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Sleep Medicine 3 (2002) 181–182

SLEEP MEDICINE

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Journal search and commentary

Article reviewed: REM sleep behavior disorder in sleep-disordered patients with versus without Parkinson's disease: is there a need for polysomnography?☆

Claudia Trenkwalder

Department Clinical Neurophysiology, University of Goettingen, Goettingen, Germany

Accepted 4 January 2002

Objectives

To investigate the sensitivity and specificity of the clinical diagnosis of REM sleep behaviour disorder (RBD) compared with the polysomnographic diagnosis in respect to a population of Parkinson's disease (PD) patients ($n = 19$) and other sleep disorder patients ($n = 273$).

Study design

Series of consecutive cases, clinical and polysomnographic data with comparisons of subgroups.

Study population

A total of 292 consecutive patients with sleep disorders, including 19 patients with PD (mean age 67.7 ± 9.4 years, 13 male, six female) and 273 patients with other sleep disorders as obstructive and central apnea syndrome (SAS), RLS, PLMD, narcolepsy, epilepsy, somnambulism, sleep-state misperception and idiopathic RBD (mean age 55.0 ± 16.0 years, 168 male, 105 female) seen at the interdisciplinary sleep disorder center at the University Hospital of Munich, Germany.

Methods

RBD was diagnosed clinically according to the guidelines given in the International Sleep Disorders Classification. Those criteria comprise movements of the limbs or body associated with dream content and one of the following features: potentially harmful sleep behavior; dreams that appear to be acted out; and sleep behavior that disrupts sleep continuity. Clinical interviews included questions about injuries, violent dreams, complex or aggressive behavior during sleep, and L-DOPA induced hallucinations. A neurologist specialized in sleep medicine interviewed all of the patients and, when possible, their bed partners prior to the polysomnogram (PSG) study. Patients were advised to have a PSG if a psychiatric disorder was excluded by the interview. PSG criteria of RBD were defined as REM sleep associated with tonic muscle activity over 50% of a 30-s epoch in the chin EMG and in the EMG of the extremities and a complex movement documented with PSG synchronized videotape.

All patients had a clinical PSG on two consecutive nights with the time between PSG and clinical interview not exceeding a period of 4 months. Patients with PD were recruited from the movement disorder outpatient clinic. All patients without PD were referred to the Department of Neurology of the University Hospital because of sleep disorders.

Statistics

The sensitivity and specificity of specialized interviews for the diagnosis of RBD were determined separately for PD and non-PD patients. The sensitivity was calculated as the ratio of the number of suspected RBD patients based on interviews, who, in fact, had RBD confirmed by PSG, divided by the number of all PSG-confirmed RBD patients. The specificity was calculated as the ratio of the number of patients, who, in fact, had no RBD confirmed by PSG and whose specialized interview did not lead to the diagnosis of RBD, divided by the number of all patients in whom PSG did not reveal RBD.

Results

Clinical diagnoses based on the interviews were distrib-

☆ Eisensehr I, Lindeiner Hv, Jäger M, Noachtar S. J Neurol Sci 2001;186:7–11.

PII: S1389-9457(02)00022-9

uted as follows: in the group of 19 PD patients: four RBD, two L-DOPA induced hallucinations, five difficulties maintaining sleep, three RLS, three OSAs, one nocturnal panic attack, and one hypersomnia. In the PD patients diagnosis of RBD was consistent between the first and second recording night and significantly more frequent than in non-PD patients ($P < 0.0001$). Within the population of PD patients sleep architecture was not different. The clinical variability of RBD varied from mild movements and sleep talking to violent behavior in affected PD patients. All patients with idiopathic RBD, however, showed violent behavior.

Interviews were conducted for a limited number of bed partners (seven of nine PD patients with RBD and two of four patients with idiopathic RBD).

The sensitivity of patient interviews for the clinical diagnosis of RBD compared with PSG results was low for PD (33%), but high for idiopathic RBD (100%). The specificity for clinical interviews in PD patients compared with PSG results was good (90%) and also high in the non-PD patient group (99.6%).

Comment

In this large case series the frequency of RBD and the diagnostic usefulness of polysomnographic recordings was investigated. The most surprising result was the low sensitivity for RBD using a clinical interview in PD patients. One may speculate that this low sensitivity results from the non-selective questions of the interview, but this may be easily rejected when we look at the specificity of RBD clinical diagnosis of 99.6% in the group of non-PD patients. The reasons for the clinical underestimation of RBD in PD patients may arise from the various sleep disorders which evolve in this group during the course of the disease and which may copy parts of RBD. The authors suggest that mild forms of RBD may be easily missed by clinical interviews due to the patient's unawareness and the high prevalence of other PD related sleep disorders (nocturnal akinesia, frequent awakenings, restlessness during the night, increased motor activities). The authors note in addition a possible selection bias, since only patients complaining about sleep disturbances were selected for this study. On the other hand, the prevalence of RBD within this PD population was not higher than in previous studies in which polysomnograms were performed [1], while the interview-based diagnoses were as low as in another study performed using only clinical interviews for the diagnosis of RBD [2]. PSG recordings are needed, therefore, to confirm a possible diagnosis of RBD for PD patients with a significant sleep complaint. The conclusion of the authors, that clinical interviews may miss a substantial number of RBD in PD patients, is limited by the fact that neither a questionnaire validated specifically for the diagnosis of RBD nor a standard set of clinical interviews has been developed. The clinical diagnosis is likely to differ for each sleep center, making it impossible to compare results between centers.

The considerable variation in sensitivity of the clinical interview diagnosis of RBD in this study of the PD and idiopathic population may reflect the process of neurodegeneration. Idiopathic cases showed the most severe forms, while PD cases were mild. Milder cases of RBD with PD, with a decrease in reported RBD episodes, often occur with the progression of PD neurodegeneration [3]. However, increased muscle tone during REM sleep (the primary PSG finding for diagnosis of RBD) may persist, even while the number of episodes decreases. Although only one of the 19 PD patients was misdiagnosed as L-DOPA induced psychosis instead of RBD, this is a therapeutically relevant differential diagnosis – a further clinical import derived from this study. The authors mention, correctly, that nocturnal confusional states in PD patients should be carefully investigated for overlooked RBD. The complexity of pharmacological, degenerative and specific motor factors in PD patients may create milder clinical presentations of RBD. It is unclear whether the idiopathic RBD also has a milder form at the onset of the disorder, but it does not appear to have the same pattern of progression from a severe to a milder form over time.

The major unresolved question is how many patients with mild idiopathic RBD are overlooked because they are not referred to a specialized sleep center? PD patients as well will not be referred for sleep disorder, but will most often be evaluated in a movement disorder outpatient clinic. We should not underestimate the referral bias in these two groups of patients. If RBD in fact precedes a neurodegenerative disease — i.e. an evolving synucleinopathy — as proposed in a recent article [4], there will be a high prevalence of RBD within the elderly population.

From this retrospective study of a large case series of sleep disorder patients it appears that RBD may be significantly under diagnosed in PD patients unless a full sleep medicine evaluation is used as part of the standard patient evaluation. It would be interesting to learn about the therapeutic consequences of these newly diagnosed cases and how this knowledge may improve sleep and quality of life in these patients.

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