Exploring the Relationship between Omega-3 Index Levels and Cancer-Related Cognitive Impairment among Women with Breast Cancer

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BACKGROUND

- Cancer-related perceived cognitive impairment (**PCI**) is a common survivorship problem affecting at least 35% of breast cancer survivors.
- PCI can be extremely distressing and may profoundly impact quality of life, feasibility of returning to work, and social reintegration.
- Symptoms can include difficulty with short-term memory, attention or concentration, processing speed, and executive function
- No readily available biomarkers that can identify survivors at higher risk for these symptoms.
- Decreased omega-3 fatty acid levels have been associated with increased levels of inflammatory markers and diminished cognitive function and brain volume in other populations.
- No study to date has evaluated the relationship between Omega-3 levels with PCI in the cancer survivorship setting.**

METHODS

- We collected finger-spot blood samples from 39 participants who were part of our cognitive rehabilitation program for PCI.
- These samples were analyzed for Omega-3 fatty acid index [expressed as a percent of total erythrocyte fatty acids including EPA and DHA].
- PROMIS Applied Cognition – General concerns (**Gen Concerns**) and Cognitive Abilities (**Cog Ability**) Short Forms were completed prior to the rehabilitation intervention.
 - Both instruments include 8 items and have been validated for use in cancer patients.
 - PROMIS GEN Concerns assesses troubling cognitive changes such as thought formation and attention. (Higher scores indicate worse cognitive function).
 - PROMIS Cog Ability assesses concentration and memory. (Higher scores indicate better cognitive function).

Patient Demographics (n=39)

Age	Stage of Breast Cancer	Omega Characteristics	
Mean: 51.6 (± 12.13)	I	16 (42.1%)	Current DHA/EPA Use
	II	18 (47.4%)	Omega 3 Index
	III	3 (7.9%)	
	Unknown	2 (5.2%)	

RESULTS

- Modest but statistically significant correlation between low Omega-3 fatty acid indices and participants' report of worse cognitive function on both the PROMIS Gen Concerns and PROMIS Cog Abilities

	PROMIS Gen Concern	PROMIS Cog Ability	
Omega3 index	-0.34	0.34	Spearman correlation
	0.037	0.041	p-value

CONCLUSIONS

- If the above correlation is validated with a larger sample, this simple test may be able to be used as an inexpensive biomarker for PCI.
- Increased intake of foods rich in Omega 3 is postulated to benefit cognitive function in other populations but has yet to be examined for the management of PCI in the cancer survivorship setting.
- Optimization of the Omega 3 index could represent a safe, low-cost intervention that can be disseminated broadly.

References

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