

Evaluation of Sleep Quantity and Quality in Older Adults with Nocturia Using Portable Electroencephalogram Acquisition Device

Introduction and Objective: Nocturia is not only bothersome for patients and their partner because of sleep disturbance, but is also associated with increased morbidity such as bone fracture and depression. Although the state of sleep should be evaluated objectively by electroencephalography (EEG), the disturbed sleep has never been evaluated by EEG. We investigated the state of sleep in the older adults with nocturia by use of portable EEG acquisition device

Materials and Methods: The sleep EEG was recorded at home for 2 or more continuous days in 17 older adults with nocturia and 10 adult volunteers by the portable EEG acquisition device (Proassist, Ltd., Japan). Frequency volume charts were simultaneously recorded in all those subjects.

Results: The average ages of older adults and volunteer groups were 72.6 ± 0.6 and 37.7 ± 11.3 years old, respectively. The measurement of sleep EEG in older adults and volunteers were performed totally 43 and 12 times (average 2.6 ± 1.6 times/older adult, 1.2 ± 0.4 times/volunteer). The total number of nocturnal voiding during examination was 90 and average frequency of nocturia was 2.1 ± 1.2 times/older adult. There were significant differences in time in bed, sleep period time, total wake time after sleep onset, deep sleep time, and sleep efficacy between older adults with nocturia and adult volunteers without nocturia. Older adults with hours of undisturbed sleep (HUS) (defined as the time between sleep onset and the first awakening to voiding) within 2 sleep cycles had longer wake time after sleep onset and shorter deep sleep time and lower sleep efficacy compared to those with HUS more than 2 sleep cycles.

Conclusions: We objectively demonstrated with portable EEG acquisition device that not only the frequency of nocturnal voiding but also the time of awakening deteriorates the quality of sleep in older adults with nocturia. Therefore, it is very important to pay attention to both the frequency of nocturnal voiding and the time of awakening for improvement of QOL in older adults with nocturia.