Supplement to Vascular burden score impacts cognition independent of Amyloid PET and MRI measures of AD and vascular brain injury

Prevalence of VBS Components

The components that made up the VBS included 8% with cerebrovascular disease, 23% with coronary artery disease, 19% with diabetes, 46% with hyperlipidemia and 71% with hypertension. Importantly, only 2 individuals had both coronary artery and cerebrovascular disease, whereas all diabetics had associated hypertension and hyperlipidemia. None of these measures differed significantly by baseline degree of cognitive impairment, although dementia frequency (5%) was quite low.

Imaging Parameters

1. Axial spin echo, T2 weighted double echo image with TE1 equal to 20 ms, TE2 equal to 90 ms, TR equal to 2420 ms with a field of view of 24 cm and a slice thickness of 3 mm.

2. Coronal 3D spoiled gradient recalled echo (IR-prepped SPGR) acquisition, T1 weighted image with TR equal to 9.1 ms a flip angle of 15 degrees and a field of view 24 cm and a slice thickness of 1.5 mm.

3. Axial high resolution FLAIR image with a TE1 of 120 ms a TR of 9000 ms a TI 2200 ms and 24 cm field of view with a slice thickness of 3 mm.

Supplemental Table.

Results of Individual Predictor models where the association between the independent variable of interest and level or change in cognition was examined*

	Memory			Executive		
	Estimate	Std Error	P-Value	Estimate	Std Error	P-Value
Demographics						
Time	-0.08	0.02	<0.0001	-0.04	0.01	0.01
Gender (M)	-0.16	0.11	NS	-0.10	0.07	NS
Age (yrs)	-0.04	0.02	0.009	-0.02	0.01	0.02
Education (yrs)	0.02	0.04	NS	0.07	0.02	0.001
Cognitive Impairment Status						
Time	-0.08	0.02	<0.0001	-0.065	0.01	<0.0001
Impaired	-0.63	0.09	<0.0001	-0.18	0.064	0.006
Impaired x Time	-0.02	0.02	NS	-0.054	0.015	0.0006
Amyloid Status						
Time	-0.08	0.02	<0.0001	-0.04	0.01	0.009
Global PiB Index	-0.88	0.37	0.02	0.21	0.23	NS
Global PiB Index x Time	-0.21	0.07	0.003	-0.20	0.05	0.0006
PET Imaging Lag Time	0.14	0.04	0.001	0.07	0.02	0.007
Hippocampal Volume						
Time	-0.07	0.02	0.0002	-0.03	0.01	0.04
Hippocampal Volume	633	133	<0.0001	170	84	0.05
Hippocampal Volume x Time	27	22	NS	60	17	0.001
WMH						

Time	-0.08	0.02	<0.0001	-0.04	0.01	0.01
WMH	-0.01	0.10	NS	0.02	0.06	NS
WMH x Time	-0.002	0.01	NS	-0.03	0.01	0.04
<u>Brain Volume</u>						
Time	-0.08	0.02	<0.0001	-0.04	0.01	0.009
Brain Volume	14.8	5.0	0.004	1.8	3.0	NS
Brain Volume x Time	-0.35	0.78	NS	2.1	0.62	0.002
<u>Vascular Burden</u>						
Time	-0.07	0.03	0.02	-0.07	0.03	0.02
Vascular Burden	-0.04	0.10	NS	-0.14	0.06	0.004
Vascular Burden x Time	-0.004	0.01	NS	0.02	0.01	NS
<u>Vascular Risk</u>						
Time	-0.07	0.02	0.0002	-0.04	0.02	0.02
Vascular Risk	-0.51	0.68	NS	-0.85	0.38	0.03
Vascular Risk x Time	0.0005	0.10	NS	0.18	0.10	NS
<u>Vascular Disease</u>						
Time	-0.07	0.02	0.0004	-0.04	0.02	0.02
Vascular Disease	-0.29	0.91	NS	-1.29	0.49	0.01
Vascular Disease x Time	0.02	0.13	NS	0.11	0.12	NS

*Age centered at 70 years, male gender and education centered at 12 years was included in all models; stroke or number of MRI infarcts were not significantly associated with either level or change in cognition and therefore were not included in the table. Hippocampus and brain volume expressed as %TCV centered to non-impaired mean volume, WMH volume expressed as log WMH %TCV centered to non-impaired mean volume.