Disordered breathing during sleep in patients with dementia

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Background: Sleep plays a vital role in facilitating a healthy recovery. Within the context of the European research project TeNDER, our focus was put in analyzing the sleep behaviour and identifying critical events during sleep in elderly patients with dementia.

Recent studies have indicated a link between cognitive impairment and sleep apnea. Specifically, research by Bubu et al. in 2020 [1] suggests a correlation between biomarkers associated with neurodegenerative processes in Alzheimer's disease and sleep apnea.

In our pursuit of enhanced detection methods, we employed an unobtrusive sleep analyzer (Withings SA) positioned under the mattress. This innovative approach is designed to accurately identify moderate to severe sleep apnea, offering a level of precision comparable to polysomnography, which is currently the gold standard in medical sleep analysis [2].

Method: The intervention was conducted monocentric at the Alzheimer's Therapy Centre at the Schoen Clinik Bad Aibling. This centre comprised 19 apartments where patients with dementia reside with their primary caregiver for an average period of three weeks. Inclusion criteria for the study encompassed patients with dementia who self-reported sleep problems.

To ensure medical-grade detection of sleep apnea, the CE-certified sleep analyser was employed. This sensor not only detected sleep apnea but also assessed the overall quality of sleep and gathered routine clinical data. Severity categorization of sleep apnea was determined through the apnea-hypopnea index (AHI) [3, 4]. The AHI, calculated as the sum of apneas and hypopneas per hour of sleep, provides norm values for categorizing severity: a value of five or more indicates mild, 15 or more suggests moderate, and 30 or more signifies severe sleep apnea [5].

Objectives: The primary objective of this data analysis, using routine clinical data, is to ascertain the prevalence rate of sleep apnoea in patients diagnosed with dementia. The study aims to establish both the prevalence of sleep apnea and assess the overall sleep quality in patients with dementia.

Results: A total of 69 patients (21 female; mean age 72.22 ± 9.26 years) diagnosed with dementia used the sleep sensor for an average duration of 8.2 days (± 3.93). The recorded data revealed an average total sleeping time (TST) of 7.38 hours per night (± 1.44), and patients spending 8.35 hours in bed (± 1.24). The sleep latency, representing the time taken to fall asleep, averaged 20.54 minutes (± 10.82).

Regarding the sleep efficiency, the median value was found to be 90 % with the minimum and maximum values recorded as 31 % and 98 % respectively.

Among the participants, the sleep sensor identified sleep apnea in 50 patients, with a mean AHI score of 21.82 points. The severity of apnea varied from mild (AHI 10.49) to severe (AHI 34.72). Patients displaying signs of suspected apnea were advised to seek consultation with a specialist.

Conclusion: This study has demonstrated that disordered breathing during sleep, particularly sleep apnea, is a significant factor for patients with dementia. Furthermore, the analysis indicated that individuals with dementia exhibited high sleep efficiency, suggesting an overall favourable sleep quality.

These findings suggest a potential shift in the approach to patient care in rehabilitation. Further investigation is planned through a multicentre analysis to deepen our understanding of these associations.

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