A CASE REPORT OF A CADASIL PATIENT WITH SUSPECTED PARKINSON DISEASE

Elena Muiño¹, Natividad Raña², Ana Rodríguez-Campello³, Irene Navalpotro-Gómez⁴, Miguel López-Cuina⁵, Iolanda Riba-LLena⁶, Natalia Cullell¹, Caty Carrera⁶, Nuria P Torres-Aguila¹, Jara Cárcel¹, Jonathan González-Sánchez^{1, 7}, Jurek Krupinski⁸, Joan Montaner^{6, 9}, Jaume Roquer³, Israel Fernández-Cadenas^{1, 10}

1. Stroke Pharmacogenomics and Genetics. Fundació Docència i Recerca MútuaTerrassa, Hospital Mútua de Terrassa. Universitat de Barcelona; 2. Neurology Department. CHUAC; 3. Neurology Department. IMIM-Hospital del Mar; 4. Neurodegenerative Disorders Area, Biodonostia Health Research Institute, 2CIBERNED, Network Center for Biomedical Research in Neurodegenerative Diseases. University Hospital; 5. Univ. de Bordeaux, Institut des Maladies Neurodégénératives. CNRS, Institut des Maladies Neurodégénératives; 6. Neurovascular Research Laboratory. Vall d'Hebron Institute of Research, Hospital Vall d'Hebron; 7. The Manchester Metropolitan University of All Saints; 8. Neurology Department. Hospital Mútua de Terrassa; 9. Biomedicine Institute of Seville, IBI/Hospital Universitario Virgen del Rocío/CSIC/University of Seville & Department of Neurology, Hospital Universitario Virgen Macarena; 10. Stroke Pharmacogenomics and Genetics. Sant Pau Institute of Research, Hospital de la Santa Creu i Sant Pau.

Background

CADASIL (“Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy”) is an autosomal dominant inherited small-vessel disease caused by mutations in the *NOTCH3* gene (19p13). The main symptoms of CADASIL are migraine, psychiatric disorders, recurrent small subcortical infarctions and dementia; parkinsonism has been rarely reported¹⁻³. Magnetic resonance imaging (MRI) and histopathology show small subcortical infarctions and confluent white matter hyperintensities (WMH), mostly in periventricular locations with involvement of the anterior temporal pole and the external capsule.

Parkinson’s Disease (PD) is clinically characterized by rigidity, rest tremor and bradykinesia as defined by the “UK PD Society Brain Bank Clinical Diagnostic Criteria”; typically with an unilateral onset and good response to levodopa. DaT-scan shows an asymmetric disturbance on the nigrostriatal dopaminergic system and the myocardial ¹²³I-meta-iodobenzylguanidine (MIBG) scintigraphy a significantly lower heart-to-mediastinum ratio (H/M ratio). On the other hand, vascular parkinsonism (VP) is characterized by symmetric symptomatology, postural instability and rare presence of rest tremor². Usually with normal DaT-scan and MIBG scintigraphy and poor response to levodopa treatment. See table 1.

	PD	VD
Symptoms	Asymmetric	Symmetric
Rest tremor	Usually	Rare
DaT-scan	Altered	Normal
MIBG	Altered	Normal
Response to levodopa	Good	Poor

Table 1. Main difference between PD and VD.

We report the case of a CADASIL patient with suspected Parkinson Disease instead of vascular parkinsonism.

Case report

A 66 year-old female with speech disturbances was diagnosed of CADASIL disease with a p.R607C mutation in *NOTCH3* gene at age of 59. With 64 years old she presented an important lose of weight and fatigue, reason why a thoraco-abdominal CT scan and a colonoscopy were performed, discarding a tumoral cause. With 65 years old she came to the consultation because of a money-counting rest tremor. She showed an asymmetric parkinsonism at the examination with a right upper-limb rest tremor, a “no-no” head tremor, bradykinesia and hypomimia, with an Unified Parkinson’s Disease Rating Scale (UPDRS) part III 15/68 and a Hoehn and Yard of 2. Her MRI showed confluent WMH, mostly in periventricular locations with involvement of the external capsule, without strategic infarcts (see figure 1). The DaT-scan evidenced an asymmetric presynaptic nigrostriatal dopaminergic degeneration with left predominance (see figure 2). The myocardial MIBG scintigraphy was not concluent as the values obtained were in the lower limit of normality (see figure 3). Levodopa and dopaminergic agonist treatments were established with a successful response. Rest tremor was almost disappeared (UPDRS part III 8/68) and non-motor symptoms as fatigue were improved.

Figure 1. Patient’s MRI (FLAIR images).

Figure 2. Patient’s DaT-scan.

MIBG scintigraphy	
H/M ratio (early)	1,56
H/M ratio (delayed)	1,40
Washout rate	29%

Figure 3. Patient’s MIBG scintigraphy.
H/M: heart to mediastinum

Discussion and conclusions

Parkinsonism has been rarely reported in CADASIL patients and most of them were related to VP². This is the first case of a CADASIL patient with suspected PD instead of VP. She presented asymmetric parkinsonism, asymmetric DAT-scan alteration and good response to levodopa and dopaminergic agonists, suggesting PD. The myocardial MIBG scintigraphy was not concluent. Therefore, it is mandatory to evaluate whether a CADASIL patient with extrapyramidal symptoms could present Parkinson Disease, as an appropriate treatment could improve the quality of life of the patient.

Bibliography

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