



The Role of Comorbidities in the Management of Obstructive Sleep Apnea

Chou Kun-Ta*

Department of Chest Medicine, Taipei Veterans General Hospital, Taiwan

Editorial

Obstructive Sleep Apnea (OSA) is a prevalent disorder, characterized with repetitive interruptions of breathing during sleep owing to the collapse of pharyngeal airway. It has been linked to a myriad of diseases or conditions (comorbidities) which may have more or less influence on the health outcome and life quality of the affected patients [1]. Among comorbidities in OSA patients, cardiovascular diseases are prevalent and most often studied [1,2]. Evidence has shown that cardiovascular diseases, such as coronary atherosclerosis, heart failure and atrial fibrillation can be triggered or aggravated by OSA [2,3]. The additive impact of OSA has also been observed in subjects with coexisting non-cardiovascular diseases. For instance, patients with combined Chronic Obstructive Pulmonary Disease (COPD) and OSA have more profound nocturnal hypoxemia, more arrhythmia and a worse prognosis compared those with OSA alone [4,5].

The close relationship between OSA to common comorbid diseases has been employed as a way to pick out undiagnosed OSA patients. The consensus guideline by the Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine recommended patients with congestive heart failure, atrial fibrillation, refractory hypertension, type 2 diabetes, stroke, nocturnal dysrhythmias, and pulmonary hypertension should be evaluated for OSA symptoms [6]. As well, Continuous Positive Airway Pressure (CPAP) therapy has been recommended for OSA patients, particularly for those of moderate to severe severity (Apnea-Hypopnea Index [AHI] 15 events per hour). A lower AHI threshold for initiating CPAP therapy is considered in presence of certain comorbid diseases. According to the Centers for Medicare and Medicaid Services (CMS) in the United States, CPAP therapy is reimbursed for mild OSA (AHI: 5-14 events per hour) with coexisting mood disorders or insomnia, or hypertension, ischemic heart disease, or stroke [7]. Despite this, the impact of comorbidities on the important outcomes of OSA still needs to be evaluated, especially via a systemic approach to tell the differential role of each disease.

OPEN ACCESS

*Correspondence:

Chou Kun-Ta, Department of Chest Medicine, Taipei Veterans General Hospital, No. 201, Shih-Pai Road, Taipei 112, Taiwan, Tel: +886-2-2871-2121 ; Fax: +886-2-2876-1009; E-mail: ale1371@yahoo.com.tw

Received Date: 05 Dec 2017

Accepted Date: 26 Dec 2017

Published Date: 03 Jan 2018

Citation:

Kun-Ta C. The Role of Comorbidities in the Management of Obstructive Sleep Apnea. *Ann Sleep Med Res.* 2018; 2(1): 1008.

Copyright © 2018 Chou Kun-Ta. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Our previous work has tried to utilize a nationwide database-Taiwan National Health Insurance Research Data base to probe into the impact of co morbidities on the mortality of OSA patients [1]. We enrolled 9853 adult OSA patients with their baseline comorbidity profile recorded. During an average follow-up period of 5.3 years, 311 (3.2%) subjects died. The leading cause of death was cardiovascular diseases. Presence of any comorbidity in OSA patients carry a much higher risk for mortality compared to those without comorbidity (Hazard ratio [HR] = 11.01, $p < 0.001$). Furthermore, we identified age and ten co morbidities related to increased overall mortality, from which the CoSA (Comorbidities of Sleep Apnea) index was devised. We assigned point to each selected comorbidity based on it HR. The CoSA index was calculated as the total of the patient's co morbidities similar to the Charlson index [8]. The results showed the utility of this easy-to-use index in stratifying the mortality risk of OSA patients based on the comorbidity burden.

Nonetheless, it is worth noting that the relationship of a given comorbidity to OSA may vary across individuals. Take hypertension for example: high blood pressure in OSA patients may attribute to increment of blood pressure secondary to OSA or primary hypertension, or both. Although further characterization of such patients (eg: Dipper vs. non-dipper, refractory vs. non-refractory) may be more close to the exact etiology of high blood pressure [9,10], the efficacy of these effort is still limited as evidenced by the small effect size of the reduction of BP in OSA patients by CPAP therapy in randomized clinical trials [11]. Moreover, for OSA with multiple comorbid diseases, to dissect the tangled interrelationship is a difficult task.

After all, the decision to initiate therapy for OSA patients should base on comprehensive assessment of symptoms, disease severity gauged by Apnea-Hypopnea Index (AHI), efficacy of treatment modalities, anticipated adherence to therapy, economics and patient preference. As well,

it seems that evaluation of comorbidities have to be incorporated as a part of an integral approach.

References

1. Chiang CL, Chen YT, Wang KL, Su VY, Wu LA, Perng DW, et al. Comorbidities and risk of mortality in patients with sleep apnea. *Ann Med*. 2017;49(5):377-83.
2. Kasai T, Floras JS, Bradley TD. Sleep apnea and cardiovascular disease: a bidirectional relationship. *Circulation*. 2012;126(12):1495-510.
3. Somers VK, White DP, Amin R, Abraham WT, Costa F, Culebras A, et al. 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):1080-111.
4. Chaouat A, Weitzenblum E, Krieger J, Ifoundza T, Oswald M, Kessler R. Association of chronic obstructive pulmonary disease and sleep apnea syndrome. *Am J Respir Crit Care Med*. 1995;151(1):82-6.
5. Shepard JW, Garrison MW, Grither DA, Evans R, Schweitzer PK. Relationship of ventricular ectopy to nocturnal oxygen desaturation in patients with chronic obstructive pulmonary disease. *Am J Med*. 1985;78(1):28-34.
6. Epstein LJ, Kristo D, Strollo PJ, Friedman N, Malhotra A, Patil SP, et al. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. *J Clin Sleep Med*. 2009;5(3):263-76.
7. Welcome to the Medicare Coverage Database. 2017.
8. Charlson M, Szatrowski TP, Peterson J, Gold J. Validation of a combined comorbidity index. *J Clin Epidemiol*. 1994;47(11):1245-51.
9. Wolf J, Hering D, Narkiewicz K. Non-dipping pattern of hypertension and obstructive sleep apnea syndrome. *Hypertens Res*. 2010;33(9):867-71.
10. Feldstein CA. Blood pressure effects of CPAP in nonresistant and resistant hypertension associated with OSA: A systematic review of randomized clinical trials. *Clin Exp Hypertens*. 2016;38(4):337-46.
11. Fava C, Dorigoni S, Dalle Vedove F, Danese E, Montagnana M, Guidi GC. Effect of CPAP on blood pressure in patients with OSA/hypopnea a systematic review and meta-analysis. *Chest*. 2014;145(4):762-71.