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Sleep Disorders in Cancer Patients: A Cross-Sectional Study

Maha Ait Berri[1*], Abdellah Taous[1], Taoufik Boubga[1], Tarik Boulhri[1]

[1]Departement of Neurology, Military hospital Moulay Ismail of Meknès, Faculty of Medicine and Pharmacy of Fez, Sidi Mohamed Ben Abdellah University, Fez, Morocco

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***Corresponding author:** Maha Ait Berri
Departement of Neurology, Military hospital Moulay Ismail of Meknès, Faculty of Medicine and Pharmacy of Fez, Sidi Mohamed Ben Abdellah University, Fez, Morocco

Abstract **Original Research Article**

Sleep disorders are very common symptoms of cancer and have a negative impact on the daily life of patients and those around them, thus altering their quality of life. This is an observational, descriptive, cross-sectional study, conducted at the Military Hospital Moulay Ismail in Meknes, Morocco, for 2 months, from 1st January 2021 to 31 December 2021. Pittsburgh Sleep Quality Index (PSQI) scale was used to assess sleep quality. Descriptive statistics, Chi-square test, and multivariate logistic regression analysis were used to conduct statistical analysis. 43% of our patients suffered from poor sleep quality and 22% had excessive daytime sleepiness. Correlation tests had objectified a significant positive relationship between sleep disorders and the presence of metastases. The correlation tests had also objectified a significant positive relationship between sleep disorders and treatment with chemotherapy, radiotherapy, and tumor ablation The correlation tests had objectified a significant positive relationship between sleep disorders and excessive daytime sleepiness. On the other hand, the correlation tests had not objectified a significant positive relationship between sleep disorders and tumor localization.

Keywords: Cancer, Sleep disturbance, Pittsburgh Sleep Quality Index.

INTRODUCTION

Sleep disorders, especially insomnia, are very common in different kinds of cancers, but their prevalence and incidence are not well-known. Disturbed sleep in cancer is caused by different reasons and usually appears as a comorbid disorder to different somatic and psychiatric diagnoses, psychological disturbances, and treatment methods. There can be many different predictors for sleep disturbances in these vulnerable groups, such as pre-existing sleep disorders, caused by the mental status in cancer, or as a side effect of the cancer treatment [1-4]. In this article, we report our experience with Sleep disorders in cancer patients.

METHODS

This is an observational, descriptive, cross-sectional study, conducted at the Military Hospital Moulay Ismail in Meknes, Morocco, for 2 months, from 1st January 2021 to 31 December 2021. We included all patients older than or equal to 18 years, with solid malignancies, and were able to finish the Pittsburgh Sleep Quality Index (PSQI).

The PSQI scale was devised by Buysse *et al.* to assess subjective sleep quality within the past month interval, which consisted of 19 self-rated items that generated seven component scores: subjective sleep quality (0–3), sleep latency (0–3), sleep duration (0–3), habitual sleep efficiency (0–3), sleep disturbances (0–3), use of sleep medication (0–3), and day time dysfunction (0–3). The global sleep quality score was summed by the abovementioned seven component scores, and a total score of more than five was described as sleep impairment (range: 0–21). A PSQI score >5 was considered a sleep disturbance [5].

Chi-square test was applied to assess possible differences of sociodemographic variables between the groups of sleep disturbance and normal sleep quality. Descriptive statistics (frequency distributions) were used to analyze the seven sleep component scores, and the PSQI scores were calculated according to established procedures. IBM SPSS version 22.0 was used to conduct all the statistical analyses in this study, and a $P < 0.05$ (two-tails) was considered statistically significant.

RESULTS

Table 1 showed the detailed information of patient characteristics. A total of 60 eligible patients were included in this study. Of them, 65% (n = 39) and 35% (n = 21) were male and female, respectively. The average age of patients was 56.3 years, with the average age of male patients being 55.7 years, while that of female patients was 57 years. The minimum age was 32 years old while the maximum age was 80 years old.

