Plasma osteopontin as a biomarker of Alzheimer's disease and vascular cognitive impairment

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Supplementary Information

Chai et al. Supplementary Table 1: Summary of Neuropsychological Battery and Component Tests

Cognitive Domain	Component Test(s)
i. Executive Function:	Frontal Assessment Battery [1]
ii. Attention:	Digit Span, Visual Memory Span [2] and Auditory Detection [3]
iii. Language:	Language: Modified Boston Naming Test [4] and Verbal Fluency [5]
iv. Visuomotor Speed:	Symbol Digit Modality Test [6], Maze Task [7] and Digit Cancellation [8]
v. Visuoconstruction:	Weschler Memory Scale – Revised (WMS-R) Visual Reproduction Copy task [2], Clock Drawing [9] and Weschler Adult Intelligence Scale – Revised (WAIS-R) subtest of Block Design [10]
vi. Visual Memory:	Picture Recall & Recognition Tasks, and WMS-R Visual Reproduction Recall & Recognition Task [2]
vii. Verbal Memory:	Word List Recall & Recognition Tasks [11] and Story Recall Task

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Chai et al. Supplementary Table 2: ROC analysis of plasma OPN for discriminating each diagnostic outcome from NCI (n=378)

Model	Diagnostic outcome	AUC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Unadjusted	CIND without CeVD	0.50 (0.41 – 0.59)	26.6 (8.9 – 97.5)	87.5 (11.3 – 98.8)
	CIND with CeVD	0.63 (0.54 – 0.71)	70.9 (30.4 – 88.6)	58.8 (35.0 – 92.5)
	AD without CeVD	0.80 (0.71 – 0.88)	72.5 (55.0 – 92.5)	85.0 (60.0 – 93.8)
	AD with CeVD	0.71 (0.63 – 0.80)	58.0 (39.1 – 87.0)	82.5 (48.8 – 95.0)
	VaD	0.73 (0.62 – 0.84)	64.5 (41.9 – 96.8)	83.8 (41.3 – 95.0)
Adjusted*	CIND without CeVD	0.68 (0.59 – 0.76)	59.5 (36.7 – 79.8)	76.3 (53.8 – 92.5)
	CIND with CeVD	0.77 (0.70 – 0.84)	68.4 (53.2 – 93.7)	77.5 (46.3 – 90.0)
	AD without CeVD	0.92 (0.86 – 0.97)	85.0 (72.5 – 97.5)	91.3 (76.3 – 97.5)
	AD with CeVD	0.89 (0.84 – 0.95)	82.6 (71.0 – 92.8)	87.5 (78.7 – 96.3)
	VaD	0.91 (0.85 – 0.96)	90.3 (71.0 – 100)	81.3 (62.5 – 96.3)

ROC = Receiver operating characteristic, OPN = osteopontin, NCI = no cognitive impairment, CeVD = cerebrovascular disease, CIND = cognitive impairment no dementia, AD = Alzheimer's disease, VaD = vascular dementia, AUC = area under curve, CI = confidence interval

*Adjusted for age, education, APOE4 carrier status, hypertension, diabetes and cardiovascular disease.

Chai et al. Supplementary Table 3: ROC analysis of plasma OPN for discriminating each diagnostic outcome from all other diagnoses (n=378)

Model	Diagnostic outcome	AUC (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
Unadjusted	CIND without CeVD	0.51 (0.42 – 0.60)	29.1 (11.4 – 97.5)	86.3 (11.3 – 97.5)
	CIND with CeVD	0.63 (0.55 – 0.72)	67.9 (30.9 – 87.7)	61.3 (37.5 – 92.5)
	AD without CeVD	0.78 (0.69 – 0.86)	68.2 (50.0 – 93.2)	83.8 (53.8 – 93.8)
	AD with CeVD	0.71 (0.63 – 0.80)	58.0 (39.1 – 88.4)	82.5 (46.2 – 95.0)
	VaD	0.73 (0.62 – 0.84)	64.5 (41.9 – 96.8)	83.8 (40.0 – 95.0)
Adjusted*	CIND without CeVD	0.71 (0.63 – 0.79)	62.0 (38.0 – 84.8)	76.3 (51.3 – 93.8)
	CIND with CeVD	0.76 (0.68 – 0.83)	75.3 (55.6 – 95.1)	68.8 (42.5 – 86.3)
	AD without CeVD	0.92 (0.87 – 0.97)	88.6 (75.0 – 97.7)	87.5 (74.8 – 96.3)
	AD with CeVD	0.88 (0.82 – 0.94)	79.7 (63.8 – 92.8)	86.3 (71.3 – 96.3)
	VaD	0.91 (0.86 – 0.96)	93.6 (67.7 – 100)	77.5 (60.0 – 100)

ROC = Receiver operating characteristic, OPN = osteopontin, NCI = no cognitive impairment, CeVD = cerebrovascular disease, CIND = cognitive impairment no dementia, AD = Alzheimer's disease, VaD = vascular dementia, AUC = area under curve, CI = confidence interval

*Adjusted for age, education, APOE4 carrier status, hypertension, diabetes and cardiovascular disease.