Descriptive Study of Cognitive Disturbances in Older Adult Breast Cancer Survivors

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Disclosures

- Study team:
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- Learner objectives:
  - Identify at least two biological and/or functional factors that relate to and impact cognitive function in older adult breast cancer survivors.
  - Discuss potential interventions for people experiencing cognitive impairment following chemotherapy
- The PI nor any member of the team have any conflicts of interest to declare related to this study.
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Purpose

- Breast cancer continues to be the number one cause of cancer in women over 50, with a median age of diagnosis at 61. (ACS, 2013)
- Treatment advances have led to a significant increase in the number of breast cancer survivors: survival rates range from 88% at 5 years to 78% after 15 years post diagnosis.
- Cognitive disturbance, “chemobrain”, is a commonly heard complaint among many breast cancer survivors.
- In older patients, the likelihood of cognitive disturbances are even greater. (Ahles, 2010)
- Purpose of this study was to examine how factors, both biological and functional relate to cognitive function in older breast cancer survivors who report persistent cognitive impairment, 12-36 months after completing their chemotherapy regimen.

American Cancer Society. *Breast Cancer Facts & Figures 2013-2014.* Atlanta: American Cancer Society, Inc. 2013

Ahles, TA, Saykin AJ, McDonald BC, et al. Longitudinal assessment of cognitive changes associated with adjuvant treatment for breast cancer: impact of age and cognitive reserve. *J Clinc Oncol.* 2010;28(29):4434-4440.

Research Question/Hypothesis

- What cognitive impairments are breast cancer survivors reporting?
- How closely do perceived cognitive impairments correlate to other measures of cognitive functioning?
- What compensatory strategies are breast cancer patients reporting?

Background

- Aging and chemotherapy impact neuronal health by altering sleep patterns, regional blood flow, and evoking inflammatory-oxidative stress pathways.
- Most breast cancer survivors experience cognitive disturbances during treatment.
- While many improve upon treatment termination, up to 25% may experience persistent cognitive decline 1-year post treatment.
- Discrepancies between perceived and measurable impairment may occur when compensatory strategies are viewed by the woman as requiring more time and effort to complete a task and perceived as a decline in function.

