E4 cancer survivors show better fall and other functional status outcomes after receiving exercise intervention

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INTRODUCTION

• Behavioral and cognitive changes are common negative side effects of cancer treatment.
• Women with cancer are significantly more likely to experience a fall compared to women without cancer, placing them at higher risk for fall-related complications.
• Not all patients experience the same symptom burden of cancer treatment, suggesting individual susceptibility and involvement of genetic risk factors.
• Apolipoprotein (apo) E4 is a major genetic risk factor for developing age-related cognitive decline, Alzheimer’s disease, trauma-related cognitive injury, and cardiovascular disease.
• Exercise appears to have a greater protective effect against cognitive decline in E4 carriers.

AIM

In this study, we examine the role of E4 in cancer- and cancer treatment-related cognitive impairments and behavioral alteration and in response to exercise intervention strategies.

Here we test the hypothesis that E4 carriers are disproportionately affected by cancer-and radiation-related cognitive impairments and behavioral alterations, but experience greater benefits from exercise interventions than non-E4 carriers.

MATERIAL & METHODS

• Secondary data analysis from a three-group, single-blind, parallel design, randomized controlled trial of fall prevention exercise in 133 female cancer survivors aged 50-75 years old (ClinicalTrials.gov NCT01635413).
• Participants were at least 3 months past cancer treatment and were assigned to one of the following groups:
  1) Placebo consisting of seated stretching exercises.
  2) Strength training.
  3) Tai chi.
• ApoE genotype was assessed by PCR. Physical functional status, falls, and quality of life were assessed using surveys questionnaires.

SUMMARY AND CONCLUSIONS

• Fall events occurred across many individual participants, rather than a subset of fall-prone participants.
• E4 carriers at baseline were no more likely to have suffered a recent fall than non-E4 carriers.
• Exercise intervention may be particularly valuable in cancer survivors with E4.
• Exercise intervention appears to improve mood and functional outcomes across apoE genotypes.
• Further study is required to better understand potential subgroup differences in response to exercise intervention based on apoE genotype.
• ApoE genotype may predict side effects from cancer treatment and responsiveness to intervention strategies aimed at improving quality of life.

REFERENCES


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