

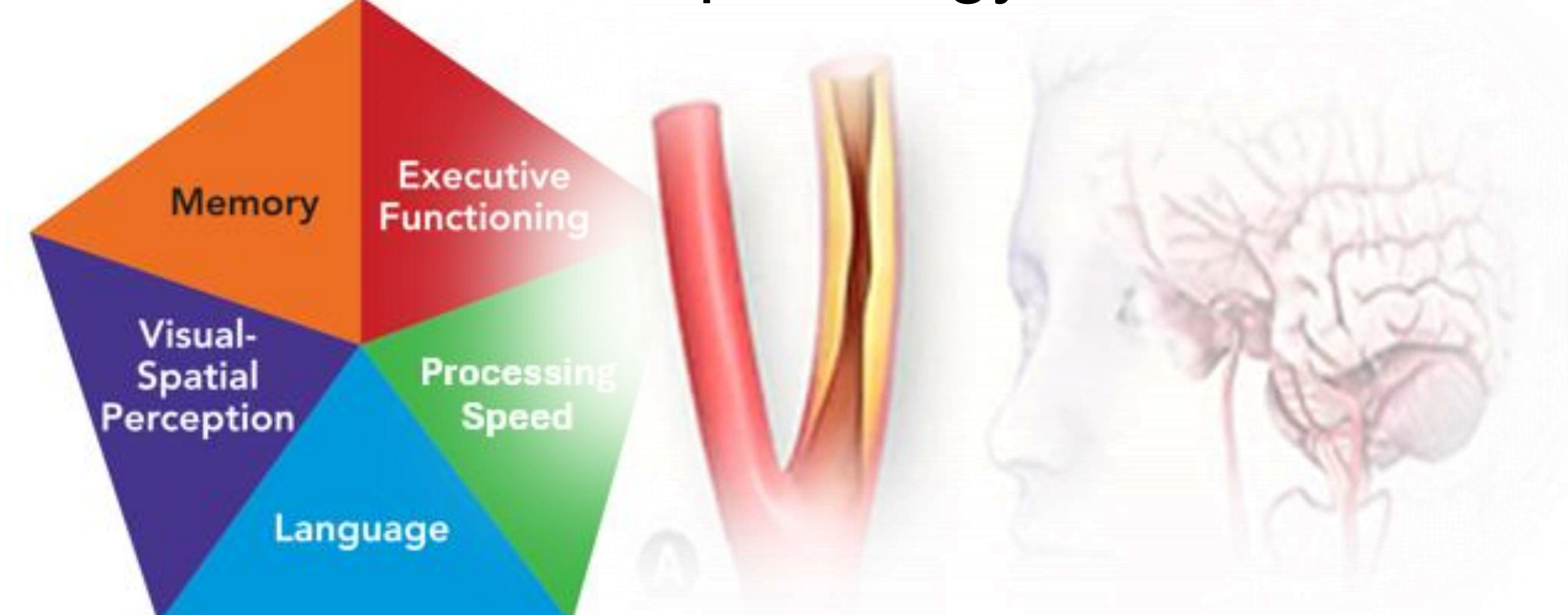
Asymptomatic Carotid Stenosis Is Associated With Processing Speed And Executive Function Deficits Which Correlate With pTau217.

Zahra S¹, French SR¹, Arias JC¹, Wiskoski HE¹, Ally M¹, Escareno CE¹, Heitkamp EN¹, Vazquez F¹, Culwell GC¹, Vitali F¹, Bedrick EJ¹, Mushtaq R², Altbach M¹, Trouard TP¹, Reiman EM³, Alexander GE¹, Weinkauff CC¹

University of Arizona¹, Barrow Neurological Institute², Banner Alzheimer's Institute³

BACKGROUND

- Asymptomatic carotid stenosis has been associated with increased Alzheimer's disease (AD) risk, but the earliest cognitive changes in this hallmark vascular disease population and its association with AD pathology are largely unknown.
- The aim of this study was to determine what neurocognitive measures are associated with asymptomatic carotid disease and whether these measures correlate with AD pathology.



