

White Matter Disease and Subcortical Vascular Dementia: Interventions for Cognitive Deficits and a Case Study

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Abstract

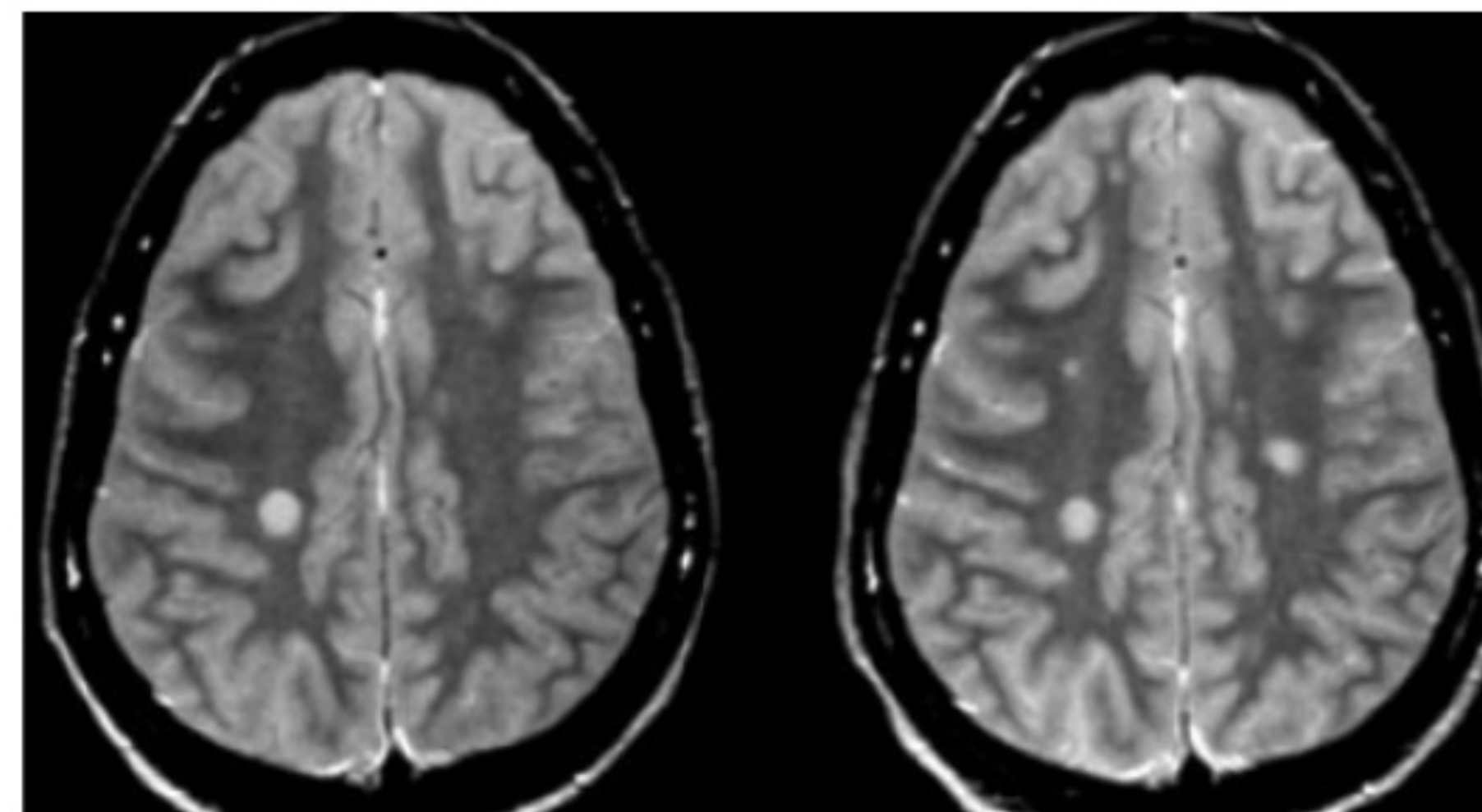
This session introduces and defines White Matter Disease and Subcortical Vascular Dementia, reviews research discussing the significance of cognitive deficits in patients with Subcortical Vascular Dementia and examines interventions targeting these deficits. The limited research supporting interventions targeting cognitive deficits in patients with White Matter Disease and Subcortical Vascular Dementia is also discussed. Finally, a brief case study on an adult patient with White Matter Disease at Fontbonne University's Eardley Family Clinic is presented along with interventions used to target cognitive deficits.

Learner Outcomes

- Define White Matter Disease and Subcortical Vascular Dementia
- Identify cognitive impairments in patients with White Matter Disease and Subcortical Vascular Dementia
- Identify various treatments available targeting cognitive deficits in patients with white matter hyperintensities and areas for research.

