ORIGINAL ARTICLE

Iranian Quarterly Journal of Breast Disease 2018; 11(1):7.

Changes in Monocyte Populations Following Acute Aerobic Exercise in Breast Cancer Survivors

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[DOR: 20.1001.1.17359406.1397.11.1.4.0]

Abstract

Introduction: Exercise is now strongly recommended for breast cancer patients to improve their overall health and quality of life. Monocytes play an important role in the cancer immune system and a better understanding of how acute exercise alters the monocyte subsets would aid in exercise prescription.

Methods: Ten breast cancer survivors (age: 59 ± 7.1) who completed their primary cancer treatment within the previous year were evaluated in this study. Using flow cytometry, monocyte subset percentages were evaluated before, immediately after, and 1 hour after 45 minutes of acute, intermittent exercise. Exercise intensity was 60% of peak wattage obtained from a cardiopulmonary exercise test.

Results: The percentage of $CD14^+$ monocytes and $CD14^+CD16^-$ monocyte subsets changed significantly across the trial (p= 0.016 and p = 0.016, respectively), with a small, non-significant increase immediately after exercise ($CD14^+$: 9%, p= 0.314; $CD14^+CD16^-$: 5%, p= 0.594) followed by a larger significant decrease 1 hour after exercise relative to baseline ($CD14^+$: -26%, p= 0.015; $CD14^+CD16^-$: -28%, p= 0.021). $CD14^+CD16^+$ subpopulation showed a tendency to change across the trial but this did not quite reach significance (p= 0.097).

Conclusion: These findings suggest that acute intermittent exercise mobilizes $CD14^+$ monocytes and $CD14^+CD16^-$ monocyte subsets in breast cancer survivors in a manner that is comparable to previous reports in healthy individuals. Further studies are warranted to determine the functionality of the mobilized monocytes and the effects of exercise training.

Keywords: Exercise, Breast Cancer, Monocyte, Immune System