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EDITORIAL

Are diabetic patients being screened for sleep related breathing disorder?

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Abstract

Prevalence of both diabetes mellitus and obstructive sleep apnea (OSA) is high among general population. Both of these conditions are associated with significant morbidity. OSA affects approximately 25% of men and 9% of women, and its prevalence is even higher among obese, Hispanics, African American and diabetic patients. Diabetes on the other hand besides having high prevalence in general population has even higher prevalence among ethnic populations as Hispanics and African American. Despite the availability of several simple screening tools for OSA, as Berlin questionnaire, STOP-BANG questionnaire, NAMES Criteria, the utility for screening of OSA among the diabetic population remains marginal. This in turn can lead to significant morbidity and complications related to OSA as well as worsening of diabetes mellitus and increase in diabetic complications due to untreated sleep related breathing disorder. It is therefore imperative for the primary care giver to screen for OSA among the diabetic population as a part of their routine evaluation to prevent worsening of diabetes, and its cardiovascular, renal, ophthalmologic and neurological complications.

Key words: Obstructive sleep apnea and diabetes mellitus; Obstructive sleep apnea screening; Obstructive sleep apnea and metabolic syndrome

Core tip: There is higher prevalence of obstructive sleep apnea (OSA) among diabetic population; if undiagnosed and untreated can cause increase in diabetic complications. Primary care giver should routinely screen for OSA among diabetic patients as a part of their routine evaluations.

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DIABETES

Obstructive sleep apnea (OSA) is characterized by repetitive, intermittent, complete or partial upper airway collapse, which leads to intermittent hypoxia, and sleep fragmentation. In addition, it also leads to increased hormonal fluctuations leading to an increased risk of hypertension, insulin resistance, heart attack, stroke and metabolic syndrome[1]. OSA is recognized as a chronic disorder affecting 24% of men and 9% of women in the general population, and its prevalence increases when looking at the older population[2]. Its prevalence is even higher among the obese population and diabetics reaches as high as 33%-77%[3]. Several screening questionnaires have been utilized for detection of sleep related breathing disorders. These include the Berlin Questions, NAMES Criteria, STOP-BANG questionnaires, American Society of Anesthesiologists (ASA), and the Sleep Disorder questionnaire. Sensitivities range from 83.6% for STOP-BANG to 86% in the Berlin questionnaire, and specificity from 38.2% for ASA to 77% with Berlin questionnaire[4-8].

On the other hand, diabetes mellitus affects 6% of the American population and its incidence and prevalence is significantly worse among the both Hispanic and African-American population, suggesting an disproportionately increased burden of both diabetes and sleep disordered breathing/OSA in this ethnicity[9,10]. The number of individuals in the United States who have been diagnosed of diabetes mellitus approaches 24 million according to an estimate by the Center of Disease Control[11]. Several studies have shown an independent association between OSA and several components of metabolic syndrome, particularly in insulin resistance and abnormalities in lipid metabolism[12-15].

Additionally, several screening devices with sensitivity and specificity ranging in the 90% have been in the market, such as ApneaLink, RUSleeping RTS, Embletta portable diagnostic system, and Stardust Ⅱ[16-19]. Furthermore, several biomarkers and proteomics studies have been designed and are in the workup for the diagnosis of OSA[20]. Proteomic studies have used urine and serum based studies, utilizing 2 dimension gel based analysis of urine to check for uromodulin and urocortin-3. The serum based mass spectrometry assay is applied to check for different expressions of 103 proteins, which are expressed differently on the basis of severity of OSA[20-22].

Several studies have shown a significantly high prevalence of OSA among patients with diabetes mellitus and metabolic syndromes, with prevalence ranging as high as 73% and 86%[5,23,24]. On the basis of these studies, approximately 17 million diabetic patients suffer from the metabolic syndrome in United States of America. In a study on prevalence of OSA and metabolic syndrome among the internal medicine setting, authors found the prevalence of OSA in patients with diabetes to be as high as 83%[25]. Moreover, in a study from Aronsohn *et al*[5] patients with OSA and diabetes mellitus had higher HBA1c levels when compared to diabetic patients without OSA. Several studies have shown an independent association between severity of OSA and insulin resistance[1,5,13,26]. Continuous positive airway pressure therapy on the other hand has shown improvement in insulin resistance in several studies[26].

With the current obesity epidemics and the high prevalence of type 2 diabetes, it remains very surprising that screenings for OSA are not routinely done at primary care practitioner offices and diabetic clinics, despite the availability of several simple screening tools[6,8]. The data from the studies are clear regarding the adverse effects of sleep apnea on cardiovascular morbidity and mortality, as well as worsening of other diabetic complications in patients with untreated OSA. OSA and diabetes combinations have even more catastrophic cardiovascular, renal, and financial implications on health care if it remains undiagnosed and treated. The International Diabetes Federation recommends screening patients for possible OSA, assessing metabolic and cardiovascular risk factors and making appropriate referrals for the management in case of any abnormality detected[11].

The author suggests an important role for the national, regional and local societies to educate the primary care practitioner and diabetes providers to make OSA screening a part of their armamentarium.

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