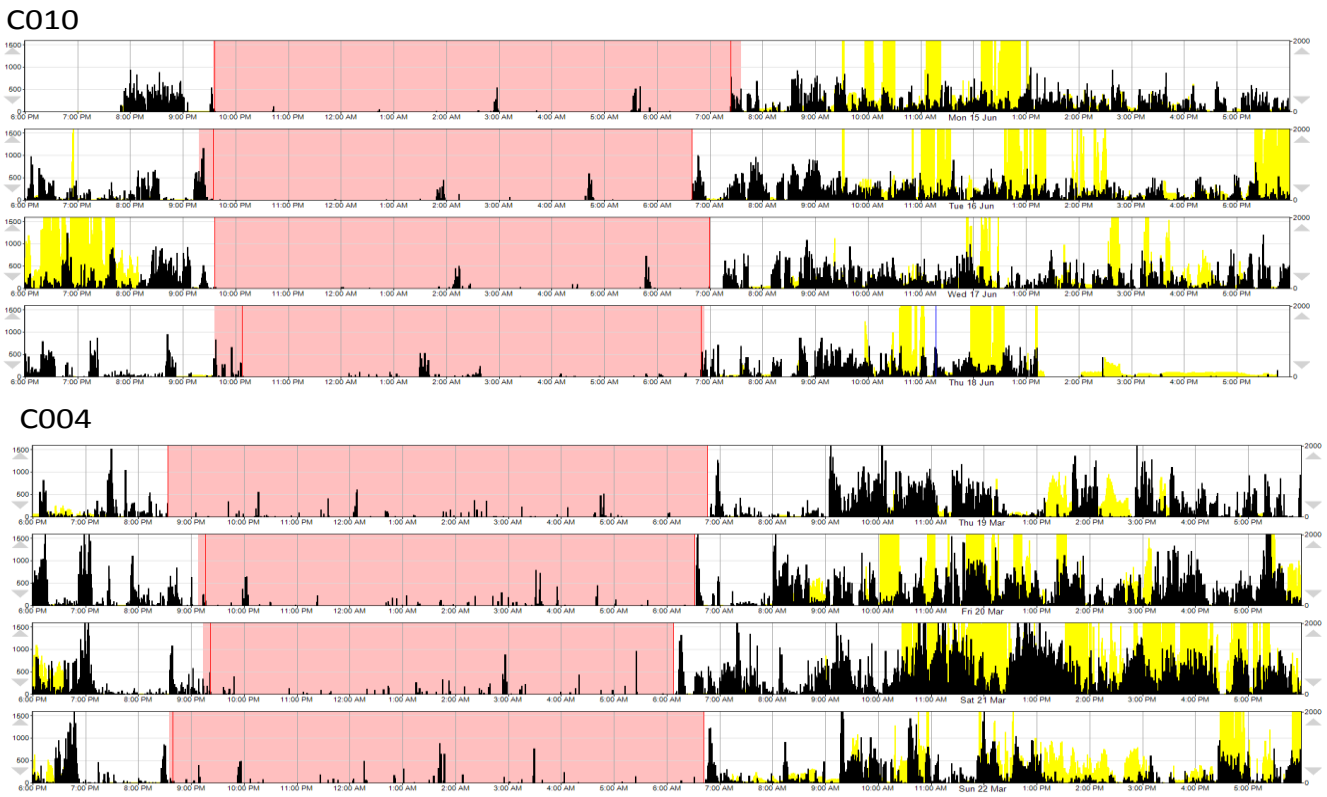
Methods

- Sample: 13 breast cancer survivors aged 50+ who had received chemotherapy >12 months ago and <36 months.
- Procedures:
  - Home: 4 day journal on sleep and cognition pre and post breast cancer, questionnaires on sleep and cognition, wrist actigraphy for 4 days.
  - Lab: Memory Consolidation Protocol including behavioral measures of memory function, EEG, cerebral oxygenation and blood draws for inflammation, oxidative stress and neuroprotective factors.

Results

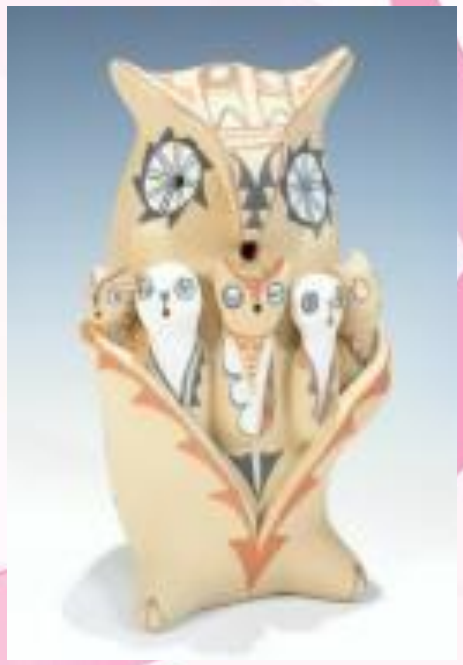
- Demographics: average age 65, range: 52-84
- Participants were asked to wear the actigraph for four days starting in the evening of the first day. They received a sleep log to record the time they went to bed and woke up.
- Only two participants said they had trouble sleeping before cancer. Many of them have had trouble sleeping since their diagnosis and treatment.

Examples of actigraph data



Journals

- Asked to write 20 minutes/day for 4 days.
- Prompts:
  - Day 1: Tell the story of what your sleep was like before breast cancer.
  - Day 2: Tell the story of what your sleep has been like since breast cancer.
  - Day 3: Tell the story of what your thinking and memory were like before breast cancer.
  - Day 4: Tell the story of what your thinking and memory have been like since breast cancer.



The story of thinking

- Many women felt that their memories and cognitive abilities were really good before cancer..
  - “Before my cancer and chemotherapy I had a great memory, I knew all the technical information for my job and many co-workers would come to me for help because I could remember everything without looking it up”.
  - “Before chemo I never had to write things down like grocery lists. I just remembered what I needed. I never lost things either, like car keys or where I parked my car!”

The story of thinking

- All women noted changes in cognitive processes after treatment. Frequently noted challenges include:
  - Word finding: “It feels just like a big blank in my head” (when trying to think of the right word). “Names are really hard!”, “Once I tried to introduce my sister and looked at her and forgot her name—my sister!!”, “It takes me longer just to tell a joke or a story because of word-finding”.
  - Focusing on task is difficult: “I have a hard time reading because it is difficult to keep the characters straight”, “Interruptions create havoc. My concentration is bad!”

Thinking (cont.)

- Multi-tasking exacerbates the problem:
  - “I no longer felt like I knew the answers and I couldn’t multi-task”—”It made me feel worthless and stupid”.
- Forgetting things:
  - “I had to start making lists and I lose things now, car keys, my car!”
  - “I am more hesitant about doing things now”
  - “I would misplace new orders that were faxed. It got so bad, I was afraid of losing my job”.
  - “I have bought two books twice”.
  - “I am afraid I am going to forget something important like putting gas in my car and get stranded somewhere really scary”.

Why is this different from normal aging?

- Cognitive functioning can be seen as a balance between stressors both biological and emotional/mental and cognitive reserves such as behavioral adaptations.
- Behavioral adaptations may work fine until overwhelmed by fatigue, multiple tasks and emotional stressors.
- “The daughter who had the baby in November is deaf and is married to a police officer who works odd shifts. So I had to be her ‘ears’ at times when she first had the baby…I was tired from the chemo, but knew I had to be alert enough to wake up when the baby woke me up. I wasn’t sleeping well because I had to sleep on the couch”.

More to come….

- The results of this study will help to develop a larger, prospective study aimed at:
  - refining the risk factors for an imbalance between cognitive reserve and stressors.
  - Identifying interventions to help women cope, adapt and improve cognitive reserve and functioning.