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EXCESSIVE DAYTIME SOMNOLENCE IN PARKINSON'S DISEASE IN A TERTIARY CARE HOSPITAL IN SOUTHERN INDIA: A CROSS-SECTIONAL STUDY

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ABSTRACT **Objectives:** To ascertain the proportion of Excessive Daytime Somnolence (EDS) in patients of Idiopathic Parkinson's Disease and its association with certain variables.

Methods: 60 patients of Idiopathic PD, attending Neurology OPD at SRMCRI, Chennai were assessed for EDS by the Epworth Sleepiness Scale. Thereafter it was evaluated if certain variables: gender, H&Y stage and use of Dopamine agonists, influenced severity of EDS.

Results: Of the 60 PD patients, 33(55%) had EDS. 23(69.7%) had mild EDS whereas 10(30.3%) had severe EDS. 71.1% males and 36.4% females reported EDS. 30% in Stage1, 40% in Stage1.5, 38.5% in stage2, 75% in stage2.5, 75% in stage3, 85.7% in stage4 had EDS. 62.8% patients on Dopamine agonists reported EDS.

Conclusion: Study suggests, EDS in PD is commoner in males, in patients who are on Dopamine agonists and is more severe with advanced H&Y stages.

KEYWORDS : Excessive daytime Somnolence (EDS), Epworth Sleepiness Score (ESS)

INTRODUCTION:

Excessive Daytime Somnolence (EDS) is a chronic state of inability to stay awake during the day and is a frequent condition in PD affecting between 15 and 71% of patients. A score of more than 10 on Epworth sleepiness scale (subjective) or a mean latency of less than 8 minutes on Multiple Sleep Latency Test (objective) suggests inappropriate sleepiness (EDS). Sleepiness occurs either as a constant feeling that the patient is aware of or as episodes of sudden, irresistible, overwhelming sleepiness without awareness of falling asleep (sleep attacks). EDS may precede the onset of motor symptoms in PD(1) and is associated with a higher risk of falls and more severe cognitive decline(2). Several factors have been known to contribute to the development and worsening of EDS in PD. The most important among these is treatment with dopaminergic medication(3,4),particularly dopamine agonists. Additionally, other sleep abnormalities in PD, including insomnia, sleep apnea, restless leg syndrome have all been linked to EDS. Treatment with sedative antidepressants, worsening H&Y stages and disease duration (5.6) have also been associated with worsening EDS. The pathological changes in patients with EDS are noted in the brainstem, particularly in the serotonergic raphe nucleus and noradrenergic locus coeruleus(7), with loss of wake promoting orexin (hypocretin) neurons.[9]

Aims and Objectives:

Our objective was to ascertain the proportion of Excessive Daytime Somnolence (EDS) in patients of Idiopathic Parkinson's Disease (PD) and to analyze its association with certain variables.

MATERIALS AND METHODOLOGY:

A cross-sectional study on 60 consecutive patients of Idiopathic Parkinson's Disease, irrespective of age and sex, attending the Neurology Out-patients department at Sri Ramachandra Medical College and Research Institute, Chennai between 1.1.2016 to 31.12.2017 were assessed for Excessive Daytime Somnolence (EDS). A diagnosis of Idiopathic PD was made based on the criteria outlined in the UKPDS Brain Bank Criteria. Patients with PD with Hoehn and Yahr stages 1 to 4 were enrolled and assessed for EDS using Epworth Sleepiness Scale after obtaining their signed consent. A diagnosis of EDS was made if the score on the Epworth Sleepiness Scale was more than 10. Thereafter it was evaluated if certain variables play a role in influencing the development or worsening of EDS. The variables taken were, sex, Hoehn and Yahr stage and the concomitant use of Dopamine agonists (Pramipexole and Ropinirole). Patients who had a MMSE Score of less than 27 and those with atypical forms of Parkinsonism, history of head trauma or surgery, psychiatric disorders and drug induced Parkinsonism were excluded.

RESULTS:

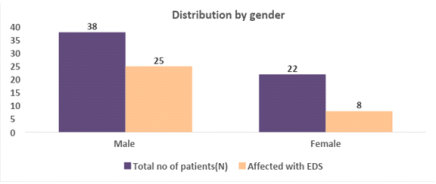
Out of the 60 Idiopathic PD patients enrolled, 38 were males and 22 females. The mean age of patient's was 60.4+11 years. 33 patients (55%) were found to have EDS, out of which 23 (69.7%) had mild EDS (ESS 10-15) whereas 10 (30.3%) had severe EDS (ESS 16-24). Among 38 males, 25 had EDS (65.8%) whereas only 8 out of 22 (36.4%) females reported EDS.

