



The 1st International Neuroinflammation Congress and 1st Student Festival of Neuroscience

Shefa Neuroscience Research Center, Tehran, Iran, 11-13 April, 2017

The Neuroscience Journal of Shefaye Khatam

Volume 5, No. 2, Suppl 2

Oral Presentation

The Effects of Vitamin D Supplementation on the T cell Compartment in Multiple Sclerosis

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Published: 11 April, 2017

Abstract

Multiple sclerosis (MS) is a complex neurological disease and its prevalence is about 2 million in the world. Neuroinflammation plays a key role in MS. Vitamins are essential nutrients that have effective role on immune system including activation of lymphocyte and differentiation of T-helper cell. Vitamin D is a micronutrient that is effective on immune function. Deficiency of Vitamin D is a risk factor for progression of MS and studies indicated that 90% of patients with MS have low level of vitamin D. studies showed that there is a relationship between regulatory T cell (Treg) function and Vitamin D status. T lymphocyte and macrophage population have vitamin D receptors especially immature immune cells of the thymus and mature CD8⁺ lymphocyte. Tregs can be stimulated by Vitamin D supplementation and increased the frequency of Tregs. Also transforming growth factor (TGFβ-1) interleukin 4 (IL-4) can be stimulated by vitamin D that can suppress inflammatory T cell activity. Generally function of vitamin D related to differentiation and activation status of CD4⁺ T cells. Therefore, attention on other vitamins can be used as an alternative treatment for immune system dysfunction. In this review the effect of vitamin D supplementation and vitamin A on T cell in multiple sclerosis were focused. Previous studies indicate that proportion IL10⁺ CD4⁺ were increased and the ratio between IFN- and IL4⁺ CD4⁺ T cell decreased by vitamin D. It has been indicated that high dose vitamin D supplementation did not effect on lymphocyte with a regulatory phenotype and the proportion of CD4⁺ Treg remained unaffected. According to studies, we suggested that other vitamins especially vitamin A can be effective on T cell. T cells that are instigated by Myelin Oligodendrocyte Glycoprotein (MOG) can be reduced by vitamin A.

Keywords: Multiple sclerosis, Vitamin D, Regulatory T cell

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