

Obstructive sleep apnea and excessive day time sleepiness as measured by epworth sleepiness scale

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Abstract

Introduction: Many patients search for medical care for symptom of a sleep disorder, obstructive sleep apnea hypopnea syndrome (OSAHS). Currently overnight polysomnography is the gold standard for diagnosis of OSAHS. However, the test is costly and time taking, accessible in big cities only and is not always well accepted by patients. Therefore approximately 95% of the patients with sleep disorders are not diagnosed. Although subjective, the Epworth Sleepiness Scale may contribute to analyze signs and symptoms. It is easy to be applied, fast and free of charge. The purpose of our study was to evaluate Epworth Sleepiness Scale Scores and AHI in obese patients and to compare these parameters, **Methods:** The present study is an observational study which was conducted in the Department of Pulmonary Medicine, People's College of Medical Science & Research Centre, Bhopal from Oct. 2013 to April 2015. Randomly selected 100 patients with BMI ≥ 23 fulfilling inclusion and exclusion criteria were assessed in the study. **Result:** In our study we took 100 patients, 5 of them have ESS score < 9 and 95 patients have ESS > 9 . In mild AHI group 2 patients were in ESS < 9 group and 6 patients were in ESS > 9 group. In moderate AHI group 2 patients were in ESS score < 9 group and 25 patients were in ESS > 9 group. In severe AHI group only 1 patient were in ESS < 9 group and 64 patients were in ESS > 9 group. **Conclusion:** We concluded that ESS shows correlation with AHI for severe and normal levels, but not for mild and moderate levels.

Key words: OSAHS, AHI, Epworth Sleepiness.

Introduction

Many patients search for medical care to treat snoring and excessive day time sleepiness. An appropriate workup can prove that snoring and excessive day time sleepiness may be a symptom of a sleep disorder, obstructive sleep apnea hypopnea syndrome (OSAHS), the prevalence of which is increasing in developed and developing countries [1]. Apnea Hypopnea Index is used to measure severity of OSAHS. It is classified as mild (< 5), moderate (5-15), severe (> 15). Currently, overnight polysomnography is the gold standard for diagnosis of OSAHS. However, the test is expensive, time-consuming, of difficult access outside big cities and is not always well accepted by patients [2,3]. The aim of this study was to evaluate weather Excessive day time sleepiness measured by Epworth Sleepiness Scale

Scores can replace polysomnography for diagnosis of OSAHS.

Methods

The present study is an observational study conducted in the Department of Pulmonary Medicine People's College of medical Sciences & Research Centre, Bhopal from Oct. 2013 to April 2015. 100 randomly selected patients with BMI ≥ 23 fulfilling inclusion and exclusion criteria were assessed in the study. All patients were registered after taking written informed consent.

They were explained about polysomnography and other investigations. Patients had full liberty to withdraw from this study without compromising his/her medical care as no intervention or treatment was involved.

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Every patient was given Epworth Sleepiness questionnaire [4], which consisted of eight questions. Each patient was asked to give points from 0 - 3 to each question on the basis of severity of their symptoms listed in question. Full confidentiality of data was maintained.

All religions and customs were respected. All these patients underwent overnight polysomnography using ALICE PDX polysomnography machine.

Inclusion criteria

1. Age 18-80 years of either sex.
2. BMI of more then or equal to 23
3. Informed and willing persons who had given consent for the study.

Exclusion criteria

1. Non consenting patients
2. Patients not tolerating sleep study.
3. Severe hypoxic patients
4. Patients with upper airway abnormality.
5. Patients with other comorbid conditions like coronary artery disease, bronchial asthma, chronic obstructive airway disease and malignancy.
6. Known hypothyroid patients.

Statistical analysis was done using Statistical Package of Social Science (SPSS Version 19; Chicago Inc., USA). Data comparison was done by applying specific statistical tests to find out the statistical significance of the comparisons.