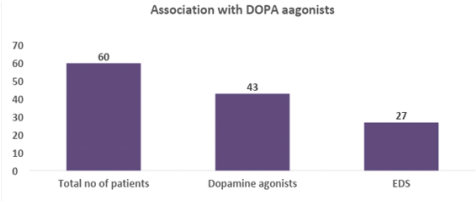
EDS in our study showed a greater preponderance with advancing H&Y stages (Mean H&Y stage 2.25 + 0.93). 3 out of 10 (30%) in Stage 1, 4 out of 10 (40%) in Stage 1.5, 5 out of 13 (38.5%) in stage 2, 6 out of 8 (75%) in stage 2.5, 9 out of 12 (75%) in stage 3, 6 out of 7 (85.7%) in stage 4 reported EDS.

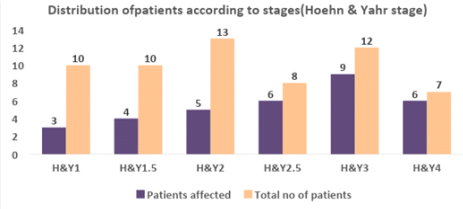
All of our patients were on Levodopa therapy. Additionally, 43 (71.7%) patients were on treatment with Dopamine agonists (Pramipexole/Ropinirole) of which as many as 27 reported EDS (62.8%).

Total no of patients	60
Mean Age	60.4(+/-11)years
Mean H&Y Stage	2.25(+/- 0.93)
EDS afflicted	33(55%)
Mild EDS (ESS:11-15)	23(69.7%)
Severe EDS(ESS:16-24)	10(30.3%)
M:F	38:22
EDS in Males	25(65.8%)

EDS in Females	8(36.4%)
EDS in H&Y1(N=10)	3(30%)
EDS in H&Y1.5(N=10)	4(40%)
EDS in H&Y2(N=13)	5(38%)
EDS in H&Y2.5(N=8)	6(75%)
EDS in H&Y3(N=12)	9(75%)
EDS in H&Y4(N=7)	6(85%)
EDS in patients on DOPA agonists (N=43)	27 (62.8%)
P Value for Gender	0.30
P Value for H&Y Stage	0.13
P Value for Patients on DOPA agonists	0.21







DISCUSSION:

This study was conducted to estimate the proportion/magnitude of EDS in patients afflicted with Idiopathic Parkinson's Disease and to note its association with certain variables. Case–controlled epidemiological studies performed in various countries consistently have found higher sleepiness scores and a higher incidence (range 16–74%) of abnormal somnolence in patients with PD than in age-matched and sex-matched controls. In our study, EDS is present in 55% of our patients, similar to Hobson et al.(3) where 51% of their PD patients have been on treatment for sleepiness. RD Abbott et al.(8) ,whose study had 50% of his patients suffering from EDS has also reported similar findings. Another study by WG Ondo et al,(4) has found a similar proportion of PD patients (50.2%) affected by excessive somnolence. Gjerstad et al.'s study(11) which followed up PD patients over 8 years also reported a >40% occurrence of EDS in their patients. In our study, 30% had severe EDS (ESS>16), 63.3% of those affected were males, comparing favourably with the study by Valerie Cochen De Cock, where 46.2% of her patients had subjective EDS, of which 27.4% had severe EDS, 74.2% of EDS affected were males(12). Several other studies have also suggested a male preponderance in patients with EDS. Ghorayeb et al.'s study(13) of a nationwide survey of EDS in Parkinson's disease in France shows 65% of EDS patients to be male whereas only 35% are female, similar to our findings. Suk Yun Kang's study(14) on 413 PD patients with EDS also shows a male predisposition comprising of 55% of all EDS affected patients in that study. Our study showed that 62.8% of patients with EDS were on Dopamine agonists, Pramipexole or Ropinirole, in addition to Levodopa therapy. Similar findings have been corroborated by RA Hauser(15) and T Roth(16) in their respective studies which showed 57% and 67% of patients on Dopamine agonists to have EDS. Roth et al.'s study of 24 patients with EDS on Dopamine agonists, showed 16(67%) to have unintended sleep episodes. 26 out of 33 patients suffering from EDS (78.8%) were in H&Y Stages 2-4, similar to the findings of a Taiwanese study by YY Lin et al. who observed that 44 out of their 59 patients (74.6%) affected with EDS were in the H&Y stages of 2 to 4 (17). Our study, with a mean H&Y staging of 2.25(+0.93) also compares favourably to the findings of the Canadian Movement disorder group survey by Hobson et al(3) where their mean H&Y stage of 2.2(+0.68) has 51% of their PD patients suffering from EDS . In the Indian context, Kumar and Bhatia et al. have reported an increase in the occurrence of EDS with advancing H&Y stages in PD(10) . This can possibly, be attributed to the fact, that, with worsening severity, greater doses of Dopaminergic therapy is required for control of motor symptoms, which in turn worsens EDS.

However in our study a statistically significant association could not be obtained, probably owing to the relatively small sample size.

CONCLUSION:

Our study suggests that EDS in PD is common. It also suggests that males, more advanced H&Y stages and those on dopamine agonists have greater predisposition to developing EDS. In such patients it would be prudent to titrate the dose of Dopamine agonists.

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