METHODS

On-going CAM Study
N=182

Inclusion Criteria:

- 50 - 85 years old
- Carotid stenosis and/or 2+ CVR

Exclusion Criteria:

- Dementia
- Major depression
- Stroke/TIA < 6 months

Carotid stenosis %
Plasma pTau217 &
APOE ϵ 4 genotyping

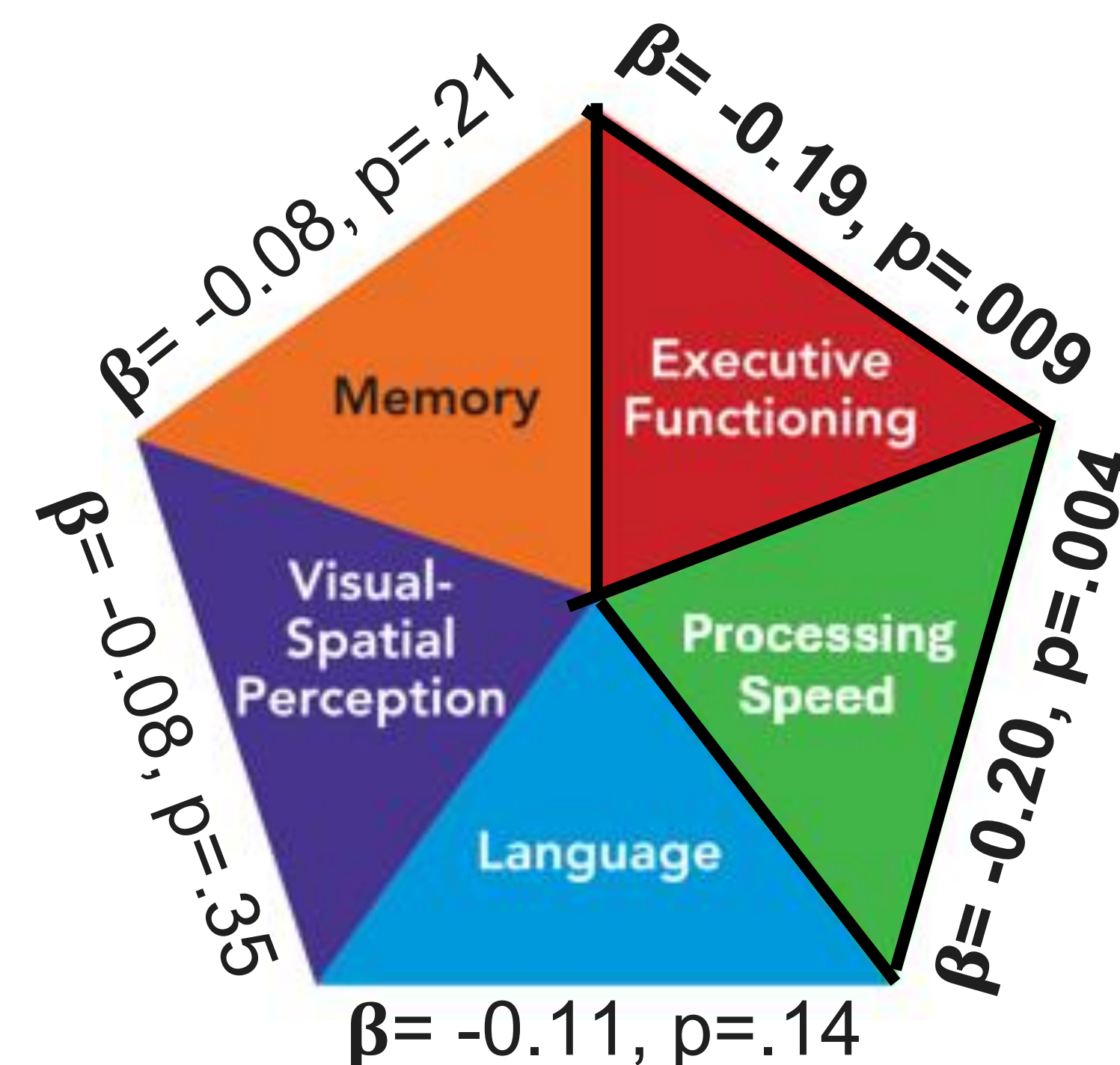
Neurocognitive
testing
UDS + Adjunctive tests

