Supplementary Material

The Degree of Cardiovascular Autonomic Dysfunction Is Not Different in *GBA*-Related and Idiopathic Parkinson's Disease Patients: A Case-Control Instrumental Evaluation

Supplementary Table 1. List of genes included in the targeted or virtual NGS panel.

Gene	Transcript ID	UniProt ID	RefSeq	Inheritance
SNCA	ENST00000394991.8	P37840	NM_000345.4	AD
LRRK2	ENST00000298910.12	Q5S007	NM_198578.4	AD
VPS35	ENST00000299138.12	Q96QK1	NM_018206.6	AD
GBA	ENST00000368373.8	P04062	NM_000157.4	AD, risk factor
RAB39B	ENST00000369454.4	Q96DA2	NM_171998.4	X-linked
PRKN	ENST00000366898.6	O60260	NM_004562.3	AR
PINK1	ENST00000321556.5	Q9BXM7	NM_032409.3	AR
DJ-1	ENST00000338639.10	Q99497	NM_007262.5	AR
ATP13A2	ENST00000326735.13	Q9NQ11	NM_022089.4	AR
PLA2G6	ENST00000332509.8	O60733	NM_003560.4	AR
DNAJC6	ENST00000371069.5	O75061	NM_001256864.2	AR
SYNJ1	ENST00000433931.7	J3KQV8	NM_003895.3	AR
FBXO7	ENST00000266087.12	Q9Y3I1	NM_012179.4	AR
VPS13C	ENST00000644861.2	Q709C8	NM_020821.3	AR
PTRHD1	ENST00000328379.6	Q6GMV3	NM_001013663.2	AR
POLG	ENST00000268124.11	E5KNU5 P54098	NM_002693.3	AD, AR
TWNK	ENST00000311916.8	Q96RR1-1	NM_021830.5	AD, AR
OPA1	ENST00000361510.8	O60313-10	NM_130837.3	AD, AR
SLC25A46	ENST00000355943.8	Q96AG3-1	NM_138773.4	AR

AD, autosomal dominant; AR, autosomal recessive

Supplementary Table 2. GBA variants identified in the study.

Patient	Nucleotide change	Amino acid change	class of variant
1	*c.1226A>G*	*p.Asn409Ser*	*mild*
2	*c.1271T>C*	*p.Leu424Pro*	*unknown*
3	*c.1448T>C*	*p.Leu483Pro*	*severe*
4	*c.1226A>G*	*p.Asn409Ser*	*mild*
5*	*c.1444G>A*	*p.Asp482Asn*	*unknown*
	c.1200G>A	*p.Met400Ile*	*unknown*
6	*c.1448T>C*	*p.Leu483Pro*	*severe*
7	*c.1093G>A*	*p.Glu365Lys*	*risk*
8*	*c.1223C>T*	*p.Thr408Met*	*risk*
	c.1093G>A	*p.Glu365Lys*	*risk*
9	*c.1093G>A*	*p.Glu365Lys*	*risk*
10	*c.1226A>G*	*p.Asn409Ser*	*mild*
11	*c.1226A>G*	*p.Asn409Ser*	*mild*
12	*c.1093G>A*	*p.Glu365Lys*	*risk*
13	*c.1093G>A*	*p.Glu365Lys*	*risk*
14	*c.1223C>T*	*p.Thr408Met*	*risk*
15	*c.509G>A*	*p.Arg170His*	*unknown*
16	*c.1223C>T*	*p.Thr408Met*	*risk*
17	*c.1448T>C*	*p.Leu483Pro*	*severe*
18	*c.1223C>T*	*p.Thr408Met*	*risk*
19	*c.1443C>A*	*p.Asn481Lys*	*unknown*
20	*c.1013del*	*p.Pro338Glnfs*26*	*severe*
21*	*c.1469A>G*	*p.His490Arg*	*mild*
	c.1379G>A	*p.Gly460Asp*	*unknown*
22	*c.508C>T*	*p.Arg170Cys*	*severe*
23*	*c.259C>T*	*p.Arg87Trp;*	*mild*
	c.1226A>G	*p.Asn409Ser*	*mild*

*variants were found in cis.

Supplementary Table 3. Neuropsychological profile of the study sample

	Total PD sample	***GBA*-mutated group**	**Non-mutated group**	**p**
	69	23	46	
Years of education, *y*	11.8 ± 3.8	11.8 ± 3.2	11.8 ± 4.0	0.979
PD-MCI, *n (%)*	14 (16.9)	6 (26.1)	8 (17.4)	0.318
MMSEc	27.8 ± 2.7	28.1 ± 1.8	27.6 ± 3.3	0.682
Brief Mental Deterioration Battery	1.9 (1.3-2.5)	1.9 (1.4 – 2.3)	1.9 (1.2 – 2.5)	0.786
Rey's 15 Words:				
immediate recall	39.4 ± 8.9	39.3 ± 9.7	39.4 ± 9.6	0.968
delayed recall	7.3 ± 1.9	6.7 ± 2.1	7.5 ± 1.8	0.287
Immediate Visual Memory	19.9 (17.9-20.8)	20.2 (16.3-20.6)	19.9 (18.2-21.1)	0.410
Copy Design: simple	10.9 ± 2.4	12.3 ± 5.8	10.2 ± 1.5	0.099
Digit Span				
Forward	5.8 ± 1.0	5.9 ± 0.9	5.7 ± 1.1	0.660
Backward	4.5 ± 1.0	4.5 ± 0.4	4.4 ± 1.1	0.889
Barrage Test				
time	50.8 (41.5-69.0)	48.0 (39.0-70.0)	55.0 (42.0-68.0)	0.808
errors	0.0 (0.0-0.0)	0.0 (0.0-1.0)	0.0 (0.0-0.0)	0.432
score	11.0 (10.0-13.0)	11.0 (11.0-12.0)	12.0 (10.0-13.0)	0.874
final result	0.2 (-0.7-0.3)	0.2 (-0.7-1.1)	0.1 (-0.7-0.2)	0.440
Rey-Osterrieth Complex Figure Test				
direct copy	31.5 ± 3.8	31.0 ± 5.1	31.7 ± 3.3	0.791
delayed recall	15.9 ± 4.7	17.3 ± 5.1	15.1 ± 4.4	0.387
Simple Verbal Analogies Test	16.5 ± 2.7	16.6 ± 2.1	16.5 ± 2.9	0.839
Verbal Fluency				
Phonemic	31.6 (23.9-43.5)	31.8 (20.3-41.4)	30.8 (25.3-43.8)	0.679
Semantic	43.5 (36.0-51.0)	43.0 (40.0-50.0)	44.0 (35.0-52.0)	0.907
Stroop test				
time	18.8 (14.1-24.8)	21.8 (16.0-28.5)	17.8 (11.8-24.3)	0.083
errors	0.0 (-0.37 – 1.5)	0.2 (-0.2 – 1.6)	0.0 (-0.5 – 1.4)	0.461
Frontal Assessment Battery	16.5 (14.2-16.9)	14.7 (13.9-16.9)	16.5 (15.2-17.2)	0.397

Data are expressed as mean ± standard deviation or median (interquartile range)

Statistically significant p-values are denoted in bold (p value ≤ 0.05).

GBA, glucocerebrosidase gene; *n*, sample size; MMSEc, corrected Mini-Mental State Examination; PD-MCI, Mild Cognitive Impairment in Parkinson's Disease; PD, Parkinson's disease