Definition

White Matter Disease	Subcortical VAD
<ul style="list-style-type: none">• Pathological appearance of white matter seen on MRI scans• Can lead to Subcortical Vascular Dementia• Associated with stroke, mortality, steeper annual decline in functional status, poorer performance in learning, greater decline in global cognition (Dhamoon, et. al., 2018)• Also known as "Leukoaraiosis" or "white matter hyperintensities"	<ul style="list-style-type: none">• Neurodegenerative disorder• Damage to small blood vessels of deep layers of white matter tissue of the brain• Demyelination of nerve fibers• Identified with MRI• Also known as "Binswanger's Disease"



LEFT : Single lesion on T2WI , RIGHT : Two new lesions at 3 month follow-up

Source: Zaitoun, M. M. A. (2015). Diagnostic Imaging of Degenerative & White Matter Diseases [PowerPoint slide]. Retrieved from <https://www.slideshare.net/meshmesh2013/diagnostic-imaging-of-degenerative-white-matter-diseases>

Cognitive Impairments in Subcortical VAD

Deficits in:

- Short-term and working memory
- Organization
- Regulation of attention
- Decreased processing speed, including slowed thinking and reaction time
- This often looks like forgetfulness, difficulty acting/making decisions, and changes in speech and language impairments.

EB Interventions for Cognitive Deficits in Subcortical VAD & Areas for Further Research

- Clinical drug trials demonstrated effectiveness of pharmaceuticals in targeting suspected mechanisms of white matter hyperintensities (Bath & Wardlaw, 2015)
- Cordyceps mushroom powder demonstrated benefits when vascular dementia was induced in adult, male mice (Chen, et. al., 2018)
- Acupuncture benefits cognitive performance in patients with vascular cognitive impairments without dementia (Yang, et. al., 2019)
- Potential utility of behavioral interventions for individuals with CADASIL, a rare, genetic form of early-onset vascular dementia (Mayer, et. al., 2012)
- *Research exploring benefits of cognitive interventions with this population is needed. There are currently no known behavioral or cognitive evidence-based treatments targeting cognitive decline in this population.*

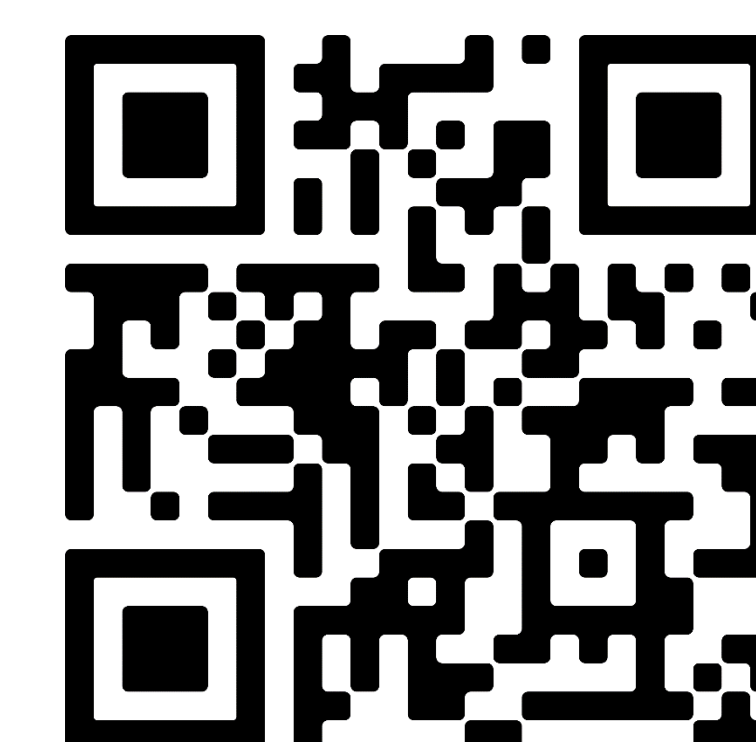
Case Study

A 74-year-old female patient diagnosed in 2013 with Aphasia secondary to White Matter Disease received twice weekly 50-minute cognitive therapy for 12 weeks from January-April 2019 at Fontbonne University's Eardley Family Clinic. Methods focused on restorative treatments and exploration of compensatory strategies to promote functional communication. Deficits in focused attention and working memory were targeted to promote the substrates that support language and communication.

- Processing speed activities were used as a strategy to target memory and attention. Focused attention tasks (cancellation-tasks, color-by-number worksheets, and repetitive, behavioral tasks) targeted attention.
- Journal sharing allowed for practice of conversational skills, topic maintenance, eye contact, and turn-taking and addressed attention, processing speed, short-term, long-term, and working memory.
- A communication booklet was used to support the patient's functional, daily communication with her husband.

Inconsistent progress was demonstrated in attention and memory goals, as it was not always clear whether the patient demonstrated difficulty understanding instructions given, if she had forgotten what was asked, or refused to respond. Inconsistent performance may have also been due to the progressive nature of white matter disease.

References



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