Screen
Failure/Missing
N=15

Study sample
N=167

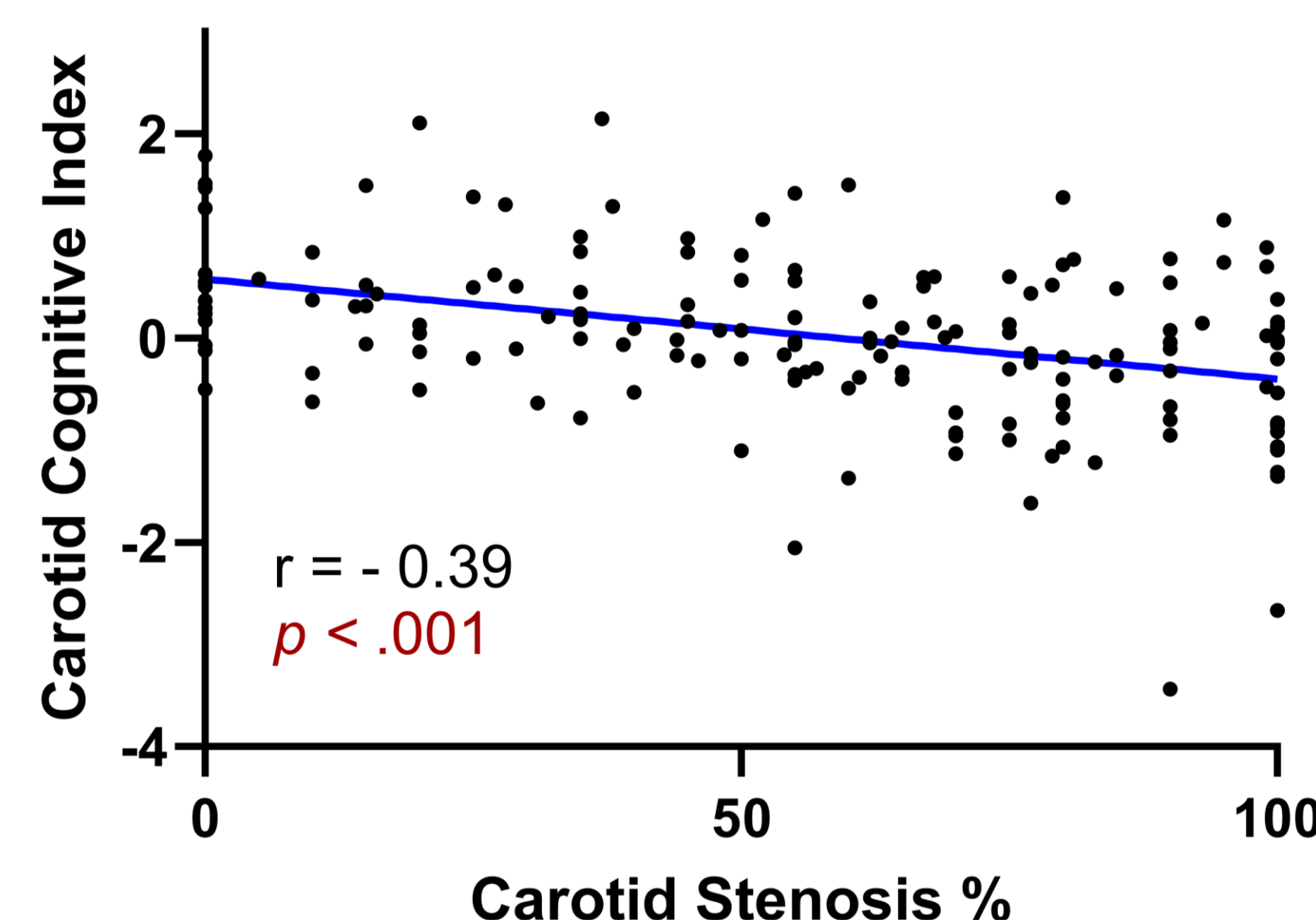
RESULTS

Carotid Stenosis is associated with poorer performance on processing speed and executive function domains*.



*Multivariable linear regression adjusting for age, sex, education, race, ethnicity.

Carotid cognitive index comprising WAIS-IV Coding, Stroop C-W Interference and Trails A was significantly associated with carotid stenosis independent of potential confounders.

