

OSA and Obesity Two Sides of the Same Coin

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Abstract:-

➤ Introduction

Sleep-disordered breathing is a common disorder often neglected due to lack of knowledge and expertise.

➤ Aims and Objectives

- To study various sleep disordered breathing patterns diagnosed by level 1 polysomnography
- To study and to correlate Severity of sleep apnea syndrome

➤ Materials & Methods

Study design: observational study

➤ Observation

- 90% patients were diagnosed to have obstructive sleep Apnea (OSA)
- 22% had periodic limb movement.
- 70% of patients were male, with mean BMI of 26.82 and mean mallampati score
- Mean epworth sleepiness score was 13.22.
- There were 18% smokers with smoking index of 14.8 pack YEARS.
- Most common associated co-morbidities were HTN(hypertension) and DM (diabetes mellitus) .
- 15% patients had severe OSA(obstructive sleep apnea) and CPAP (continuous positive airway pressure) treatment was initiated in all patients with OSA with Mean AHI of 28.81

I. INTRODUCTION

Sleep-disordered breathing is a common disorder with increasing prevalence due to the sedentary lifestyle, lack of physical exercise and obesity.

II. AIMS AND OBJECTIVES

- To study various sleep disordered breathing patterns diagnosed by level 1 polysomnography.
- To study and to correlate Severity of sleep apnea syndrome with BMI.

III. MATERIALS S& METHODS

Study design: observational study

➤ Inclusion criteria:

- Patients consenting for the study.
- Patients aged 25 years and above.

➤ Exclusion criteria:

- Patients not consenting for the study.
- Patients not fitting into inclusion criteria.
- COPD patients with acute exacerbation will not be included in the study.
- COPD patients with CNS lesions and taking psychiatric medications.
- Patients with recent history of myocardial infarction (< 3 months), arrhythmias.
- Patients with present history of PTB

IV. OBSERVATION

- A total of 100 patients underwent level 1 polysomnography.
- Among them 90 patients were diagnosed to have obstructive sleep Apnea (OSA)
- 22 had periodic limb movement.
Patients were mostly male, with mean BMI of 26.82 and mean mallampati score 3.22.mean epworth sleepiness score was 13.22.
- There were 18 smokers with smoking index of 14.8 pack YEARS.
- Most common Association were HTN and DM.
- 15 patients had severe osa and CPAP treatment was initiated in all patients with OSA with Mean AHI of 28.81

V. CONCLUSION

With the increasing incidence of obesity, prevalence of the OSA will increase over the coming years thus representing an important public-health problem. Diagnosing OSA early and treating it will reduce the morbidity and mortality associated with the disease

REFERENCES

- [1]. Watanabe M, Kikuchi H, Tanaka K, Takahashi M. Association of short sleep duration with weight gain and obesity at 1-year follow-up: a large-scale prospective study. *Sleep*. 2010;33(2):161–167.
- [2]. Chen X, Pensuksan WC, Lohsoonthorn V, Lertmaharit S, Gelaye B, et al. Obstructive sleep apnea and multiple anthropometric indices of general obesity and abdominal obesity among young adults. *Int J Soc Sci Stud*. 2014;2(3):89–99.
- [3]. Senaratna CV, English DR, Currier D, Perret JL, Lowe A, et al. Sleep apnoea in Australian men: disease burden, co-morbidities, and correlates from the Australian longitudinal study on male health. *BMC Public Health*. 2016;16(Suppl 3):1029.
- [4]. Sokwalla SM, Joshi MD, Amayo EO, Acharya K, Mecha JO, et al. Quality of sleep and risk for obstructive sleep apnoea in ambulant individuals with type 2 diabetes mellitus at a tertiary referral hospital in Kenya: a cross-sectional, comparative study. *BMC Endocr Disord*. 2017;17(1):7.
- [5]. Young T, Shahar E, Nieto FJ, Redline S, Newman AB, Gottlieb DJ, Walsleben JA, Finn L, Enright P, Samet JM. Predictors of sleep-disordered breathing in community-dwelling adults: the sleep heart health study. *Arch Intern Med* 2002;162:893–900
- [6]. Ogden CLCM, McDowell MA, Flegal KM. Obesity among adults in the United States—no change since 2003–2004. NCHS data brief no 1. Hyattsville, MD: National Center for Health Statistics: 2007
- [7]. Newman AB, Foster G, Givelber R, Nieto FJ, Redline S, Young T. Progression and regression of sleep-disordered breathing with changes in weight: the sleep heart health study. *Arch Intern Med* 2005;165:2408–2413.
- [8]. Young T, Peppard PE, Taheri S. Excess weight and sleep-disordered breathing. *J Appl Physiol* 2005;99:1592–1599
- [9]. Wolk R, Shamsuzzaman ASM, Somers VK. Obesity, sleep apnea, and hypertension. *Hypertension*. 2003;42:1067.
- [10]. Young T, Palta M, Dempsey J, et al. The occurrence of sleep-disordered breathing among middle-aged adults. *N Engl J Med*. 1993;328:1230–1235.
- [11]. Somers VK, White DP, Amin R, et al. American Heart Association Council for High Blood Pressure Research Professional Education Committee, Council on Clinical Cardiology. American Heart Association Stroke Council. American Heart Association Council on Cardiovascular Nursing. American College of Cardiology Foundation Sleep apnea and cardiovascular disease: an American Heart Association/American College Of Cardiology Foundation Scientific Statement from the American Heart Association Council for High Blood Pressure Research Professional Education Committee, Council on Clinical Cardiology, Stroke Council, and Council On Cardiovascular Nursing. In collaboration with the National Heart, Lung, and Blood Institute National Center on Sleep Disorders Research (National Institutes of Health) *Circulation*. 2008;118(10):1080–1111.
- [12]. Parish JM, Somers VK. Obstructive sleep apnea and cardiovascular disease. *Mayo Clin Proc*. 2004;79(8):1036–1046.
- [13]. Peppard PE, Young T, Palta M, Skatrud J. Prospective study of the association between sleep-disordered breathing and hypertension. *N Engl J Med*. 2000;342(19):1378–1384.
- [14]. Pepperell JC, Ramdassingh-Dow S, Crosthwaite N, et al. Ambulatory blood pressure after therapeutic and subtherapeutic nasal continuous positive airway pressure for obstructive sleep apnoea: a randomised parallel trial. *Lancet*. 2002;359(9302):204–210.
- [15]. Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep-disordered breathing among middle-aged adults. *N Engl J Med*. 1993;328(17):1230–1235.
- [16]. Bixler EO, Vgontzas AN, Ten Have T, Tyson K, Kales A. Effects of age on sleep apnea in men: I. Prevalence and severity. *Am J Respir Crit Care Med*. 1998;157(1):144–148.
- [17]. Bixler EO, Vgontzas AN, Lin HM, et al. Prevalence of sleep-disordered breathing in women: effects of gender. *Am J Respir Crit Care Med*. 2001;163(3 Pt 1):608–613.
- [18]. Durán J, Esnaola S, Rubio R, Iztueta A. Obstructive sleep apnea-hypopnea and related clinical features in a population-based sample of subjects aged 30 to 70 yr. *Am J Respir Crit Care Med*. 2001;163(3 Pt 1):685–689.
- [19]. Kim J, In K, Kim J, et al. Prevalence of sleep-disordered breathing in middle-aged Korean men and women. *Am J Respir Crit Care Med*. 2004;170(10):1108–1113.
- [20]. Sharma SK, Kumpawat S, Banga A, Goel A. Prevalence and risk factors of obstructive sleep apnea syndrome in a population of Delhi, India. *Chest*. 2006;130(1):149–156.
- [21]. Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999–2004. *JAMA*. 2006;295(13):1549–1555.
- [22]. Knutson KL, Ryden AM, Mander BA, Van Cauter E. Role of sleep duration and quality in

