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ORIGINAL ARTICLE

CLINCIAL AUDIT OF PATIENT HAVING OBSTRUCTIVE SLEEP APNEA IN CAVAN GENERAL HOSPITAL, IRELAND

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ABSTRACT

Objective

To audit the practise of diagnosis & treatment of patient having Obstructive Sleep Apnoea between 2009 to 2010.

Audit Criteria:

The criteria set out by Scottish Intercollegiate Guidelines Network (SIGN), for the Diagnosis and Treatment of OSA, guidelines 2007

Methodology:

Retrospective chart review of 60 patients having OSA was done in Pulmonary Lab. All notes, test results and relevant documents were reviewed. Verbal interviews were done and the results were analysed in percentages.

Results:

Total number of patients included in this audit were 60(n=60).Eighty two percent were males and 18% females. Age varied from 31 to 76 years (mean: 50 years) and weight varied from 70.7kg to 130 kg (mean: 100.3 kg). All the patients had associated diseases. Utilisation of diagnostic services was 100%. The AHI Index analysis showed that 42.8% had mild, 9.5% moderate and 47.6% had severe disease. Fifty one percent patients complied with CPAP treatment, 35% didn't show up for treatment after being diagnosed with OSA, 13.34% gave up the treatment as they could not tolerate CPAP machine. CPAP treatment was offered to 100% of the patients. Only 8.3% of the patients adhered to dietary and behavioural modification. No patient was offered IOD. Twenty one percent reported significant improvement in their quality of life after CPAP treatment while 43.4% didn't show any improvement.

Conclusion:

Public awareness campaigned should be launched for OSA. People who are have a High BMI and snore with apnic symptoms should be investigated & aggressively followed up. Family support should be sought out. IODs should be offered to all the patients who are not inclined to use CPAP machine. Dietary and behavioural modification should be emphasised.

Keywords: OSA (Obstructive Sleep Apnea), IOD (Intraoral Device), CPAP(Continuous Positive Airway Pressure)

INTRODUCTION

Obstructive Sleep Apnea is chronic sleep disorder affecting large number of people worldwide. It is a major cause of mortality and morbidity and causes significant strain on the health resources. Due to its complex nature, in the past it was rather under recognized but now with advance medical facilities & increase public awareness it is

a well-accepted clinical entity which has significant effects on other systems of human body.

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A clinical audit of patients having Obstructive Sleep Apnoea was carried out in the Department of Respiratory Medicine, Cavan General Hospital. The audit was based on the criteria set out by Scottish Intercollegiate Guidelines Network (SIGN), for the Diagnosis and Treatment of OSA, guidelines 2003 and reviewed in 2007 A detailed retrospective chart review of 60 patients was carried out, who were registered in the Pulmonary Lab of Cavan General Hospital. Keeping in view that the selection of patients for the diagnosis of OSA was as per guidelines and treatment protocols followed up. Proper use of diagnostic services and failure to treatment was adequately looked in, keeping in view the overall cost, benefit and improvement in the quality of life.

AUDIT CRITERIA

Implementation of national guidelines is the responsibility of each hospital and is an essential part of clinical governance. It is acknowledged that every hospital cannot implement every guideline on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and where appropriate addressed. Local arrangements may then be made to implement the national guideline in individual hospitals, units and practices and to monitor their compliance.

Keeping in view these SIGN guidelines this audit was carried out and the following areas were evaluated

1. All the patients who are assessed meet the criteria for the diagnosis of OSA.
2. Availability of specific diagnostic tests and treatment options.
3. Proportion of patients with a positive diagnosis of OSA receiving treatment according to locally agreed protocols
4. Proportion of patients with OSA failing to tolerate IODs and CPAP and the underlying reason for failure.
5. Proportion of patients undergoing surgery for OSA and its outcome.
6. Effect of weight reduction
7. Number of patients who did not turn up after initial assessment and diagnosis.
8. Associated diseases with OSA.
9. Socio-economic group.
10. Use of CPAP and overall improvement in quality of life.
11. Involvement of GPs and information given to driving authorities and employers.

METHODOLOGY

A retrospective chart review of 60 patients was carried out in the pulmonary lab. All documents including Epworth's Score, Sleep Questionnaire, Limited Sleep Study results, all investigation results, correspondence with GP and follow up notes were

reviewed and analysed. Verbal interviews were also conducted with the Respiratory Nurses involved in the follow up of the patients by the audit team.

RESULTS:

Out of 60 patients, age varies from 31 years to 76 years with a mean age of 50 years. The Male to female Ratio was 49:11. The weight of these 60 patients varied from minimum 70.7 kg to maximum of 130kg with an average weight of 100.3kg. The collar size range was from 15.5 to 19 inches, and an average size of 16.8 inch.

