

The Role of Vitamin D Supplementation in Augmenting IFN- γ Production in Response to Mycobacterium Tuberculosis Infection: A Randomized Controlled Trial

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Abstract : Vitamin D supports the immune system fight TB by inhibiting Interferon-gamma (IFN- γ) and lowering host inflammation. The purpose of the research was to see if giving the vitamin D supplements to TB patients affected their prognosis. A randomized placebo control study of 200 TB patients was performed among which 106 received 400,000 IU of injectable vitamin D3 and 94 received placebo for 2 doses. Assessment was carried out at the end of every month for 3 months. IFN- γ responses to whole blood stimulation generated by the Mycobacterium tuberculosis sonicate (MTBs) antigen and early secreted and T cell activated 6 kDa (ESAT6) were assessed at 0 and 12 weeks. The statistical analysis used descriptive statistics (mean and standard deviation), Friedman's test and Fisher's test. The vitamin D group gained significantly more weight (+3.90 pounds) and had less persistent lung disease on imaging (1.33 zones vs. 1.84 zones). They also had a 50% decrease in cavity size. Additionally, patients with low baseline serum concentrations of 25-(OH)D had a significant increase in MTB-induced IFN- γ production after taking vitamin D supplements. Vitamin D administration in large amounts can hasten the recovery of TB patients. The findings point is a therapeutically useful activity of Vitamin D's in the management for tuberculosis.

Keywords : tuberculosis, vitamin D, interferon gamma, protein, infection

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