

Table S1 Neuropsychological battery

xxx	PD-NC	PD-MCI	P value
Animal fluency test	15.12 (3.86)	13.80 (4.18)	0.225
Digit span	11.13 (2.39)	11.06 (2.31)	0.911
Digit symbol	11.65 (2.41)	10.17 (2.62)	0.003*
Logical memory	5.38 (2.64)	3.57 (1.34)	0.003*
Immediate memory	7.71 (2.85)	3.40 (3.56)	<0.001*
Vocabulary	10.48 (2.38)	9.94 (2.92)	0.16
Similarities	11.10 (2.52)	10.0 (2.76)	0.062
Block design	9.90 (2.21)	9.2 (2.84)	0.11
Object assembly	8.71 (1.94)	6.51 (1.96)	<0.001*

Data are mean (standard deviation). Mann-Whitney U test was used to determine significant difference.

Table S2 Region with correlation between the volume of NBM/Ch4 and cortical thickness in PD-MCI

Cluster no.	p-Max (-log10)	Size (mm ²)	MNI coordinates			NVtxs	Annotation of peak region
			X	Y	Z		
1	3.624	1,391.97	-4	-16	39	3,784	Left posterior cingulate,
2	3.097	1,406.28	-33	17	13	3,880	Left pars opercularis
3	2.908	1,682.5	-18	-74	30	3,023	Left precuneus
4	2.798	1,434.32	-14	42	11	2,449	Left superior frontal
5	4.256	3,151.13	20	-77	35	7,203	Right superior parietal
6	2.908	1,561.18	15	35	18	2,956	Right superior frontal

p-Max, max indicates the maximum -log10 (P value) in the cluster; NVtxs, number of vertices in cluster.

Table S3 Region with significant difference of correlation coefficients between the volume of NBM/Ch4 and cortical thickness in comparison of PD-MCI versus HC and PD-NC versus HC

Contrast	Cluster No	p-Max (-log10)	Size (mm ²)	MNI Coordinates			NVtxs	Annotation of Significant Region
				X	Y	Z		
PD-MCI vs. HC	1	3.271	2752.22	8	33	-8	5326	right anterior cingulate, medial orbitofrontal, lateral orbitofrontal, middle frontal
	2	3.057	1533.67	4	-22	33	3779	right posterior cingulate, precuneus, isthmus cingulate, anterior cingulate
PD-NC vs. HC	1	4.791	2101.87	9	31	-13	4091	right medial orbitofrontal, anterior cingulate, superior frontal lateral orbitofrontal

p-Max: Max indicates the maximum -log10 (p-value) in the cluster; NVtxs: number of vertices in cluster.