OP 5 Vitamin D3 might protect against inflammation in migraine: post hoc analysis of a randomized clinical trial

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Background: Although the exact mechanism involved in migraine pathogenesis remained uncertain, different researches have been developed to address the role of neuro-inflammation. Thus, due to anti-inflammatory effects of vitamin D3, we aimed to explore the effects of supplementation with this vitamin on serum levels of pro/anti-inflammatory markers in migraineurs.
Methods: This placebo-controlled, double blind study included 80 episodic migraineurs who randomly assigned into two equal groups to receive either daily dose of vitamin D3 2000 IU or placebo for 12 weeks. Serum levels of interleukin (IL) -10, IL-6, inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (Cox-2) were assessed at baseline and after the trial using ELISA method.

Results: Using ANCOVA adjusted for baseline levels and confounding variables, it was found that serum levels of IL-10 and Cox-2 did not significantly differ between groups after the experiment; whereas. iNOS serum level was significantly reduced in the intervention group (106.06U/L) comparing to the controls (156.18U/L P<0.001).Also, the patients receiving vitamin D3 yielded a marginally-significant lower IL-6 serum concentration (76.43ng/L) compared to placebo (93.10ng/L) (P:0.055).The Pearson correlation analysis indicated significant negative correlations between changes in serum 25-hydroxy-vitamin D and both IL-6 changes (r=−0.327, P:0.004) and iNOS changes (r=−0.278, P:0.016).

Conclusion: Based on the results of this study, we found that 2000 IU/day vitamin D3 supplementation for 12-week might reduce neuro-inflammation in episodic migraine. It was also revealed that elevation in serum 25-hydroxy-vitamin D levels accompanied decreases in IL-6 and iNOS levels throughout the trial. However, more studies are required to confirm these findings.