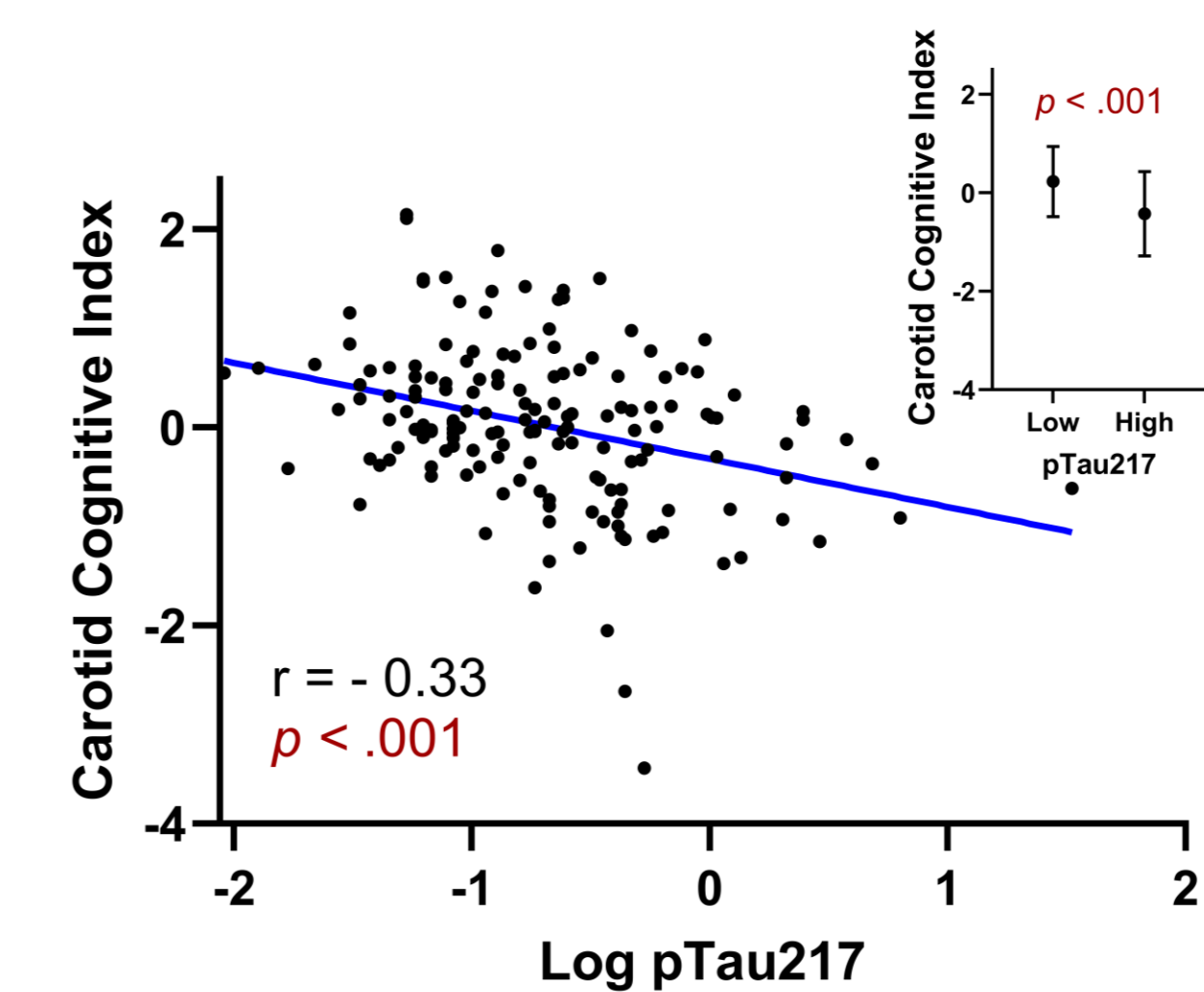


Outcome: Carotid Cognitive Index

		β	95% CI	P value
Carotid Stenosis				
Age	***	-0.24 (-0.37 - -0.11)		
Sex	**	-0.22 (-0.34 - -0.09)		
Education	***	0.29 (0.15 - 0.43)		
Stroke	*	-0.47 (-0.83 - -0.11)		
Carotid Stenosis				
+demographics		-0.28	-0.42 - -0.14	<.001
+demographics		-0.28	-0.42 - -0.14	<.001
+vascular risk factors				
+demographics		-0.24	-0.38 - -0.10	.001
+vascular diseases				
+demographics		-0.29	-0.43 - -0.15	<.001
+ <i>APOE</i> ϵ 4				

RESULTS

Carotid cognitive index correlated significantly with AD biomarker, plasma pTau217.



Outcome: Log pTau217

		β	95% CI	P value
Carotid Cognitive-Index				
+demographics	***	-0.24	-0.41 - -0.07	.005
Diabetes	*	-0.22	-0.39 - -0.05	.01
+demographics				
+vascular risk factors				
+demographics	***	-0.21	-0.38 - -0.03	.02
+vascular diseases				
+demographics		-0.21	-0.37 - -0.04	.01
+ <i>APOE</i> ϵ 4				

CONCLUSIONS

- Cognitive dysfunction in the processing speed and executive domains associated with carotid stenosis correlate with AD pathology and complement and contrast the memory domain changes associated with a classic notion of Alzheimer's dementia.
- Although patients with carotid disease are not regularly evaluated clinically for cognitive impairment or dementia, this work builds momentum for clinical management changes and future studies with a long-term goal of dementia prevention.

CONTACT

Summan Zahra, MD
Postdoctoral Research Fellow
University of Arizona, USA
summanzahra@arizona.edu
X: summanzahra_



CV
Brain
Health
Lab