

Cognitive profile of cerebrovascular disease: from small vessel disease to chronic stroke

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INTRODUCTION

- At least, one third of the patients with CVD suffer from communicative disorders accompanied by other cognitive disruptions (Kauhanen, et al, 2000; Sacco et al., 2013).
- There is no clinically homogenous pattern of cognitive symptoms or established course of cerebrovascular disease (CVD) from initial to terminal stages.
- We present a newly validated adaptation of the Oxford Cognitive Screen into Russian (Rus-OCS; Shendyapina et al., 2017) measuring attention, memory, praxis, language and number processing and generates a unique cognitive profile.
- Rus-OCS is designed to detect cognitive impairment using nonverbal responses and is suitable when aphasia, apraxia and visual neglect are present.

OBJECTIVES

- Collect preliminary Rus-OCS normative data on CVD patients
- Compare performance of stroke participants with different lesion locations (left vs right)
- Determine if there is a specific cognitive profile associated with two different stages of CVD - small vessel disease (SVD) and chronic stroke

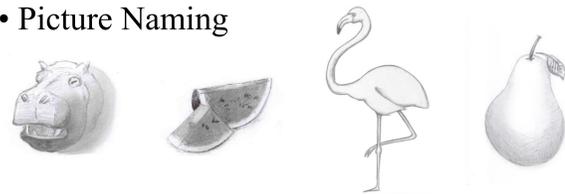
PARTICIPANTS

Characteristics	Patients with SVD n = 42			Patients with stroke n = 205		
	Mean	SD	Range	Mean	SD	Range
Age in years	65	14	38-88	62	15.78	18-88
Education in years	15	2	9-20	15	1.5	9-20
Female % (n)	64% (27)			41% (85)		
Months post onset	12	29	0-120	8.44	19.12	0-123

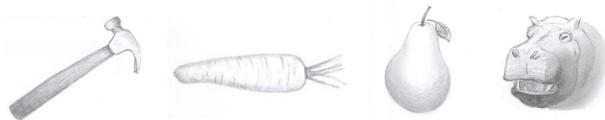
MATERIALS

1. Language

- Picture Naming



- Picture Pointing

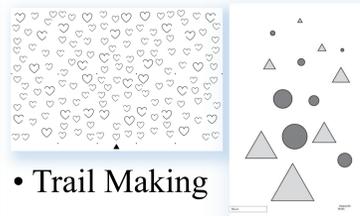


- Sentence Reading

Have any of the islands got a quay, thought the colonel sitting on his yacht.

2. Attention

- Hearts Cancellation



- Trail Making

3. Memory

- Orientation
- Verbal Recall
- Episodic Recognition

4. Praxis

- Gesture Imitation

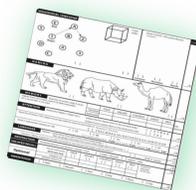


5. Number Skills

- Number Writing
- Calculation

6. Additional Task

- Rus-MoCA



RESULTS

Aim 1: Rus-OCS data on stroke and SVD

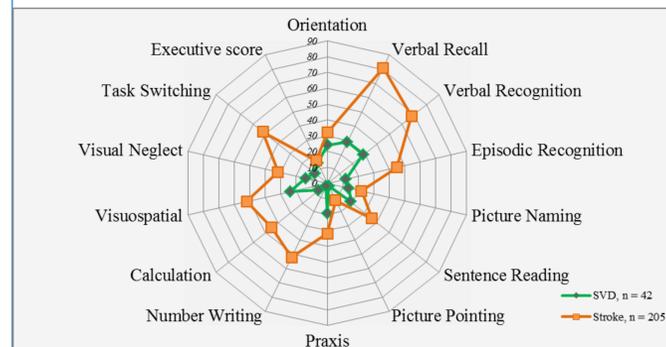
Cut-off scores were set at 5th percentile for scores in those tests where higher results indicated more preserved cognitive functioning and 95th percentile for scores in the tests where the score larger than normative cutoff signifies weaker performance.

OCS tasks	Score range	Cutoffs	Patients with SVD (n = 42)				Patients with stroke (n = 205)			
			M	SD	Range	% of Imp	M	SD	Range	% of Imp
Picture Naming	0-4	3	3.52	0.8	1-4	14	3.11	1.27	0-4	22
Picture Pointing	0-3	3	2.93	0.46	1-3	2	2.87	0.49	0-3	12
Orientation	0-4	4	3.57	0.91	0-4	24	3.49	0.91	0-4	32
Visual Field	0-4	4	3.67	0.95	0-4	14	3.7	0.76	0-4	20
Sentence Reading	0-15	15	14.31	2.37	4-15	19	12.27	5.1	0-15	36
Number Writing	0-3	3	2.87	0.63	0-3	2	2.41	1.02	0-3	52
Calculation	0-4	3	3.43	0.73	2-4	7	3.2	1.05	0-4	45
Broken Hearts	0-50	40	39.85	12.11	0-50	24	35.2	13.68	0-50	52
Space asymmetry	-25 - 25	-3 - 3	-0.49	3.16	-14 - 7	14	3.37	5.16	-18 - 25	32
Gesture Imitation	0-12	8	9.36	2.98	0-12	19	8.66	3.55	0-12	32
Verbal Recall	0-4	0	0.52	0.99	0-3	29	0.95	1.33	0-4	81
Verbal Recognition	0-4	3	2.17	1.61	0-4	29	2.21	1.43	0-4	68
Episodic Recognition	0-4	3	3.17	1.07	1-4	12	3.25	1.05	0-4	45
Mixed Executive task	0-13	4	8.30	4.48	0-13	10	8.45	4.62	0-13	52
Executive score	-13 - 12	-2 - 6	2	3.54	-5 - 10	14	1.88	3.64	-10 - 12	16

Aim 2: Left VS Right Stroke



Aim 3: SVD VS Chronic Stroke



CONCLUSIONS

- SVD group demonstrated mild level of verbal and non-verbal cognitive impairments mostly in the verbal memory domain.
- Chronic stroke cohort revealed high-incidence impairments on language, memory, executive and numerical domains.
- Additional analysis on patients with different lesion localisations showed that left hemisphere stroke survivors are likely to have the highest rate of language functions deficit. Statistical analysis of the impairment ratios within each group confirmed these results.
- The observed differences could be explained by cognitive decline in lesion specific sites following loss of intact brain tissue. The accumulation of deficits may lead to the secondary-level cognitive disorders.

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