Results

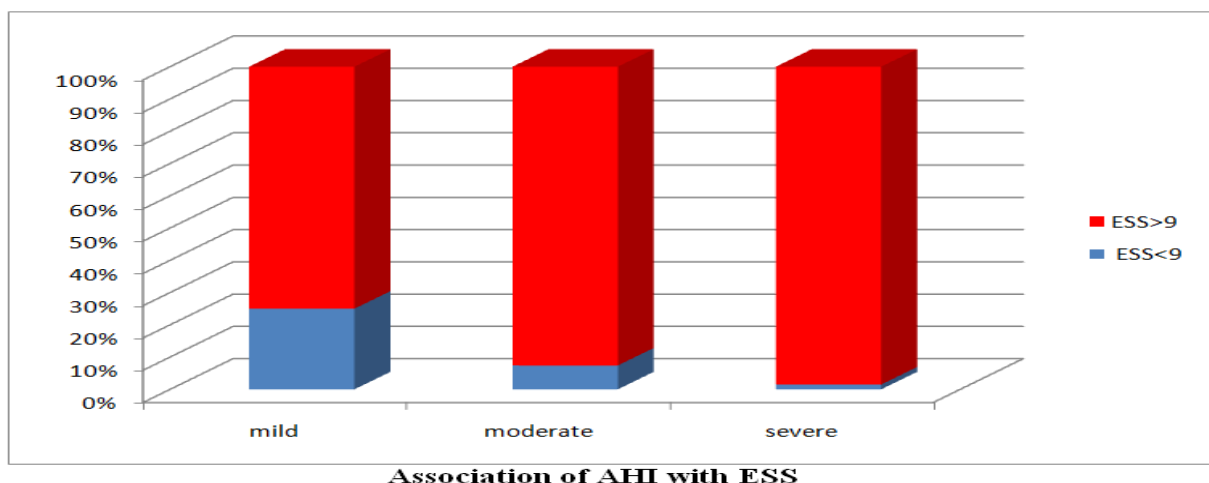
In this study 100 patients were taken, 5 of them had ESS score <9 and 95 patients had ESS >9. In ESS< 9 group 2 patients and 6 patients were in ESS >9 group.

Table-1: Association of AHI with ESS.

AHI	ESS		Total	Mean ESS
	ESS<9	ESS>9		
Mild (<5)	2	6	8	8
Moderate (5-15)	2	25	27	14
Severe (>15)	1	64	65	17
Total	5	95	100	

In moderate AHI group 2 patients were in ESS score <9 group and 25 patients were in ESS >9 group. In severe AHI group only 1 patient was in ESS< 9 group and 64 patients were in ESS >9 group. Mean ESS in mild AHI group was 8 which increases to moderate AHI group to 14 and in severe AHI group mean ESS was 17.

Above table shows sensitivity of ESS score is 75 % in mild OSA which increases to 92.6% in moderate OSA which further increases to 98.5% in sever OSA.



Discussion

According to American Academy of Sleep Medicine Obstructive Sleep Apnea and Hypopnea Syndrome is recurrent episodes of total or partial upper airways obstruction, causing desaturation and sleep fragmentation which is associated with the frequent symptom of excessive daytime sleepiness [5]. About 90% of patients affected with OSAHS show excessive daytime sleepiness, whereas the remaining patients show changes only during overnight monitoring [6].

Overnight polysomnography is accepted as the gold standard for OSAHS diagnosis. However, the test is expensive and of difficult access.

Epworth Sleepiness Scale was developed in 1991 by Dr. John W. Murray, since then, it has been used globally, and it was translated into many languages, such as German, Spanish and Japanese. but it is influenced by patient's reading and comprehension skills and honest answers. The Scale was able to separate primary snoring subjects from patients with OSAHS; the higher the ESS score, the more severe the condition. All patients with severe conditions scored over 10 [4]. However, it is worth noting that the severity level used by Dr. Murray was based on his judgment. In his study AHI < 5 was normal; 5 to 25 was mild; 25 to 50 was moderate, and > 50 was severe.

In our study symptom of excessive day time sleepiness was measured by Epworth sleepiness scale which has sensitivity 75 % in mild OSA which increases to 92.6% in moderate OSA which further increases to 98.5% in severe OSA.

Similar results were found in the study done by Leticia Boari et al [7] who evaluated ESS score in 66 patients with OSAHS syndrome and found that 78% of patients with normal AHI scored less than 10 in the ESS and 65% of patients with severe AHI scored more than 10. In groups presenting mild and moderate apnea no statistically significant result was found. Therefore they concluded that ESS can detect normal and severe levels of apnea, but is not able to detect mild and moderate levels and that ESS can be used in the follow-up of patients with OSAHS. Similarly, Bausmer U et al [8] tested for a possible correlation between ESS score and arithmetic values of AHI. No correlation between ESS and AHI was proven and therefore they concluded that it is not possible to predict solely on the basis of the ESS score the existence of OSA.

Rakan M. Haddad [9] et al also conduct a retrospective study of patients diagnosed to have obstructive sleep apnea syndrome. Epworth Sleepiness Scale score and Apnea-Hypopnea Index of 118 patients were compared and concluded that Epworth Sleepiness Scale was sensitive in patients with severe OSAS.

However, the accuracy of the ESS becomes less in mild and moderate OSAS.

Jianyin Zou et al [10] also conduct a study to develop a simple and efficient model for identifying OSA in Chinese adult population. They found that the ESS was moderately useful for screening undiagnosed OSA in adult population, and there may exist sex differences in ESS score cut-offs.

Conclusion

We concluded that symptom of excessive day time sleepiness as measured by ESS can help to predict severe OSA but not mild and moderate OSA. Therefore, it can be used as a diagnostic tool but should not replace polysomnography.

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Permission from IRB: Yes

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