Most of the patients were married (80%), without comorbidity (66,7%), and with metastases (53.3%). With regard to specific tumor types, 25% (n = 15), 21.7% (n = 13), 20% (n = 12), 13.3% (n = 8), 10% (n = 6), and 10% (n = 6) of them had breast cancer, lung cancer, gastrointestinal cancer, urogenital cancer, head and neck cancer, and other cancer, respectively.

In this study, 26.7% (4/15), 61.5% (8/13), 66.7% (8/12), 50% (4/8), and 33.3% (2/6) of the patients with breast cancer, lung cancer, gastrointestinal cancer, urogenital cancer, and head and neck cancer suffered from sleep disturbance, respectively. In addition, patients with metastases (p = 0.001), surgery (p = 0.017), radiotherapy (p = 0.033), and chemotherapy (p = 0.036), were more likely to suffer from sleep disturbance. However, there were no differences in gender, and cancer type (Table 1).

Table-1: Sociodemographic and clinical characteristics of the patients with and without sleep disorders

Variables	Total (%)	Sleep disorders		*p*
		No (%)	Yes (%)	
Gender				
Male	39 (65)	23 (67.5)	16 (61.5)	0.623
Female	21 (35)	11 (32.5)	10 (38.5)	
Metastases				
No	28 (46.7)	22 (64.7)	6 (23.1)	**0.001***
Yes	32 (53.3)	12 (35.3)	20 (76.9)	
Surgery				
No	29 (48.3)	21 (61.8)	8 (30.8)	**0.017***
Yes	31 (51.7)	13 (38.2)	18 (69.2)	
Radiotherapy				
No	49 (81.7)	31 (91.2)	18 (69.2)	**0.033***
Yes	11 (18.3)	3 (8.8)	8 (30.8)	
Chemotherapy				
No	17 (28.3)	12 (35.3)	5 (19.2)	**0.036***
Yes	43 (71.7)	22 (64.7)	21 (80.8)	
Cancer localization				
Breast	15 (25)	11 (32.3)	4 (15.4)	0.05
Lung	13 (21.7)	5 (14.7)	8 (30.8)	
Gastrointestinal	12 (20)	4 (11.8)	8 (30.8)	
Urogenital	8 (13.3)	4 (11.8)	4 (15.4)	
Head and neck	6 (10)	4 (11.8)	2 (7.6)	
Other cancer	6 (10)	6 (17.6)	0 (0)	

*The significance of the difference between percentages was measured by the Pearson Chi-Square test. *Significant $p < 0.05$.*

The median global PSQI score was 6.9 (range: 0–21). Of the 60 patients, 43.3% (n = 26) had a global sleep quality score of more than five, indicating that they suffered from a sleep disorder. Seventeen patients (28.3%) needed more than 30min to fall asleep, while 46.7% (n = 28) of them fell asleep in <15min. 50% (n = 30), 13.3% (n = 8), 23.4% (n = 14), and 13.3% (n = 8) of patients slept >7, 6–7, 5–6, and <5 h in a night, respectively. Regarding subjective sleep quality, 21.7% (n=13) of the patients suffered fairly and very bad quality. In addition, among all the patients, 70% (n = 42) experienced sleep efficiency ≤ 85%, 15.2% (n = 8) needed medication to improve sleep, and 75% (n = 45) suffered daytime dysfunction (having difficulties staying awake during the daytime) at least once a week. Moreover, 56.7% (n = 34) of the patients had trouble sleeping at least once a week due to a variety of reasons such as shortness of breath, coughing or snoring, cold, hot, bad dreams, pain, and other reasons (Table 2).

