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Artículo original

Falta de asociación entre trastornos del control de impulsos y trastorno conductual del sueño REM en pacientes con enfermedad de Parkinson

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Resumen

Objetivo. El trastorno conductual del sueño de movimientos oculares rápidos (RBD) y los trastornos del control de impulsos (ICD) son frecuentes en sujetos con enfermedad de Parkinson. La asociación entre estas dos condiciones ha sido contradictoria. El objetivo de este estudio es analizar la asociación entre estos dos síntomas no motores.
Material y métodos. Se incluyeron sujetos consecutivos con enfermedad de Parkinson de la Clínica de Trastornos del Movimiento de un hospital de tercer nivel. La presencia de los ICD se evaluó utilizando el Escala de Valoración de Trastornos de Control de Impulsos. El RBD fue diagnosticado por un estudio de polisomnografía nocturna.
Resultados. Se incluyeron cincuenta y cinco sujetos consecutivos con enfermedad de Parkinson. La prevalencia de los CDI y los comportamientos relacionados fue de 23,6% (14,5% en el ICD y los comportamientos relacionados con el 9,1%). RBD fue diagnosticada en el 47,2% de los pacientes. No se encontraron diferencias en la frecuencia de los CDI y los comportamientos relacionados al comparar sujetos con y sin RBD (23% frente a 24,1%, p = 0,926, respectivamente).
Conclusión. No se encontró asociación entre la presencia de RBD y la frecuencia de los ICD en sujetos con enfermedad de Parkinson.

***Palabras clave**: enfermedad Parkinson, trastornos del control de impulsos, trastorno conductual del sueño REM, asociación.*

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Lack of association between impulse control disorders and REM sleep behavior disorder in patients with Parkinson's disease

Abstract

Objective. Rapid eye movement sleep behavior disorder (RBD) and impulse control disorders (ICDs) are common in subjects with Parkinson's disease. The association between these two conditions has been contradictory. The aim of this study is to analyze the association between these two non-motor symptoms.
Material and methods. Consecutive subjects with Parkinson's disease attending the Movement Disorders Outpatient Clinic were included. The presence of ICDs was assessed using the Questionnaire for Impulse Control Disorders Rating Scale. RBD was diagnosed by an overnight, single night polysomnography.
Results. Fifty-five consecutive subjects with Parkinson's disease were included. The prevalence of ICDs and related behaviors was 23.6% (ICD in 14.5% and related behaviors in 9.1%). RBD was diagnosed in 47.2% of the patients. No differences were found in the frequency of ICDs and related behaviors when comparing subjects with and without RBD (23% versus 24.1%, p=0.926, respectively).
Conclusion. No association between the presence of RBD and the frequency of ICDs in subjects with Parkinson's disease was found.

Key words: *Parkinson; impulse control disorders, REM sleep behavior disorder, association.*

Introduction

Impulse control disorders (ICDs) and rapid eye movement sleep behavior disorder (RBD) are two well-known non-motor symptoms associated with Parkinson's disease (PD). ICDs and related behaviors are a heterogeneous group of conditions including pathological gambling, hypersexuality, compulsive shopping and eating, punding, walkabout, hobbyism and overuse of dopamine drugs[1]. The prevalence of ICDs has been reported to be of 13.6%[2], but in patients treated with dopamine agonists (DA) the frequency can be as high as 24%[3]. Predisposing factors for ICDs in PD include the use of high doses of DA, a younger age, male gender, an early onset of motor symptoms, depression, a personal history of addictive behaviors, as well as genetic factors[4].

On the other hand, RBD is a disorder characterized by vigorous movement and abnormal persistence of muscle tone during REM sleep. Prevalence of RBD in subjects with PD has been reported to be between 15% and 47% depending on the assessment method[5]. Subjects with PD and RBD usually have a rigid-akinetic subtype, more axial symptoms and severe dyskinesia[6]. Moreover; these patients appear to have an increased risk for cognitive decline and dementia [7].

