

Polysomnography Recordings of Patients with Insomnia

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The aim of the study was to compare the sleep architecture of two groups of patients who presented with insomnia. The first group consisted of 20 patients with sleep related breathing disorders (obstructive sleep apnoea) and the second group consisted of 22 patients with no evidence of obstructive sleep apnoea. The polysomnography recordings assessed 7 sleep related variables (sleep onset latency, episodes of awakening, REM sleep, oxygen saturation, respiratory disturbance index, sleep efficiency and total sleep time) and in addition the age as well as body mass index between the two groups of patients were also compared. Significant differences ($p < 0.05$) were noted among the variables related to body mass index, oxygen saturation and respiratory disturbance index. The result of this study indicated the need to assess insomniacs appropriately as the management of these patients are related to the accuracy in identifying the underlying cause. (Sleep and Hypnosis 2000;1:31-35)

Key words: insomnia, polysomnography, apnoea, body mass, oxygen saturation

INTRODUCTION

Our daily lifestyles and how we cope with the demands expected of us, can influence our sleep rhythm. Many medical disorders and severe stress can precipitate insomnia, and if these are not attended to early and effectively, more complications may occur later. Insomnia is said to occur when an individual experiences unsatisfactory quantity or quality of sleep over a period of time (1). Insomnia can be secondary to many causes, these can be broadly grouped into 4 categories, namely medical, psychological, physiological and addictive drug di-

sorders (2).

Medical disorders example bronchogenic carcinoma with metastases to the bones can be excruciatingly painful and if not managed properly can affect the sleep patterns of the patients, and this in turn can aggravate the disorder. Another medical disorder closely related to sleep disturbance is sleep apnoea, more commonly is the obstructive sleep apnoea. Psychological disturbances like severe depressive disorders have profound effect on the patient's sleep architecture and this require careful management to avoid tragic consequences. Individuals who travel frequently and those on long distance flights across continents will succumb to abnormal sleep patterns because of shift in the circadian rhythms. Unsupervised consumption of hypnotics, tranquilizers and excessive alcohol can lead to insomnia (3).

People with fragmented sleep tend to be sleep deprived and suffered daytime sleepiness which can cause disastrous consequences, and in addition patients with obstructive sleep apnoea have a higher risk of developing cardiovascular disorders (4).

At our UNIMAS sleep laboratory, we received referrals from the physicians in the hospital requesting polysomnography assessment on their patients presenting with insomnia (5). The results of the sle-

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ep analyses would make them more aware of the actual cause of the insomnia thereby helping the therapists to manage their patients better. This study was to observe the differences between two groups of insomnia patients, one group presented with respiratory related sleep disorder which is obstructive sleep apnoea and the other group has no evidence of respiratory related sleep disorder. These latter group of patients presented mainly with psychological disorders and these were contributory factors to the complaints of insomnia.

METHODS

Forty four patients were included in this study, all were referred for assessment of insomnia, and these patients met the essential clinical features of insomnia as described in the Tenth International Classification of Diseases (1). These include difficulty in falling asleep or maintaining sleep, the episodes occur at least three times a week for at least one month, preoccupation with these disturbances and impairment of functions.

They were assessed at our sleep study clinic and subsequently appointments were made to do polysomnography recordings at our sleep laboratory. All patients completed the sleep history questionnaires

ment ended about 5.30 am. All patients were subjected to the same sleep laboratory environment and the same technician was in attendance for all the recordings.

The data were analysed by the author (a psychiatrist) and the co- researchers (a neurologist and an epidemiologist). Statistical test for significance was done using student t test.

RESULTS

A total of 44 patients were studied using polysomnography recordings to identify the sleep variables. The patients were categorised into two groups, i.e. those with obstructive sleep apnoea as one group (20 in number) and the rest without obstructive sleep apnoea as the other group (22 in number). The obstructive sleep apnoea group have definite abnormal readings in their oxygen saturation, the apnoea duration and the respiratory disturbance index. Where as the group without obstructive sleep apnoea have no abnormalities with respect to these variables, but they present with a multitude of other disorders like depression, anxiety, nocturnal epilepsy and conversion disorders. The mean age and gender distribution between the groups are shown in Table 1.

