ORIGINAL ARTICLE

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Effect of Endurance Training on Tumor Tissue IL-2 Cytokine Levels in Breast Cancer Bearing Mice

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Abstract

Introduction :The goal of this study was assessing the prophylactic effect and adjuvant therapy of exercise on cytokines involved in anti-angiogenesis in estrogen-dependent breast cancer. Breast cancer is the most common cancer among women, in this type of cancer which often includes a type of carcinoma, epithelial cells lining the breast ducts or Lobulus are suffering from a malignant proliferation. The physical activity used an adjuvant to improve the quality of life in those who are suffering from cancer .Most of the studies have concentrated on the effects of exercise on quality of life, strength, muscular endurance and performance indicators for cancer patients, only a few studies have examined the cellular and molecular mechanisms of exercise on inflammation and have noted the tumor metastasis.

Method: In this experimental study, 20 Balb/C female mice were collected and randomly were put into 2 groups of 10 teeth, Rest - Tumor - Exercise (TE), the Rest - Tumor - Rest (TR). After environmental orientation, and estrogen-dependent MC4-L2 cancer cells were injected to them. Then, one group of mice performed a 6weeks period endurance exercise 5days per week. Tumor volume was measured by a digital caliper weekly. Finally, the mice were dead; tumor tissue was removed and Tumor sample was homogenized and levels of cytokines were measured and quantified using ELISA.

Results: Based on the results of t-test in both variables, the growth of tumor volume in the group (TE) compared to group (TR) had a significant decrease (p= 0.0001), and the concentration of IL-2 in tumor tissue (TE) than group (TR) showed a significant increase (p= 0.013). The Pearson correlation between tumor size and levels of IL-2 in tumor tissue (TE), there was a significant inverse relationship (p= 0.002, r=-00.8)

Conclusion: Endurance exercise reduces the changes in levels of cytokines, according to the reducing inflammation in the tissue and tumor volume in endurance exercise group which is in the same level with IL-2, exercise can therapy or cure along with other methods presented. Increasing of anti-angiogenic cytokines such as IL-2 is effective in reducing tumor volume in athletic group. The exercise can be used as an adjunct therapy along with other methods.

Keywords: Estrogen Receptor Dependent Cancer, Endurance Training, Interleukin-2 (IL-2), Balb/C mice.