Supplementary Table 1: American College of Rheumatology Neuropsychological Battery (ACR-NB)

Domain	Test	Domain	Test
1. Manual motor speed	Finger Tapping Test: 1. Dominant Hand 2. Non-Dominant Hand	**4. Language processing[57]**	1. COWAT 2. ANIMALS
2. Simple Attention and Processing Speed	1. Trail A[58] 2. Stroop colour naming 3. Stroop word reading[59]	**5. Learning and Memory**	*Visuospatial[60]:* 1. RCFT recall 2. RCFT Delay Recall 3. RCFT Recognition *Verbal[61]:* 4. HVLT-R delayed recall 5. HVLT-R Recognition 6. HVLT-R total recall
3. Visual-spatial Construction	1. RCFT Copy[60]	**6. Executive Functioning**	1. Stroop (interference score)[59] 2. WAIS Letter-Number[62] 3. WAIS-III Digit Symbol/SDMT[63] 4. Trail B[58] 5. Auditory consonant Trigrams test[64]

RCFT: Rey-Osterrieth Complex Figure Test
COWAT: Controlled Oral Word Association Test
HVLT-R: Hopkins Verbal Learning Test, revised
SDMT: Symbol Digit Modalities Test
WAIS-III: Wechsler Adult Intelligence Scale, 3rd ed.

Our battery is identical to the ACR recommended cognitive battery for adults with SLE [23,65], except that the Hopkins Verbal Learning Test – Revised (HVLT-R) was substituted for the California Verbal Learning Test (CVLT) [25] and the Trail Making Test part A [58] was added. The HVLT-R is shorter and an easier test compared to CVLT which could have rendered our battery less sensitive than the original ACR-NB. However, the addition of Trails A to our battery helps to offset that as it adds overall sensitivity to the battery. In addition, the Montreal Cognitive Assessment (MoCA) [66,67] was administered, and the Revised North American Adult Reading Test can assess for estimated pre-morbid IQ.

Supplementary Table 2: Baseline use of specific centrally acting angiotensin converting enzyme inhibitors (cACEi) and centrally-acting angiotensin receptor blockers (cARB)

cACEi/cARB	Number (%)
Candesartan	7 (13%)
Valsartan	1 (2%)
Fosinopril	1 (2%)
Irbesartan/Ramipril	1 (2%)
Lisinopril	1 (2%)
Perindopril	4 (8%)
Ramipril	37 (70%)
Trandolapril	1 (2%)
Total	53 (100%)

Supplementary Table 3: **Equivalent dosing for centrally-acting angiotensin converting enzyme inhibitors (cACEi) and centrally-acting angiotensin receptor blockers (cARB)**

cACEi/cARB	Equivalent Dose (milligrams per day)
Ramipril	2.5
Captopril	50
Fosinopril	10
Lisinopril	10
Perindopril	4
Trandolapril	2
Candesartan	8
Valsartan	80

Supplementary Table 4: Comparison of domain five (learning and memory) cognitive tests between treated (cACEi/cARB) and untreated participants

Cognitive test	cACEi/cARB use Mean (SD)	No cACEi/cARB use Mean (SD)	p-value	Ramipril use Mean (SD)	No Ramipril use Mean (SD)	p-value
5.1 RCFT recall	-1.04 (1.25)	-0.812 (1.41)	0.27	-0.93 (1.25)	-0.84 (1.40)	0.73
5.2 RCFT delay recall	-1.12 (1.27)	-0.77 (1.34)	0.09	-0.91 (1.28)	-0.82 (1.34)	0.72
5.3 RCFT recognition	-0.66 (1.07)	-0.48 (1.13)	0.31	-0.52 (1.07)	-0.51 1.13)	0.97
5.4 HVLT-R delayed recall	-0.95 (1.21)	-0.88 (1.13)	0.72	-1.01 (1.19)	-0.88 (1.14)	0.52
5.5 HVLT-R recognition	-0.68 (1.26)	-0.86 (1.32)	0.36	-0.73 (1.31)	-0.84 (1.32)	0.65
5.6 HVLT-R total recall	-0.79 (1.02)	-0.87 (0.93)	0.57	-0.86 (0.96)	-0.86 (0.94)	0.98

RCFT: Rey-Osterrieth Complex Figure Test
COWAT: Controlled Oral Word Association Test
HVLT-R: Hopkins Verbal Learning Test, revised

Supplementary Table 5: Comparison of cognitive dysfunction (CD) between Ramipril treated (cACEi/cARB) and untreated participants

VARIABLE	No CD n=184 (61.3%)	CD n=116 (38.7%)	p value
Use of Ramipril within 6 months - Yes (%)	20 (10.9%)	14 (12.1%)	0.75
Cumulative dose of Ramipril (mg/kg) - Mean (SD)	37.6 (170.8)	29.5 (106.4)	0.65