Table 1. Insomnia patients

	Obstructive Sleep Apnoea	Non Obstructive Sleep Apnoea
No. of patients	20	22
Age	39.1+14.4 years	32.4+13.6 years
Male	15	10
Female	5	12

which were given to them when they came for the sleep analysis (Appendix). The information provided gave an indication on the likely cause of the insomnia which was either physical or psychological and the polysomnography recordings confirmed the presence or absence of such disorders.

The patients were seen at the sleep laboratory at about 10.30 pm, after the briefing by the electroencephalography technician, the electrodes were applied and the machine used was the Nightingale sleep analyser. After the calibration has been completed, the recording was done overnight and the assess-

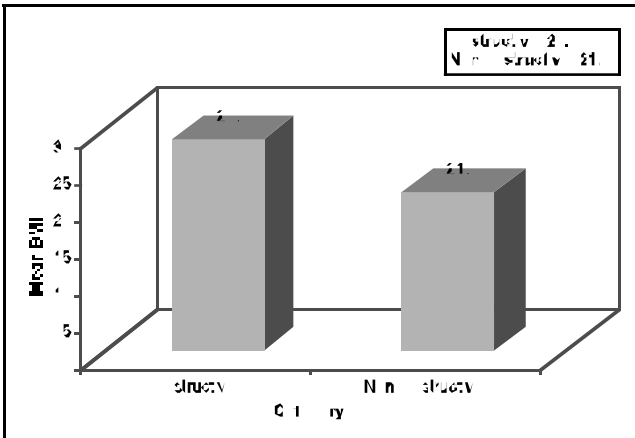
Out of the 7 variables (sleep onset latency, episodes of awakening, REM sleep, oxygen saturation, respiratory disturbance index, sleep efficiency and total sleep time) assessed by the polysomnography recordings, only the oxygen saturation and the respiratory disturbance index showed significant difference between the two groups. In addition there was also a significant difference between the two groups with respect to the body mass index as illustrated in Table 2 and Figure 1.

Table 2. Sleep variable

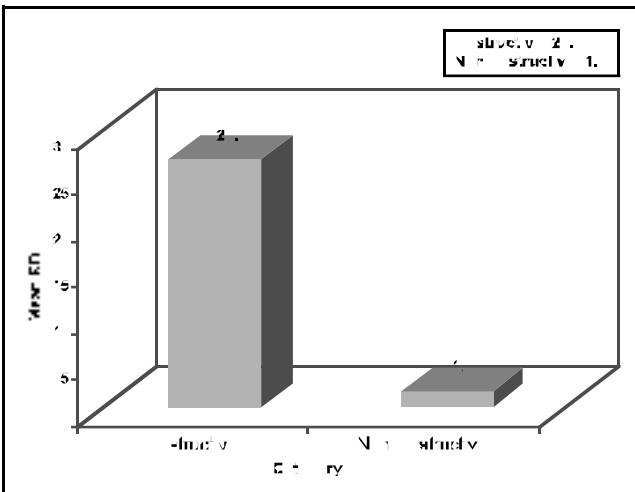
No.	Variable	Obstructive Sleep Apnoea	No Obstructive Sleep Apnoea	p value (2 tailed)
1.	Sleep onset latency	0:35:52+1:59:33	0:09:39+0:14:48	0.313
2.	Awakening	16.2+8.3	17.8+9.0	0.536
3.	REM	18.7+8.4	24.5+12.5	0.089
4.	Oxygen saturation	88.9+11.1	94.8+3.9	0.023
5.	RDI	26.8+22.2	1.8+1.2	0.000
6.	Sleep efficiency	91.1+6.5	86.0+10.9	0.077
7.	Total time sleep	4:49:30+1:08:06	4:27:58+1:11:38	0.326
	BMI	28.6+5.3	21.4+6.1	0.0000