Of the sample under study there were 21 non-smokers and 39 smokers. Similarly 23 were teetotallers and 37 took alcohol. Of these 60 patients 29 (47.82%) had private insurance and 31 (52.18%) were public patients. It shows that prevalence was almost equal in all socioeconomic groups.

All patients had associated diseases. Of these patients 20 were hypertensive, 9 were diabetic, 8 had Asthma/COPD, 13 had sinusitis, 2 had epilepsy and 8 had GERD. Twenty had a formal ENT review done and of them 5 had ENT Surgery done. Forty patients didn't have any kind of ENT assessment. The percentages were 33.33% and 66.66%% respectively.

The treatment in form of CPAP was offered to all of these patients. Of all the patients 31(51.6%) continued used CPAP treatment. Twenty one patients (35%) did not turn up after being diagnosed having sleep apnoea. 8 (13.33%) patients had a trial of CPAP treatment but gave up as could not tolerate.

Apnoea hypopnoea Index (AHI) analysis showed that 42.8% were Mild 9.5% was moderate and 47.6% were classified as having severe obstructive sleep apnoea. All of these patients underwent full diagnostic work up and everybody had limited sleep studies, PFTs, CXR, CT Sinuses, TFT, GH, IGF and all routine blood tests done. The compliance was 100 %.

Of all these patients only 5 i.e. 8.3% adhered to behavioural modification and dietary advice and this resulted in significant reduction in their AHI on follow up limited sleep study i.e. AHI improved from 14 to 6.2, 13.7 to 5 and 16 to 6 in above groups. None of these patients who could not tolerate CPAP was offered IODs (Intra Oral Devices).

GPs were informed in all 100 % of cases, but driving licence authorities were not informed by the hospital. It was left to the discussion of patients & Gps.Of the sample 21 patients didn't turn up for any kind of treatment after being diagnosed as having OSA,despite reminder letters sent to them and information sent to the GPs.

21.7% reported significant improvement in their quality of life after getting on treatment, 43.4% didn't show any improvement, while other didn't turn up or declined treatment.

DISCUSION

Obstructive sleep apnea is being increasingly recognized as an important cause of morbidity and mortality.Indepth analysis of the results of this audit was done keeping in view the SIGN Guidelines as a standard, and recommendations were made accordingly.

It was observed that selection of patients, diagnosis protocol and treatment was 100% in line with the guidelines and all the criteria were fully met. However in other areas certain niches were identified which have to be seriously looked in to prevent further progress of the disease & prevention of complications. As mentioned above 35% of the people didn't turn up for the treatment after being diagnosed with OSA.This is a significant number of patients and the hospital had only sent formal letters to the GP, informing of nonattendance to the clinics. It's suggested that a system should be in place which should ensure a regular follow up of such patients so that treatment should not be delayed.

Similarly the services of Psychologist for behavioural therapy and dietician were underutilized, where as its clearly emphasized in the guidelines that a multidisciplinary approach has to be adapted for the management of this disease.

It was also observed that 48.3% patients were unable to tolerate the CPAP Machine. Intra Oral Device (IOD) is an alternate form of treatment and should be offered to all patients who are intolerant to CPAP. Unfortunately this option was not given to the patients, whereas in other hospital this option is always offered.

The process of documentations & record maintenance should also be streamlined as per the accepted guidelines, so that a uniform care pathway could be adapted for every patient.

The emphasis should be laid down on acceptance of OSA as a disease with its long term implications amongst the general public and a public awareness campaign should be launched.

Since it's a relatively common sleep disorder which if left untreated it leads to excessive daytime sleepiness, cognitive dysfunction, impaired work performance and decrease in health related quality of life [1]. Observational and experimental evidence also suggest that OSA may also contribute to the development of systemic hypertension [2], increased risk of cardiovascular diseases [3], abnormality in glucose metabolism. [4]

Earlier recognition, diagnosis & treatment can lessened the cardiovascular and neurobehavioral consequences of this disease with favourable effects [5]

Clinical description of obstructive sleep apnoea can be found in numerous reports published in the last century[6] ,however ,it was not until the 1980's that the clinical manifestations of this disorder became more widely recognized by the medical community & looked in, keeping in view the overall cost, benefit and improvement .

Although public awareness of obstructive sleep apnoea has steadily increased since then, a majority of those affected still remain undiagnosed.

Since 1990's much has happened to quantify the health burden of OSA in various populations across the globe. Different studies have been carried out in US, UK, Australia, China, Spain, Australia, Korea and India. Based on the population based

studies the prevalence of OSA is approximately 3 to 7% for adult men and 2 to 5 % for adult females.

