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TITLE: "Hippocampal and Cognitive Function, Exercise, and Ovarian Cancer: A Pilot Study"

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13. SUPPLEMENTARY NOTES
n/a

14. ABSTRACT

In this application, we propose to address this problem by focusing primarily on a single post-chemotherapy complaint in a single cancer: problems with memory in patients with ovarian cancer. We focus on this problem for three reasons: 1) according to the Ovarian Cancer National Alliance, memory problems are among the most frequently cited by patients; 2) by narrowly targeting our inquiry, we will avoid the "noise" in the data associated with different treatment regimens and correspondingly different cognitive complaints and; 3) there are decades of neuroscience research, some of it from our group, indicating that memory impairment, such as the kind reported in the context of chemotherapy, is mediated primarily by a region of the brain called the hippocampus. In this application, we propose to investigate the possibility that standard chemotherapy regimen used to treat ovarian cancer leads to memory impairment because it arrests the normal processes of neurogenesis, the growth of new nerve cells, in this brain region. In addition, because a growing body of research studies shows that physical exercise leads to improvement in memory and learning and that exercise targets the same brain regions responsible for chemotherapy-induced memory problems, we propose to conduct a pilot study of an intervention to increase patients' physical activity to test whether this will slow this effect of chemotherapy on nerve cell growth in the hippocampus and subsequently offset memory decline.

15. SUBJECT TERMS

Nothing listed

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"Hippocampal and Cognitive Function, Exercise, and Ovarian Cancer: A Pilot Study"
Proposal Log Number OC130386,
Award Number W81XWH-14-1-0236
HRPO Log Number A-18125
Reporting Period: 8/1/14 – 7/31/15

1 INTRODUCTION:

In this application, we propose to address this problem by focusing primarily on a single post-chemotherapy complaint in a single cancer: problems with memory in patients with ovarian cancer. We focus on this problem for three reasons: 1) according to the Ovarian Cancer National Alliance, memory problems are among the most frequently cited by patients; 2) by narrowly targeting our inquiry, we will avoid the "noise" in the data associated with different treatment regimens and correspondingly different cognitive complaints and; 3) there are decades of neuroscience research, some of it from our group, indicating that memory impairment, such as the kind reported in the context of chemotherapy, is mediated primarily by a region of the brain called the hippocampus. In this application, we propose to investigate the possibility that standard chemotherapy regimen used to treat ovarian cancer leads to memory impairment because it arrests the normal processes of neurogenesis, the growth of new nerve cells, in this brain region. In addition, because a growing body of research studies shows that physical exercise leads to improvement in memory and learning and that exercise targets the same brain regions responsible for chemotherapy-induced memory problems, we propose to conduct a pilot study of an intervention to increase patients' physical activity to test whether this will slow this effect of chemotherapy on nerve cell growth in the hippocampus and subsequently offset memory decline.

2 KEYWORDS:

Physical activity interventions, ovarian cancer treatment, chemotherapy-induced cognitive dysfunction

3 ACCOMPLISHMENTS:

Major Goals/Objectives:

1. Approval by CUMC Herbert Irving Comprehensive Cancer Center (HICCC) Protocol Review and Monitoring Committee
   Date of Completion: 4/17/14 (100% completed)

1A. Approval of HICCC protocol materials by DoD HRPO; Respond to DoD HRPO questions
   100% completed

2. Approval by New York State Psychiatric Institute (NYSPI) Institutional Review Board
   Date of Completion: 5/15/15 (100% completed)

2A. Approval of NYSPI IRB materials by DoD HRPO; Respond to DoD HRPO questions
   Date of Completion: June 1, 2015 (100% completed)

3. Training research assistant "coach" in patient recruitment, retention, delivery of walking intervention
   Date of Completion: July 1, 2015 (100% completed)

4. Training research assistant in administration and scoring of neuropsychology tests
   Date of Completion: July 1, 2015 (100% completed)

5. Training research assistant in image analysis
   Date of Completion: July 1, 2015 (100% completed)

6. Recruiting 21 ovarian cancer patients 4-6 weeks post-surgery
   August 1, 2016: 5% completed

7. Pre- and post-intervention neuropsychology and imaging data collection and scoring
   August 1, 2016: 5% completed

8. Delivering the interventions to the two treatment groups

August 1, 2016: 5% completed

9. Data analysis
   August 1, 2016: 5% completed
10. Post-Analysis: Submission of findings to national meetings, proposal to DoD or NIH for definitive study (if appropriate)
    August 1, 2016: 0% completed

What was accomplished under these goals?