Although the association is still unclear, a relationship between these non-motor symptoms

has been suggested[8]. To date, two studies have been published with opposite results[9,10]. These studies had a different methodology. The objective of our study is to analyze the association between RBD confirmed by polysomnography (PSG) and ICD diagnosed with a validated questionnaire in patients with PD.

Materials and methods

Subjects

Consecutive patients diagnosed with PD according to the UK Brain Bank criteria were included. Patients with dementia based on clinical grounds were excluded. All subjects were evaluated by a neurologist with expertise in movement disorders using the Movement Disorder Society Unified Parkinson's disease Rating Scale (MDS-UPDRS)[11].

Impulse control disorders and related behavior assessment

The presence of ICDs and related behavior symptoms was assessed using the Questionnaire for Impulse Control Disorders Rating Scale (QUIP-RS). The QUIP-RS is a self-completed screening instrument specifically developed and validated to assess the presence of symptoms of ICDs (gambling, hypersexuality, compulsive buying, and binge eating), as well as other related behaviors (punding, hobbyism, walkabout and dopamine dysregulation syndrome)[12].

Polysomnography

All patients underwent a standardized overnight, single night PSG at the Sleep Clinic using a Grass Technologies TWin (version 4.5.0.27) Polysomnographer. The international 10-20 system for electrode placement was applied. Electrocardiography, chin, upper and lower extremities electromyography, electro-oculography, pulse oximetry, abdominal and chest respiratory effort were registered according to the specifications of the American Academy of Sleep Medicine Manual for the Scoring of Sleep and Associated Events. PSG was later scored and analyzed by a sleep medicine specialist blinded to the QUIP-RS. RBD was diagnosed by a neurologist according to the International Classifications of Sleep Disorder criteria[13].

All subjects gave written informed consent to participate in the study. The study protocol was approved by the local Ethics Committee.

Statistical analysis

Measures of central tendency and dispersion in terms of means and standard deviation were obtained for quantitative data. Categorical data were expressed as percentages. Data were assessed for normality using the Shapiro-Wilk test. Quantitative variables were analyzed using a T-student test or Mann-Whitney test as needed. Qualitative variables were compared using chi square test or Fisher's test as needed. Statistical analysis was performed using Statistical Package for the Social Sciences (SPSS) version 19 for Windows. The level of significance was set at $p<0.05$.

Results

A total of fifty-five patients (34 male) were included in the study. The mean age of the sample was 61.9 ± 10.8 years. Disease duration was 6.5 ± 6.6 years. In regards to disease severity the mean Hoehn and Yahr stage was 2.18 ± 0.69; the MDS-UPDRS part III (motor evaluation) mean score was 27.4 ± 14.8. The most frequent motor subtype was tremor-dominant (60%). A total of 44 (81.5%) of the patients were receiving a dopamine agonist, while 42 (77.7%) were also on levodopa.

The prevalence of both ICDs in the study sample was 14.5%; whereas ICD related behaviors were present in 9.1% of the sample. Overall, the prevalence of individual ICDs in the sample was as follows: 3.6% for gambling, 7.3% for compulsive sexual behavior, 5.5% compulsive shopping, and 10.9% for eating disorder.

On the other hand, a total of 26 (47.2%) of the patients were diagnosed with RDB by PSG. Table 1 shows the clinical and demographic characteristics of the patients with and without RBD. No relation between the presence of RBD and ICDs was found. Frequency of individual ICDs in relation to the presence or absence of RBD is shown in table 2.

Table 1. Demographical and clinical characteristics of Parkinson's disease patients with and without RBD.

