Abstract


The effects of vitamin E supplementation on endometrial thickness, and gene expression of vascular endothelial growth factor and inflammatory cytokines among women with implantation failure.

Hashemi Z, Sharifi N, Khani B, Aghadavod E, Asemi Z.

Research Center for Biochemistry and Nutrition in Metabolic Diseases, Kashan University of Medical Sciences, Kashan, Iran; Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.

OBJECTIVE: Data on the effects of vitamin E supplementation on endometrial thickness, and gene expression of vascular endothelial growth factor (VEGF) and inflammatory cytokines among women with implantation failure are limited. This research was performed to determine the effects of vitamin E supplementation on endometrial thickness, and gene expression of VEGF and inflammatory cytokines among women with implantation failure.

METHODS: A randomized clinical trial was done among 40 women with implantation failure aged 18-37 years old. Participants were randomly divided into two groups: group A (n = 20) received 400-IU vitamin E supplements and group B (n = 20) received placebo for 12 weeks. Fasting blood samples were taken at baseline and after the 12-week treatment to determine biomarkers of oxidative stress, and gene expression of VEGF and inflammatory cytokines.

RESULTS: After the 12-week intervention, compared with the placebo, women with implantation failure who consumed vitamin E supplements had significantly increased serum vitamin E levels (+ 18.6 ± 15.0 vs. -1.5 ± 1.0 nmol/mL, p < 0.001) and endometrial thickness (+ 1.1 ± 0.9 vs. -0.5 ± 0.3 mm, p = 0.01), and significantly decreased plasma malondialdehyde (MDA) concentrations (-0.4 ± 0.3 vs. + 0.4 ± 0.3 µmol/L, p < 0.004). In addition, results of RT-PCR demonstrated that compared with the placebo, vitamin E intake downregulated gene expression of low-density lipoprotein receptor (LDLR) (p = 0.008), interleukin-1 (IL-1) (p = 0.02) and tumor necrosis factor alpha (TNF-α) (p = 0.007) in peripheral blood mononuclear cells of women with implantation failure.

CONCLUSION: Overall, vitamin E supplementation for 12 weeks among women with implantation failure had beneficial effects on endometrial thickness, MDA values, and gene expression of LDLR, IL-1 and TNF-α.

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