

Association of REM sleep behavior disorder with other neuropsychiatric non-motor symptoms in Indian patients with Parkinson's disease

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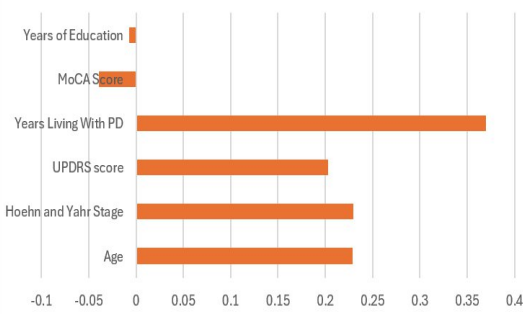
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KEY MESSAGE : REM Sleep Behaviour Disorder shows significant association with presence of hallucinations and subjective complaints of memory impairments in Parkinson's Disease.

INTRODUCTION

Non-motor symptoms form an important part of the disease spectrum of Parkinson's Disease(PD). Some of these manifestations such as hyposmia, rapid eye movement (REM) sleep behaviour disorder (RBD), depression and constipation can precede the motor symptoms by several years. Braak and colleagues introduced the concept of a six-stage pathological process in Parkinson's, beginning in Braak stage 1 where there is degeneration of the olfactory bulb and the anterior olfactory nucleus, and then in Braak stage 2 the pathological process progresses to the lower brainstem. In preclinical stages 1 and 2 of Parkinson's disease, these areas mediate non-motor symptoms such as olfaction, sleep homeoeostasis and other autonomic characteristics(1).The pedunculopontine nucleus, locus coeruleus, subcoeruleus nucleus, and serotonergic raphe nuclei are key areas implicated in development of visual hallucinations and RBD in PD(2). RBD occurs in about a third of patients with Parkinson's and data suggests that RBD heralds the onset of motor symptoms in up to 40% of patients(1). Previous studies have shown pRBD(probable RBD) to be a independent risk factor for cognitive decline in PD. A study reported lower MMSE and MoCA scores in the group with RBD in PD compared to the group without RBD(4). Another study found that pRBD in early PD was associated with greater annual rate of decline in MoCA score and delayed free recall and is a risk factor for future cognitive decline in PD(5). Previous studies have also reported a higher risk of visual hallucinations in those PD patients who have RBD(3). But no such studies have been published from India and so we undertook this work to find association between RBD and other neuropsychiatric symptoms and cognition in PD.

Figure 1: Correlations of RBD with various parameters of PD patients RBD



METHODOLOGY

Ninety-six consecutive patients with PD, (mean age 65.94; SD 6.69 years), attending our Neurology Clinic, underwent detailed assessment including MDS-UPDRS Part 3 motor evaluation (Movement Disorder Society-sponsored Revision of the Unified Parkinson's Disease Rating Scale) and Hoehn and Yahr (HY) grading for motor severity. Neuropsychiatric symptoms, including presence of RBD, were determined as part of an overall NMS assessment using the NMS questionnaire (NMSQ). The single-question RBD1Q was also asked for presence of Probable RBD (pRBD). Montreal Cognitive Assessment (MoCA) was done in a subset of patients(n=81). Statistical analysis was done using SPSS 29.0.2.0. P-value <0.05 was considered significant.

RESULTS

Mean duration of motor symptoms in our patients was found to be 4.96 (SD:3.89) years. pRBD was noted in 43 patient(n=96) (44.8%). pRBD was the most prevalent sleep related non-motor symptom in our study and the 4th most prevalent non-motor symptom in PD. p RBD showed a significant correlation with duration of motor symptoms of PD ($r = 0.370$, $p < .001$) but not with HY score ($\phi = 0.23$, $p = 0.24$) (indicates motor staging) or UPDRS score ($\phi = 0.203$, $p = 0.48$) (indicates motor severity). Presence of pRBD showed moderately positive correlation with hallucinations ($\phi = 0.372$, $p < .001$), and with complaints of forgetfulness($\phi = 0.300$, $p = .003$). However, no significant correlation was found between pRBD and MoCA score(for cognitive assessment) ($\phi = -0.039$, $p = 0.729$) or with other neuropsychiatric non-motor symptoms of PD such as depression($\phi = 0.101$, $p = 0.327$), anxiety($\phi = 0.251$, $p = 0.013$), apathy($\phi = 0.181$, $p = 0.077$) or delusions($\phi = 0.256$, $p = 0.012$) (Ref Fig 2). The average MoCA score of the study group was 18.97(SD: 4.97). pRBD showed no significant correlation with the presence of other preclinically appearing non-motor symptoms of PD - like drooling($\phi = 0.131$, $p = 0.204$), anosmia($\phi = 0.007$, $p = 0.944$) or constipation($\phi = 0.219$, $p = 0.032$).

CORRELATION COEFFICIENT WITH RBD

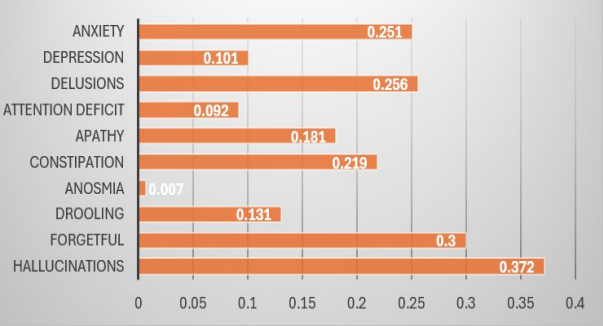


FIGURE 2.

DISCUSSION & CONCLUSION

Our results on prevalence of RBD and its relation with hallucinations are in keeping with that in the existing literature. Previous studies have revealed that RBD to be an independent predictor of hallucinations in PD patients. Cholinergic dysfunction may account for this relation between these two non motor symptoms of PD(3). Contrarily, the dichotomy between subjective reporting of memory impairment and MoCA score is against prevalent knowledge, with many earlier studies linking RBD with objective cognitive impairment. We could not show significant correlation with MoCA scores in our study. This suggests the need for additional detailed and focused questioning of patients with PD regarding both RBD and memory issues and need for more detailed cognitive assessment to elucidate a significant relation between RBD and cognition in PD.

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