INTRODUCTION, PURPOSE

Difficulty turning over in bed is one of the motor symptoms of Parkinson’s disease (PD), with a prevalence of 45-82% for this subjective complaint [1-4]. In recent years, the accuracy of three-axis accelerometers has improved together with advances in miniaturization, and wearable accelerometers are now available to analyze kinetic data of nocturnal movements in PD patients [5]. This study set out to objectively assess nocturnal turnover movements in PD patients with overnight monitoring using a wearable three-axis accelerometer to test the hypothesis that inability to turn in bed would negatively impact on daytime sleepiness, sleep quality, and depressive mood in PD patients.

METHODS

Study Design: A prospective observation study
Subjects: PD patients (n=64)
Data Collection:
1) Activity of daily living in PD patients
   ● Unified Parkinson’s disease rating scale (UPDRS) & Barthel Index
   ● Modified Hoehn-Yahr stage (MH-Y)
2) Sleep evaluation
   ● Epworth Sleepiness Scale (ESS)
   ● Beck Depression Inventory (BDI)
   ● Parkinson’s Disease Sleep Scale-2 (PDSS-2)

Overnight monitoring of turnover movements:
A wearable motion recorder (75 mm × 50 mm × 20 mm, 120 g) equipped with three-axis acceleration sensors (Mimamori Gait system, MG-M1110-HW; LSI Medience)
● Fixation on the center of the abdomen at the novel
● Monitoring for 10h from 21:00 to 7:00 the next day

Definition of turnover movement:
Turnover movements are defined as movements simultaneously registering acceleration along three axes (Y axis value ≤0.32G, X axis value ≥0.58G, Z axis value ≤0.20G) [5].

RESULTS

Fig 2: Number of turnover movements in bed correlated significantly with disease duration, modified H-Y stage, B-I, and total UPDRS score.

Table 2: Multivariate logistic regression analyses.

CONCLUSIONS

Decreased number of turnover movements may not be a direct determinant of daytime sleepiness, sleep disorders, or depressive mood in PD patients. Use of anti-psychotic drugs and higher UPDRS score are factors significantly associated with daytime sleepiness and uncomfortable sleep, respectively.

REFERENCES