	PD-RBD n= 26	PD-noRBD n=29	p
Gender (male)	61.5%	62.1%	0.968
Age (years)	63.5 ± 9.1	60.6 ± 12.6	0.215
Age of onset (years)	61.2 ± 10.7	58.2 ± 11.1	0.407
Duration of PD (years)	7.4 ± 8.3	5.6 ± 4.8	0.343
Hoehn and Yahr stage	2.2 ± 0.7	2.1 ± 0.6	0.422
LEDD (mg)	734.4 ± 485.6	546.6 ± 355.6	0.105
DA- LEDD(mg)	181.5 ± 147.1	131.1 ± 126.7	0.178
Use of dopamine agonist	84.6%	75.9%	0.418
Use of levodopa	76.9%	75.9%	0.926

PD: Parkinson'ss disease. LEDD: levodopa equivalent daily dose. DA-LEDD: dopaminergic agonist-levodopa equivalent daily dose. RBD: rapid eye movement sleep behavior disorder.

Table 2. Frequency of impulse control disorders and related behaviors in patients with Parkinson's disease according to the presence or absence of rapid eye movement sleep behavior disorder.

	PD-RBD n= 26	PD-noRBD n=29	p
Pathological gambling	1 (3.8%)	1 (3.4%)	0.937
Compulsive sexual behaviors	1 (3.8%)	3 (10.3%)	0.354
Compulsive shopping	1 (3.8%)	2 (6.8%)	0.619
Compulsive eating	2 (7.6%)	4 (13.79%)	0.469
Hobbyism	5 (19.2%)	3 (10.3%)	0.351
Any ICD	3 (11.5%)	5 (17.2%)	0.549
ICD and Related behaviors	6 (23%)	7 (24.1%)	0.926

PD: Parkinson'ss disease. LEDD: levodopa equivalent daily dose. DA-LEDD: dopaminergic agonist-levodopa equivalent daily dose. RBD: rapid eye movement sleep behavior disorder.

Discussion

ICDs in PD have been associated with altered connectivity between an associative striatal area and limbic cortical regions[14]. Conversely, RBD is thought to be the result of disturbances of the REM-generating circuitry[15]. Increased activity of limbic and paralimbic structures during REM sleep may be responsible of the reactivation of previously acquired affective experiences[16]. The association between RBD and ICDs has been previously explored. A cross-sectional interview study in 994 patients with PD found that ICDs and related disorders, especially punding, were associated with the presence of clinically probable RBD (p=0.046), although the statistical significance disappeared after adjusting for age and disease duration[8].

Bayard et al carried out a study with 98 patients with PD who underwent a PSG study and then were screened for ICD's using a semi-structured diagnostic interview by a psychologist[9]. They did not find a statistically significant association between the two non-motor symptoms. More recently, Fantini et al found an increased risk of developing ICDs or related behaviors in patients with PD and RBD[10]. They included a total of 216 patients who were screened for RBD using the RBD Single Question and the RBD Screening Questionnaire (RBDSQ). On the other hand, ICD's were assessed using the Questionnaire for Impulsive-Compulsive Disorders in PD (QUIP)-short form.

Our study design included the use of PSG for the diagnosis of RBD and the use of a disease-specific rating scale for the assessment of ICD's in PD.

The prevalence of ICD and related disorders in the study sample was 23.6%; while the frequency of RBD was 47.2%. No association between the presence of RBD and the presence of ICDs was found in our study. Our findings are in line with the study of Bayard et al, who also used PSG for RBD diagnosis in opposition to a screening questionnaire.

The main predisposing factors for ICDs in PD include male gender, younger age and early age of PD onset and a longer PD duration[17]. In our study, none of these clinical features differ between patients with and without RBD.

Our study have limitations including a small sample size in comparison to similar studies. Nevertheless, the diagnosis of RBD was performed by PSG criteria instead of a questionnaire. Also, the presence of ICD's was based on a rating scale rather than in a structured-interview; although it should be highlighted that the QUIP-RS has a sensitivity of 92% an specificity of 97% for identifying ICDs in our study population[18].

In conclusion, our study failed to show an association of ICDs and related behaviors in patients with PD and RBD diagnosed by PSG. A study with a larger sample and using gold-standard methods for both conditions (PSG and structured-interview) is needed to achieve a solid conclusion.

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Artículo sin conflicto de interés

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