

Efficacies of vitamin D and omega-3 polyunsaturated fatty acidson experimental endometriosis.

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Abstract

OBJECTIVE:

The aim of this study was to investigate the effects of 1,25-dihydroxyvitamin-D3 (vitamin D) and omega-3 polyunsaturated fatty acids (omega-3 PUFA) on experimentally induced endometriosis in a rat model.

MATERIALS AND METHODS:

A prospective, single-blind, randomized, controlled experimental study was performed on 30 Wistar female rats. Endometriosis was surgically induced by implanting endometrial tissue on the abdominal peritoneum. Four weeks later, a second laparotomy was performed to assess pre-treatment implant volumes and cytokine levels. The rats were randomized into three groups: vitamin D group (42 µg/kg/day), omega-3PUFA group (450 mg/kg/day), and control group (saline 0.1 mL/rat/day). These treatments were administered for 4 weeks. At the end of treatment, a third laparotomy was performed for the assessment of cytokine levels, implant volumes (post-treatment) and implants were totally excised for histopathologic examination. Pre- and post-treatment volumes, cytokine levels within the groups, as well as stromal and glandular tissues between the groups were compared.

RESULTS:

The mean post-treatment volume was statistically significantly reduced in the omega-3 PUFA group (p=0.02) and the level of the interleukin-6 (IL-6), tumor necrosis factor alpha (TNF-α), vascular endothelial growth factor (VEGF) in the peritoneal fluid were significantly decreased at the end of treatment in the omega-3 PUFA group (p=0.02, p=0.03, and p=0.03, respectively). In the vitamin D group, only IL-6 levels were significantly decreased. In the histopathologic examination, the glandular tissue and stromal tissue scores of the implants were significant lower in the omega-3 PUFA group (p=0.03 and p=0.02).

CONCLUSION:

Omega-3 PUFA caused significant regression of endometriotic implants. Vitamin D has not been as effective as omega-3 PUFA on endometriosis.