with infectious diseases.

The use of vitamin D supplementation in the treatment of infectious diseases has been considered. However, further investigations examining serum interleukin levels, VDR polymorphisms, and malnutrition status in patients with certain infections are needed to support this treatment strategy.

ABBREVIATIONS

- **HIV:** human immunodeficiency virus.
- **VDR:** vitamin D receptor.

DISCLOSURE, CONFLICT OF INTEREST

None.

REFERENCES

1. Melo-Villar L, Lampe E, de Almeida AJ, Scalioni LDP, Lewis-Ximenez LL, Miguel JC, Romero-Gomez M. Hypovitaminosis D and its relation to demographic and laboratory data among hepatitis C patients. *Ann Hepatol* 2014; 14: 457-63.
2. Youssef DA, Miller CW, El-Abbassi AM, Cutchins DC, Cutchins C, Grant WB, Peiris AN. Antimicrobial implications of vitamin D. *Dermato-endocrinology* 2011; 3: 220-9.
3. Allavena C, Delpierre C, Cuzin L, Rey D, Viget N, Bernard J, Raffi F. High frequency of vitamin D deficiency in HIV-in-

fects patients: effects of HIV-related factors and antiretroviral drugs. *J Antimicrobial Chemotherapy* 2012; 67: 2222-30.

4. Banda R, Mhemedi B, Allain TJ. Prevalence of vitamin D deficiency in adult tuberculosis patients at a central hospital in Malawi [Short communication]. *The International Journal of Tuberculosis and Lung Disease* 2011; 15: 408-10.
5. Barchetta I, Carotti S, Labbadia G, Gentilucci UV, Muda AO, Angelico F, Cavallo MG. Liver vitamin D receptor, CYP2R1, and CYP27A1 expression: relationship with liver histology

and vitamin D3 levels in patients with nonalcoholic steatohepatitis or hepatitis C virus. *Hepatology* 2012; 56: 2180-7.

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