This is a study to assess the feasibility of recruiting ovarian cancer patients in a pilot study to assess the impact of increasing physical activity on neuropsychological and brain imaging outcomes. The principle finding to date is that due to changing treatment protocols, it is extremely difficult to recruit patients into the study. To date, we have screened 739 post-operative patients and have recruited only 1. With the exception of 4 patients, all others failed to meet inclusion/exclusion criteria. Of the 4 who met criteria, only one agreed to participate.

What opportunities for training and professional development has the project provided?

Nothing to report

How were the results disseminated to communities of interest?

Nothing to report

What do you plan to do during the next reporting period to accomplish the goals?

We have expanded our potential pool of patients to those with endometrial and uterine cancers in the hope that we will be able to recruit more patients.

IMPACT:

What was the impact on the development of the principal discipline(s) of the project?

Nothing to report

What was the impact on other disciplines?

Nothing to report

What was the impact on technology transfer?

Nothing to report

What was the impact on society beyond science and technology?

Nothing to report

CHANGES/PROBLEMS:

Changes in approach and reasons for change

To increase recruitment, we have opened enrollment to endometrial and uterine cancer patients.

Actual or anticipated problems or delays and actions or plans to resolve them

As this is a feasibility study, we have encountered significant problems with recruitment, due in large part to changes in treatment protocols.

Changes that had a significant impact on expenditures

Nothing to report

Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

IRB approval to recruit endometrial and uterine cancer patients: January 16, 2016
IRB approval to recruit patients receiving both chemotherapy and radiotherapy: May 27, 2016

Significant changes in use or care of human subjects

IRB approval to recruit endometrial and uterine cancer patients: January 16, 2016
IRB approval to recruit patients receiving both chemotherapy and radiotherapy: May 27, 2016

Significant changes in use or care of vertebrate animals.

Nothing to report

Significant changes in use of biohazards and/or select agents

Nothing to report

PRODUCTS:

Publications, conference papers, and presentations:

Journal publications.

Nothing to report

Books or other non-periodical, one-time publications.

Nothing to report

Other publications, conference papers, and presentations.

Nothing to report

Website(s) or other Internet site(s)

Nothing to report

Technologies or techniques

Nothing to report

Inventions, patent applications, and/or licenses

Nothing to report

Other Products

Nothing to report

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS:

What individuals have worked on the project?

Name:	***Richard Sloan, PhD***
Project Role:	*Principal Investigator*
Researcher Identifier (e.g. ORCID ID):	*n/a*
Nearest person month worked:	*1*
Contribution to Project:	*Dr. Sloan is responsible for all aspects of the study including recruitment of patients, oversight of the activity-increasing program, and data analysis.*
Funding Support:	*Columbia University internal funds*
Name:	***Scott Small, MD***
Project Role:	*Co-Investigator*
Researcher Identifier (e.g. ORCID ID):	*n/a*
Nearest person month worked:	*1*
Contribution to Project:	*Dr. Small supervises all aspects of the imaging within the proposed project and supervises the half-time Research Assistant in scoring the imaging data.*
Funding Support:	*Columbia University internal funds*
Name:	***Adam Brickman, PhD***
Project Role:	*Co-Investigator*
Researcher Identifier (e.g. ORCID ID):	*n/a*

Nearest person month worked:	*1*
Contribution to Project:	*Dr. Brickman will oversee the neuropsychological evaluation of participants in the study, including training study personnel on task administration, scoring, quality assurance, and data entry.*
Funding Support:	*Columbia University internal funds*
Name:	***Jason Wright, MD***
Project Role:	*Co-Investigator*
Researcher Identifier (e.g. ORCID ID):	*n/a*
Nearest person month worked:	*1*
Contribution to Project:	*Dr. Wright will be responsible for patient recruitment as well as medical oversight for patients recruited to the study.*
Funding Support:	*Columbia University internal funds*
Name:	***Jose Henriquez-Rivera***
Project Role:	*Technician B*
Researcher Identifier (e.g. ORCID ID):	*n/a*
Nearest person month worked:	*1*
Contribution to Project:	*Mr. Henriquez-Rivera is the study "coach" and his responsibilities include patient recruitment, retention, delivery of walking intervention.*
Funding Support:	

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Nothing to report

What other organizations were involved as partners?

Nothing to report

SPECIAL REPORTING REQUIREMENTS:

n/a

APPENDICES:

n/a