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The effect of vitamin D supplementations on TNF-A, serum Hs-CRP and NF-κB in patients with ulcerative colitis: A randomized, double-blind, placebo-controlled pilot study

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Background & Objective: Inflammatory bowel disease (IBD), including Crohn's disease (CD) and ulcerative colitis (UC) is an immune-mediated chronic intestinal disorder with an unknown etiology. The overexpression of proinflammatory factors such as proinflammatory cytokines is believed to have pivotal role in development of UC. Among them tumor necrosis factor alpha (TNF-α) is identified as a key cytokine. Also it has indicated that the levels of expression of NF-κB reflect development and progression of UC. It has no cure until now and the purposes of treatments are to alleviate signs, lengthening remission and improvement in quality of life in these patients. Different mechanisms for the effects of vitamin D on inherent and acquired immune systems are supposed to reduce inflammation, promote immunological tolerance and increase the intestinal epithelial integrity. Thus this study was designed to determine the effects of vitamin D supplementation on TNF-α, serum hs-CRP and NF-κB in patients with UC.

Materials & Methods: In this randomized, double-blind, placebo-controlled study, 50 patients with UC were divided into two groups which the case group received two pearls of vitamin D (2000IU) once/day for 12 weeks and the control group received one placebo capsule and one pearl of vitamin D (1000IU) per day. Serum inflammatory markers, serum hs-CRP and NF-κB were assessed at baseline and the end of the study. Dietary intake and physical activity of patients is assessed by a valid questionnaire. Anthropometric and diet measurements were assessed in this study. The SPSS was used for data analysis.

Results: In this study, 24 patients in case group and 22 in control group. Among 50 participants completed the intervention. At the beginning of study, no significant differences were seen in baseline variables between two groups. At the end of 12 weeks there were no significant differences in serum hs-CRP, TNF-α between the case and control group after adjustment for confounders. The level of NF-κB in both groups increased, but this increase in the low dose group was statistically significant at the end of the study comparing to the beginning (P value=0.006).

Conclusion: Supplementation with 2000IU vitamin D daily for 12 weeks made no changes in serum hs-CRP. Serum TNF-α, remained with no change in both groups after adjustment. We recommend supplementation of vitamin D with appropriate dosage in all patients with UC in order to take advantage of its great therapeutic benefits.

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