Figure 1. Significant difference in BMI, RDI and Oxygen Saturation

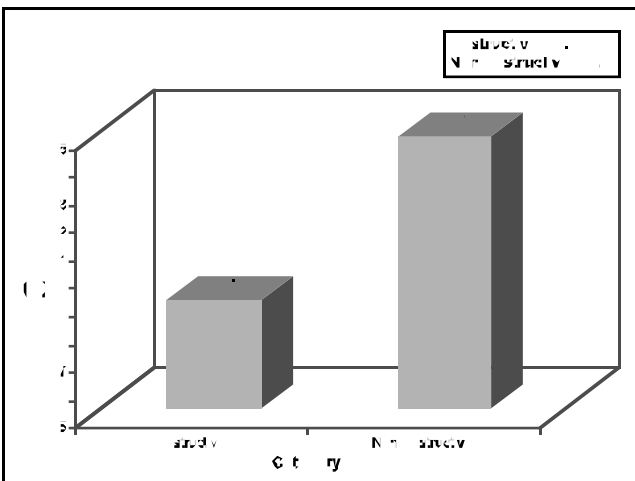
Body Mass Index



Respiratory Disturbance Index



Oxygen Saturation



The results illustrated the importance of polysomnography recordings in the assessment of patients with insomnia. There are many causes of insomnia and the availability of facilities to assess these patients as above would help the doctor responsible to decide the mode of intervention strategies to adopt. Obstructive sleep apnoea has its own complications and if left untreated would cause more harm to the patients. The patients with no evidence of obstructive sleep apnoea, need a different approach and would benefit from the appropriate therapy. At the same time these patients would be spared from unnecessary surgical manipulations.

DISCUSSION

Restorative sleep is vital to every individual as it enhances one's alertness in the daytime as well as it helps in the cognitive aspects. Fragmented sleep because of insomnia would lead to sleep deprivation and thereby causing untold mishaps to the patients. This study compared the group of patients with obstructive sleep apnoea with another group of patients who have no evidence of obstructive sleep apnoea. Nevertheless these latter group of patients have their own inherent problems relating to psychological disorders and other neurological abnormalities.

For the obstructive sleep apnoea, still the polysomnography plays the key role in establishing the diagnosis, and in terms of treatment strategies in addition to conservative measures like attempts at weight reduction and application of CPAP, surgical interventions like uvulopharyngoplasty are sometimes done. If left untreated, these patients are vulnerable to develop complications like respiratory failure, pulmonary hypertension, polycythaemia and coronary artery disease.

For those patients with no evidence of obstructive sleep apnoea, the treatment approach can be non pharmacological or pharmacological in nature. Environmental manipulation and stress management might help in these patients. Bootzin et al (6) mentioned some of the nonpharmacological treatments of insomnia. Those who need pharmacological interventions to alleviate their symptoms of insomnia, judicious use of tranquilizers, antidepressants and hypnotics would prove useful in these cases.

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APPENDIX

SLEEP HISTORY QUESTIONNAIRE

Name:

I.C. No.: Date:

1. What troubles you most about your sleep?
 - a. Do you have trouble asleep when you first go to bed?
 - b. Do you awaken during the night?
 - c. How frequently?
 - d. Do you awaken too early in the morning?
2. How long have you had trouble sleeping?
What do you think precipitated the problem?
3. Do you ever experience sleepiness during the day?
Do you fall asleep suddenly for no apparent reason?
4. How would you describe your usual night's sleep?
 - a. What time do you go to bed?
 - b. When do you awaken?
 - c. Do you nap during the day?
5. What do you do in the few hours preceding bedtime?
6. Is your schedule for sleep and rising the same on the weekend as its during the week?
If not, how is it different?
7. Describe your bedroom?
8. Do you sleep alone or do you share a bedroom?
If you share a bedroom, do you and your partner go to bed at the same time?
9. Medical/psychiatric/drug review
 - a. Apart from difficulty sleeping, what, if any, other medical problems do you have?
 - b. Have you receive d counseling and /or medication for depression, anxiety, or any similar problems?
 - c. What prescription and over-the-counter medications do you regularly use?
 - d. Do you think coffee or soft drinks that contain caffeine? If so, how much?
 - e. Do you smoke?

10. Do you have children living at home?
If so, what are their ages?

11. Does your job require shift changes or travel?

12. Are you regularly awakened at night by pain or need to use the bathroom?

13. How many hours of sleep per night do you think you require?

14. Do you snore?

Questions for the Sleep Partner

15. Does your partner snore?

16. Does your sleep partner seem to stop breathing repeatedly during the night?

17. Does your sleep partner jerk his or her legs or kick you while he/she is sleeping?

18. Have you experienced trouble sleeping?
Please explain.

Thank you