- the risk and severity of type 2 diabetes mellitus. *Arch Intern Med.* 2006;166(16):1768–1774.
- [23]. Spiegel K, Tasali E, Penev P, Van Cauter E. Brief communication: sleep curtailment in healthy young men is associated with decreased leptin levels, elevated ghrelin levels, and increased hunger and appetite. *Ann Intern Med.* 2004;141(11):846–850.
- [24]. Bonnet MH, Arand DL. Clinical effects of sleep fragmentation versus sleep deprivation. *Sleep Med Rev.* 2003;7(4):297–310.
- [25]. Gangwisch JE, Heymsfield SB, Boden-Albala B, et al. Sleep duration as a risk factor for diabetes incidence in a large U.S. sample. *Sleep.* 2007;30(12):1667–1673.
- [26]. Phillips B, Cook Y, Schmitt F, et al. Sleep apnea: prevalence of risk factors in the general population. *South Med J.* 1989;82:1090–1092.
- [27]. Vgontzas AN, Tan TL, Bixler EO, Martin LF, Shubert D, Kales A. Sleep apnea and sleep disruption in obese patients. *Arch Intern Med.* 1994;154:1705–1711.
- [28]. Ip MS, Lam KS, Ho C, Tsang KW, Lam W. Serum leptin and vascular risk factors in obstructive sleep apnea. *Chest.* 2000;118:580–586.
- [29]. Ozturk L, Unal M, Tamer L, Celikoglu F. The association of the severity of obstructive sleep apnea with plasma leptin levels. *Arch Otolaryngol Head Neck Surg.* 2003;129:538–540.
- [30]. Phillips BG, Kato M, Narkiewicz K, Choe I, Somers VK. Increases in leptin levels, sympathetic drive, and weight gain in obstructive sleep apnea. *Am J Physiol Heart Circ Physiol.* 2000;279:H234–237.
- [31]. Ulukavak Ciftci T, Kokturk O, Bukan N, Bilgihan A. Leptin and ghrelin levels in patients with obstructive sleep apnea syndrome. *Respiration.* 2005;72:395–401.
- [32]. Phillips BG, Hisel TM, Kato M, et al. Recent weight gain in patients with newly diagnosed obstructive sleep apnea. *J Hypertens.* 1999;17:1297–300.
- [33]. Eckert DJ, Malhotra A. Pathophysiology of adult obstructive sleep apnea. *Proc Am Thorac Soc.* 2008;5:144–153.
- [34]. Owens RL, Eckert DJ, Yeh SY, Malhotra A. Upper airway function in the pathogenesis of obstructive sleep apnea: a review of the current literature. *Curr Opin Pulm Med.* 2008;14:519–524.
- [35]. Vaa T. Impairments, Diseases, Age and Their Relative Risks of Accident Involvement: Results from a Meta-Analysis. Oslo: Institute of Transport Economics; 2003.