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Sleep Medicine 2 (2001) 255–257

SLEEP MEDICINE

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Journal search and commentary

Article reviewed: Rapid eye movement sleep behaviour disorder: demographic, clinical and laboratory findings in 93 cases ☆

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Objectives

1. To study demographic, clinical, laboratory and aetiological findings in 93 consecutive patients with REM sleep behaviour disorder (RBD).
2. To examine the relationship between RBD and neurological disease.

Study design

Retrospective review of clinical and polysomnographic data from consecutive cases, and a review of neuroimaging data (CT or MRI scans) where available for these cases.

Study population

Ninety-three patients (81 men, 12 women; mean age at presentation: 64.4 years, range 36–84 years) with clinical RBD, seen at the Mayo Sleep Disorder Center between January 1 1991 and July 31 1995, identified by the computerized record system, confirmed by polysomnography and a history of self-injuries (32%), assault of spouses (64%), or altered dream content in 87% of patients.

Methods

RBD was defined according to standard criteria (Mahowald and Schenck, 1994), excessive phasic or tonic EMG activity during recorded REM sleep, a history of injurious or disruptive sleep behaviour or documentation of abnormal behaviour during REM sleep in the laboratory, and the absence of EEG epileptiform activity during REM sleep.

Information on patients was obtained by retrospective review of clinical records which included a standard sleep questionnaire completed by all patients and a medical history and neurological examination completed for 89% of the patients. Associated neurological diseases were diagnosed by consultant neurologists according to the following definitions: Parkinson's disease (PD) defined by the presence of at least two of the following four symptoms: rest tremor, bradykinesia, rigidity, postural instability and a therapeutic response to levodopa; multiple system atrophy defined according to the consensus criteria of the American Autonomic Society, 1996; dementia defined by abnormalities on neuropsychometric testing; narcolepsy defined by standard abnormalities on the multiple sleep latency test.

Diagnoses of psychiatric diseases were made for 27 patients based on the patients' history and the clinical psychiatric assessments.

Sleep studies were performed and evaluated according to standard protocols with recording of three or more EEG channels to assess epileptiform

☆ Olson EJ, Boeve BF, Silber MH, (Brain 2000;123:331–339).

PII: S1389-9457(01)00093-4

activity. Split-screen or time-synchronized video recordings were performed. Evaluation of sleep studies followed the guidelines of Rechtschaffen and Kales, 1968.

Results

These 93 patients showed the following clinical features of RBD:, age of RBD onset ($n = 56$) 60.9 years, age at diagnosis 64.4 years (range 37–85); history of parasomnias 7%; self-injury 32%; partner assault 64%; description of dream content 55%. Seventy percent of the 82 patients asked reported daytime sleepiness and the causes could be identified for 63% of these as: SA (sleep apnea syndrome) for 23, PLMD (periodic limb movement disorder) for 26, and narcolepsy for four patients.

Laboratory findings included increased phasic or tonic EMG in REM sleep in 97%, abnormal gross motor behaviour in REM in 45%, periodic limb movements (PLM) more than 20/h in 47% and an abnormal sleep-disordered-breathing index (>10/h) in 34% of patients.

Associated neurological disorders were suspected in 53 of 93 patients. These patients were examined neurologically and with neuroimaging studies (CT or MRI scan). Their final clinical diagnoses yielded: 25 patients with Parkinson's disease (PD), 14 with multiple system atrophy (MSA), seven with dementia without parkinsonism, one with Progressive Supra-nuclear Palsy (PSP), one with brainstem infarction and two with prior encephalitis. Imaging studies of these patients revealed generalized atrophy in 24 cases, non-specific white matter lesions in 20 cases, a normal scan in 15, and some other non-relevant findings in the remaining patients.

The gender distribution showed the usual male preponderance for the entire RBD group, but this did not occur for those with associated neurological disorders. Eight of 12 female patients with RBD had documented neurological disease, especially MSA (five of 14 MSA patients were females).

Twenty-four of 93 patients had a lifetime history of a psychiatric disorder.

Treatment was partially to completely successful in 87% of 38 patients given clonazepam (0.25–1.5 mg before sleep). Thirty-four patients were not treated because symptoms were only mild, OSAs were present or patients refused pharmacological therapy.

Comment

With this retrospective case series, the largest number of consecutive RBD cases published, the authors could confirm essential clinical findings reported in previous studies adding some interesting new aspects. As in former studies, the age of RBD patients was about 60, only slightly older than previously reported. There was again the male preponderance, the high risk of self-injury, including two patients with subdural hematoma, and the high incidence of associated neurological diseases. Violent dream contents with mainly a defence of the sleeper against attacks were commonly reported. New findings consisted of a high percentage of female RBD patients within the MSA group and the decrease of events with time for RBD patients with documented neurodegenerative diseases, explained by the authors as a progressive involvement of brainstem structures.

The frequent association of neurodegenerative disorders with RBD confirms results of previous studies and case series that revealed a high rate of occurrence of PD and Lewy body dementia for patients with RBD. In a recent report [1], Turner and coworkers (2000) described an interesting patient, who first presented symptoms of RBD 17 years prior to the development of dementia with visual hallucinations. The patient spent about 2 years with a progressive worsening of neuropsychiatric symptoms that led to the patient's death. Autopsy confirmed the diagnosis of Lewy body dementia particularly with neuronal loss of monoaminergic brainstem nuclei. These histopathological findings support the hypothesis that the monoaminergic neurons in the brainstem could be the anatomical correlate of RBD, an hypothesis also advanced in this article by Olson et al. In PD as well as in MSA, PSP or dementia a neurodegenerative process may affect these neurons, and they may alter motor activity in REM sleep earlier than in wakefulness. Therefore, RBD may precede motor disabilities in these patients.

The authors claim that neuroimaging studies do not add diagnostic information to the clinical findings. That may be correct for CT or even some MRI inves-

tigations, but not for more sophisticated techniques that are desirable for detecting subtle changes of the monoaminergic system. Some cases may point to early neurodegenerative processes using SPECT techniques with quantification of the dopamine transporter system [2] or PET studies to show cerebral metabolic changes in neurodegeneration.

The 93 patients reported here provided excellent clinical information, although the main limitation of this study consists of its retrospective design. Unfortunately the authors could complete the clinical information only for subgroups of patients, so that some conclusions can not be applied for RBD patients in general. A selection bias of data assessment is likely to have occurred. This applies especially to the lack of follow-up data, which could be obtained only for some patients within the treatment management, but not for overall disease progression. These cases underscore the need for a careful prospective observation of RBD patients in respect to the development of neurodegenerative diseases. If a degenerative process or a lesion of monoaminergic nuclei in the brainstem is the pathological correlate of RBD, one may detect a neurological disorder in almost every RBD patient, if the observation period is long enough. The percentage of 53% neurological disorders may reflect that our methods to detect neurodegenerative disorders are not yet accurate enough to establish the final and correct diagnosis.

References

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[2] Eisensehr I, Linke R, Noachtar S, Schwarz J, Gildehaus FJ, Tetsch K, Reduced striatal dopamine transporters in idiopathic rapid eye movement sleep behaviour disorder: comparison with Parkinson's disease and controls. Brain 2000;123:1155–1160.