Table-2: Descriptive statistics for the scores of the seven Pittsburgh Sleep Quality Index components in cancer patients

PSQI component score	Number of patients (%)
Subjective sleep quality	
0 (very good)	15 (25)
1 (fairly good)	21 (35)
2 (fairly bad)	15 (25)
3 (very bad)	9 (15)
Sleep latency	
0 (≤15 mn)	28 (46.7)
1 (16-30 mn)	15 (25)
2 (31-60 mn)	11 (18.3)
3 (>60 mn)	6 (10)
Sleep duration	
0 (> 7 h)	30 (50)
1 (6–7 h)	8 (13.3)
2 (5–6 h)	14 (23.4)
3 (<5 h)	8 (13.3)
Habitual sleep efficiency	
0 (>85%)	18 (30)
1 (75–85%)	14 (23.3)
2 (65–75%)	10 (16.7)
3 (<65%)	18 (30)
Sleep disturbance	
0 (no)	26 (43.3)
1 (minor)	21 (35)
2 (moderate)	10 (16.7)
3 (severe)	3 (5)
Use of sleep medication	
0 (no use)	52 (86.8)
1 (< 1/week)	1 (1.6)
2 (1–2/week)	1 (1.6)
3 (3≥week)	6 (10)
Daytime dysfunction	
0 (no in last month)	15 (25)
1 (< 1/week)	26 (43.3)
2 (1–2/week)	15 (25)
3 (3≥week)	4 (6.7)
Total score	
≤5	34 (56.7)
>5	26 (43.3)

DISCUSSION

In the literature, sleep disorders in cancer patients are reported in 30–50% of cancer patients [6–8]. Surprisingly, the perception of sleep disorders in this group of patients is relatively low [7]. This may be due to the fact that usually, patients do not report spontaneously their bad quality of sleep because they seem to consider bad sleep normal, given the imminent threat to health and life that comes with a cancer diagnosis. Furthermore, when asked specifically, though, sleep disorders that severely affect the general quality of life are reported frequently. The evaluation of symptoms directly associated with the tumor disease like pain or shortness of breath is a part of the daily oncological practice. This is usually not the case for specific questions about sleep disorders. One reason why doctors do not ask about sleep disorders may also be because the causes of sleep disorders are little known [6].

The American Academy of Sleep Medicine has defined five categories of sleep disorders: i. disorders of initiating and maintaining sleep: insomnias; ii. Sleep-related breathing disorders: sleep apnoea; iii. Disorders of excessive somnolence: hypersomnias; iv. Disorders of the sleep-wake cycle: circadian rhythm sleeps disorders; v. dysfunctions associated with sleep, sleep stages, or partial arousals: parasomnias [9, 10].

A wide variety of issues may be related to sleep disorders in cancer patients, including psychological factors such as anxiety about cancer

notification and recurrence, physical factors such as pain, dyspnea, and nausea, and direct or indirect effects of the use of anticancer drugs, analgesics, and hormones [11, 12].

Although sleep disorders are a very common problem in cancer patients, their evaluation and treatment have not taken place in daily clinical application routines. One of the most important issues is the inadequate evaluation of the patients. From medical literature, the lack of simple standard quantitative scales to measure sleep disorders prevalence in cancer patients, and the use of results from subjective and objective studies, leads to variation in reporting sleep disorders. There are different subjective sleep evaluation methods and only a few can be used to evaluate sleep quality and disorders in cancer patients. The most commonly used sleep disorders measurement instruments for the general population are Insomnia Severity Index, Epworth Sleepiness Scale, and PSQI. This one is a self-evaluation questionnaire that has been used in the general population and populations with different clinical diagnoses including cancer patients and their relatives [5, 13].

Currently, sleeping pills, especially benzodiazepines, are the most commonly prescribed pharmacotherapy for sleep disorders in cancer patients. It has been reported that newer, shorter-acting nonbenzodiazepines are safer and more effective than older, longer-acting benzodiazepines. Other nonpharmacological therapies, such as cognitive-behavioral therapy and mindfulness-based stress reduction, have also been reported to be effective in improving sleep in some cancer patients [11].

CONCLUSION

The present study shows that sleep disorders are common in cancer patients. A major variable in the deterioration of Quality of Life, sleep disorders are considered an important symptom that should be screened and treated. It can therefore be concluded that a close and complex interconnection exists between sleep disorders and tumors and that the introduction of the assessment of sleep disorders in clinical practice and in cancer research can lead to an important improvement in the understanding and treatment of these pathologies [14].

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