Should Women with Obstructive Sleep Apnea Syndrome Be Screened for Hypothyroidism?

Chad M. Miller, M.D.¹ and Aatif M. Husain, M.D.¹²

ABSTRACT

This study was conducted to determine if there is a significant increase in prevalence of hypothyroidism in women with OSAS such that screening might be warranted. Women undergoing polysomnography (PSG) at Duke University between January 1, 2000 and August 21, 2001 were considered for enrollment. Those with a respiratory disturbance index (RDI) ≥ 10 were included for further analysis. Demographic data and documentation of thyroid testing was obtained. Thyroid testing obtained within 1 year of the PSG was used for this study. Demographic data of the euthyroid and hypothyroid groups were compared. Prevalence of hypothyroidism was calculated and compared with the prevalence of hypothyroidism in the Framingham study. A total of 118 women had OSAS per PSG. Seventy-five patients had thyroid function testing within 1 year of PSG evaluation. The mean age, body mass index, and RDI in the euthyroid and hypothyroid groups were not significantly different. The prevalence of hypothyroidism was 9.3%; the established prevalence of hypothyroidism in women in the general population is 5.9%. There was no statistically significant difference in the prevalence between these groups. The prevalence of hypothyroidism in women with OSAS is no higher than that seen in the general population. Screening women with symptoms of OSAS for hypothyroidism is unlikely to be useful.

KEYWORDS: Obstructive sleep apnea syndrome, women, hypothyroidism, euthyroid, thyroid screening, prevalence
Obstructive sleep apnea syndrome (OSAS) is a condition in which there is recurrent cessation of respiration during sleep, which results in characteristic nocturnal and diurnal symptoms. Several medical conditions have been implicated as serving a causal or contributing role in the development of OSAS.\textsuperscript{1,2} One such condition is hypothyroidism. Although several early reports suggested that hypothyroidism was a risk factor for the development of OSAS,\textsuperscript{3–7} more recent studies have contradicted these findings in middle-aged, obese men.\textsuperscript{8–10} The correlation between hypothyroidism and OSAS in women has not been adequately studied. This is especially important because women are more likely to have autoimmune endocrine disorders. Given that treatment of hypothyroidism has lead to improvement and resolution of apnea in numerous studies,\textsuperscript{3–7} it is important to identify subpopulations in which an association between the disorders might hold clinical significance. This study was undertaken to determine the prevalence of hypothyroidism in women diagnosed with OSAS in a tertiary-care sleep disorders center and compare it with population norms.

METHODS

Charts of all women undergoing polysomnography (PSG) at the Duke University Sleep Disorders Center between January 1, 2000 and August 31, 2001 were reviewed. This population included patients seen and cared for by clinicians in the Sleep Disorders Center as well as other physicians who had referred patients to the sleep laboratory for PSG. Only women referred for evaluation of OSAS and women with an established diagnosis of OSAS who were returning for a continuous positive airway pressure (CPAP) titration PSG were included.

PSGs were obtained according to standard laboratory protocol. Electroencephalography (EEG), electro-oculography, chin and anterior tibialis electromyography (EMG), oxyhemoglobin saturation, electrocardiography, oronasal airflow, body positioning, and chest and abdominal movement were recorded for all studies. Esophageal pressure monitors ($P_{es}$) were not used. Sleep stages were scored according to the Rechtschaffen and Kales system.\textsuperscript{11} Respiratory disturbance, arousals, periodic movements, and oxyhemoglobin desaturations were scored on the basis of established guidelines.\textsuperscript{12}

For this study, OSAS was polysomnographically defined as a respiratory disturbance index (RDI) > 10. Only women with an RDI of $\geq 10$ were included in the study. Exceptions to this were when the overall RDI was $\leq 10$, but positional RDI was $>10$ and the interpreting clinician believed the patient had significant OSAS needing treatment; these patients were also included in the study. Chart review of these patients was performed to obtain demographic data, height and weight (to determine body mass index [BMI]), and documentation of thyroid testing or evidence of treated hypothyroidism. Patients with a single TSH value $>5.66$ mIU/L were considered to have hypothyroidism if there was no documentation of hypothalamic or pituitary dysfunction. TSH level was determined by automated chemiluminescent immunoassay.

Demographic data of the euthyroid and hypothyroid groups were compared by using two-tailed Student $t$-tests. Prevalence of hypothyroidism was calculated from the portion of women with OSAS who had thyroid function testing. These results were compared with Framingham Study\textsuperscript{13} estimates of hypothyroidism in women by a two-tailed chi-square analysis.

RESULTS

A total of 459 PSGs were performed on women during the specified time period. Of these, 118 women (25.7\%) were noted to have OSAS per criteria es-