

Cognitive assessment in oncology patients reveals age-sensitive attentional impairment and deficits to a neurogenesis sensitive measure: An unmet need?

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- The Methodological Question Being Addressed

Can cognitive testing in oncology patients identify clinically relevant cognitive impairments?

- Introduction

Cognitive impairments, often referred to as “chemobrain” or “chemofog”, are increasingly recognized in cancer patients during and after treatment. The cognitive deficits to domains such as executive function, attention, information processing, short and long term memory, could be temporary or long lasting. The mechanisms by which cancer treatments are affecting cognition are not fully understood. Further, evidence is emerging that the effects of such treatments (radiotherapy, chemotherapy) can also disrupt adult hippocampal neurogenesis, an important phenomenon for cognitive integrity. Adult hippocampal neurogenesis is believed to be involved in the process of object pattern separation, and pattern separation tasks can be used to assess this process in man.

- Methods

The CDR System, a computerized cognitive battery interrogating essential cognitive domains has been used in oncology to assess the cognitive impairments in patients (Wesnes et al. 2010). Here we examine cognitive data from 902 oncology patients aged 18 to 88 years, comparing them with a large age-matched normal control population from the normative database (Wesnes et al. 2014).

- Results

Notable impairments in the oncology patients in their ability to focus attention were identified, and also shown to increase in magnitude with increasing age. Further, using a validated Pattern Separation task, the patients showed marked and selective impairments to the neurogenesis sensitive stimuli, and these deficits also increased with age. The effect sizes of these effects are notable and clinically relevant.

- Conclusions

The use of sensitive and appropriate tests of cognitive function has identified that cancer treatments disrupt attentional and neurogenesis-linked processes, and the magnitude of these effects increases with age. Targeting cognition in cancer patients is essential in order to improve quality of life and everyday function.

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- Disclosures\* if applicable

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