HHS Public Access

Author manuscript

J Neurol Sci. Author manuscript; available in PMC 2023 May 15.

Published in final edited form as:

J Neurol Sci. 2022 May 15; 436: 120219. doi:10.1016/j.jns.2022.120219.

Behavioral Validation of the University of Michigan REM Behavior Disorder Questionnaire in the Synucleinopathies

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Abstract

Many questionnaires have been proposed to collect data related to dream enactment. These are typically validated by reference to objective measurements of polysomnography, which incorporate physiologic recording of muscle activity during sleep. Another approach to such questionnaire validation would be the direct behavioral observations of patients' sleep. In the course of an ongoing study, we examined the association between sleep technologists' observations of dream enactment on two consecutive sleep laboratory nights and patients' and bedpartners' responses on the University of Michigan REM Behavior Disorder Questionnaire (UMRBDQ). Results suggested good correspondence between laboratory-based observations and questionnaire responses that did not appear to be impacted by whether the patient or the bedpartner completed the questionnaire. These results suggest utility of the UMRBDQ to identify individuals who have dream enactment during sleep.

Keywords

REM Behavior Disorder; synucleinopathy; dream enactment

1. Introduction

Initial presentation of synucleinopathies often involve patient or spouse/bedpartner reports of acting out dreams [1]. Although several questionnaires have been proposed to screen for such behavior [2], the most direct test of whether a questionnaire accurately reflects behavioral dream enactment would be observational data generated by another individual who observed the patient's sleep. In the course of a larger study of sleep in synucleinopathic

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Declarations of Interest:

Dworetz: No declarations of interest

Trotti: Dr. Trotti is a member of the Board of Directors of the American Academy of Sleep Medicine, the AASM Foundation, and the American Board of Sleep Medicine. Any opinions expressed are those of the authors and do not necessarily reflect those of these organizations.

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disease [3], we examined whether dream enactment was noted on either (or both) of two consecutive sleep lab nights. We then examined associations between questionnaire-derived reports of dream enactment made prior and independently from those observations using a previously published, polysomnographically validated scale (University of Michigan REM Behavior Disorder Questionnaire: UMRBDQ) [4]. We hypothesized that the questionnaire responses prior to sleep laboratory recording that indicated a higher likelihood of dream enactment would be reflected in behavior of the patient while under observation in the sleep laboratory.

2. Materials and Methods

Patients were 92 individuals (67 men, 25 women) ranging from 39 to 83 years of age (mean 64.9 ± 8.9 [SD]). Diagnoses included idiopathic Parkinson's disease (n = 67), Lewy Body Dementia (n = 14), Multi-system atrophy (n = 3), and idiopathic RBD (n = 8). Time from diagnosis (n = 87) ranged from < 1 year to 20.5 years (mean 4.9 ± 4.0 [SD]). Mean Hoehn and Yahr (n = 91) score was 2.10 (± 0.72 [SD]). Mean Unified Parkinson's Disease Rating Scale (UPDRS) motor score (n = 80) was 17. 6 (± 9.8 [SD]). Patients underwent overnight polysomnography with a single nighttime technologist attending to the patient. Only a single patient was studied at a given night and the overnight technologist performed both the electrode application and monitored the patient polysomnographically with infrared video monitoring for the entire night. The technologist was instructed to document on a log any abnormal behaviors originating during sleep. Documentation was subsequently reviewed independently from the UMRBDQ for noted dream enactment on each night of monitoring. UMRBDQ was completed either by the patient's spouse/bedpartner n = 74) or, for patients living alone (n = 12), themselves. In 6 cases, the person completing the scale was left unspecified. The scale was quantified following the procedures described in its original description [4].

3. Results

Of the 92, 30 individuals (32.6%) exhibited dream enactment behavior during REM observed on either night of polysomnographic recording (19 on one night; 11 on both nights). Mean UMRBDQ total scores were higher in subjects with observed dream enactment on one or both nights (0.43 [95% CI 0.34–0.52]) when compared to those without observed dream enactment (0.32 [95% CI 0.26–0.38]) on either night, the difference statistically significant (p = 0.041; 2-tailed test). UMBRDQ scores did not differ between those patients showing dream enactment on both nights when compared to a single night (p = .98). When the comparison of patients with and without observed dream enactment was limited to those in whom the UMRBDQ was reported only by spouse/bedpartner, the difference between groups no longer was statistically significant (p = .066), likely owing to smaller sample size (n = 74)

4. Discussion

These data confirm the potential utility of the UMRBDQ as a questionnaire-based tool to examine behavioral dream enactment. Other approaches to this have been developed as well

and range from single items to scales with as many as 13 items (2). Elsewhere we have shown that the 6 items that constitute this scale have high internal consistency and reliability (5). An additional feature of the scale is that its derivation of total score essentially corrects for missing response by altering the denominator of the ratio. Its utility as a screening tool in non-neurologic populations remains to be determined, as does its sensitivity as an outcome for interventional trials.

Acknowledgments

Support: NS 083748 (LMT); NS 111280 (LMT); NS 050595 (DLB)

References

[1]. Iranzo A, Molinuevo JL, Santamaría J, Serradell M, Martí MJ, Valldeoriola F, Tolosa E. Rapid-eye-movement sleep behaviour disorder as an early marker for a neurodegenerative disorder: a descriptive study. Lancet Neurol. 2006 Jul;5(7):572–7. doi: 10.1016/S1474-4422(06)70476-8. [PubMed: 16781987]

[2]. Li SX, Lam SP, Zhang J, Wing YK. Instruments for screening, diagnosis and assessment of RBD severity and monitoring treatment outcome. In: Schenck CH, Hogl B, Videnovic A (Eds.), Rapid-Eye-Movement Sleep Behavior Disorder, Springer, Cham, Switzerland, 2019, pp. 255–269. doi: 10.1007/978-3-319-90152-7_19

[3]. Bliwise DL, Trotti LM, Juncos JJ, Factor SA, Freeman, Rye DB. Daytime REM sleep in Parkinson's disease. Parkinsonism Relat Disord 2013 Jan;19(1):101–3. doi: 10.1016/j.parkreldis.2012.08.003. [PubMed: 22939103]

[4]. Consens FB, Chervin RD, Koeppe RA, Little R, Liu S, Junck L, Angell K, Heumann M, Gilman S. Validation of a polysomnographic score for REM sleep behavior disorder. Sleep. 2005 Aug 1;28(8):993–7. doi: 10.1093/sleep/28.8.993.

[5]. Bliwise DL, Scullin MK, Factor SA. Internal consistency of the University of Michigan RBD questionnaire. J Neurol 2014; 261: 1439–41. doi: 10.1016/j.jns.2013.09.009. [PubMed: 24916829]