Apnea is defined as the complete cessation of airflow for at least 10 seconds, whereas hypopnoea is reduction in airflow that is followed by an arousal from sleep or a decrease in oxyhemoglobin saturation. It requires 25% to 50% reduction in oronasal airflow associated either with a reduction in oxyhemoglobin saturation or an arousal from sleep.

Sleep Apnea severity is typically assessed by the Apnoea-Hypopnoea Index (AHI), which is the number of apnoea's and hypopnoea per hour of sleep. It's also called as Respiratory Disturbance Index (RDI).

OSA may be subdivided into varying degrees of breathing abnormality, depending on the AHI MILD; AHI 5-14/hr, MODERATE: AHI 15-30/hr and SEVERE: AHI >30/hr.

Features of OSA are Excessive daytime sleepiness, impaired concentration, snoring, unreflecting sleep, choking episodes during sleep, witnessed apnoea, restless sleep, Irritability/personality change, Nocturnal and decreased libido.

Data from Wisconsin Sleep Cohort Study show that changes in weight is an important determinant of progression or regression of the disease [7]. Increase in weight of 10% leads to six fold risk of developing moderate to severe obstructive sleep apnoea with a 32% increase in AHI where as a reduction in weight by 10% leads to 26% decrease in AHI.Recent data from Sleep Heart Health Study has shown concrete evidence for body weight as predetermining of OSA [8].

Increasing age also contributes towards OSA in people who are at risk [9, 10], with AHI> 10 in 3.2% at 20-44 rs and 18.1% in above 61years of age [9]

Though OSA is more prevalent in men but the male to female ratio is 3:1.However conditions like Polycystic Ovarian Syndrome, Hypothyroidism and Pregnancy can predispose women to OSA. It's an established fact that OSA is associated with multiple other diseases which have serious consequences on human body.

There is considerable evidence that OSA is associated with a procoagulant state [11] which can lead to other diseases but it still needs considerable research. Association of hypertension with OSA is well recognized and presence of Resistant Hypertension and absence of nocturnal decrease in Blood Pressure should prompt the clinician to look for OSA in such individuals [12] a beneficial response on Blood Pressure was seen with significant reduction after use of CPAP for 12 months [13].

Patients with untreated OSA also have a higher recurrence of Atrial Fibrillation after cardioversion and when treated with CPAP there is lower recurrence [14]. Depression is also reported to be more common in people with OSA and there depression symptoms usually reverse after treatment with CPAP [15].Diabetic Patients who have OSA are also at a risk of cardiovascular event [16].

Though various options have been tried for the treatment of OSA, but CPAP is the best acceptable treatment option[17]. Although the compliance with CPAP machine is individual based but it is clearly superior to other treatment options. We have already discussed the beneficial effects of weight reduction on OSA; though it's beneficial,

but it should be used as an adjunct to curative therapy[20]. The other treatment options are surgical treatment for specific indications [18] and introral devices.

The issue of adherence to CPAP Machine is long being recognized. It has been observed that the use is gender and age dependent [19]. Males are more compliant then females and the usage increases with age. The effectiveness of CPAP machine for treatment of OSA is beyond debate, but recommending it as the ultimate treatment is adherence dependent [20].

Lastly though SIGN Guidelines were satisfactorily followed in our hospital settings, but in view of the above evidence based discussion, the hospitals should assume a more proactive role which should involve not only the physicians but also the families.GPs and the general public for the management of this disease.

CONCLUSION AND RECOMMENDATIONS:

After doing this audit the audit team makes the following recommendations.

1. All the patient who didn't turn up after initial diagnosis of OSA should be rigoursly followed up. This may be done, by getting GPs involved and adequate support from the family, after having a family discussion.
2. The services of a detritions and psychologist should be utilized in doing behavioural therapy and dietary modifications, as studies show that weight reduction can lead to much improvement in OSA.
3. Dedicated days should be kept for regular review of these patients in the sleep clinic or pulmonary function lab, to ensure a proper review by a multidisciplinary team.
4. A more public awareness campaign should be launched for OSA at the local level, involving GPs and Public Health Nurses.
5. Appropriate form should be designed to be filled in by the nursing staff, when patients are followed up in the clinic.
6. IODs should be offered to all patients who are not compliant to CPAP, as studies show that they show an equal benefit to those who are intolerant to CPAP.
7. In discussion with the GPs, employers and driving licence & insurance authorities should be informed by the patient himself especially if involved in hazardous professions.
8. A healthy life style with a balanced diet should be advocated to all of those at risk.
9. All associated diseases including hypertension and diabetes should be aggressively treated.
10. Adequate filling of all forms and questionnaires should be ensured, especially at the time of initial assessment and then on follow up.

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