

Physician accuracy in predicting successful treatment in suspected obstructive sleep apnea did not differ between home monitoring and polysomnography

Whitelaw WA, Brant RF, Flemons WW. Clinical usefulness of home oximetry compared with polysomnography for assessment of sleep apnea. *Am J Respir Crit Care Med.* 2005;171:188-93. **Clinical impact ratings:** GIM/FP/GP ★★★★★☆ Pulmonology ★★★★★☆

QUESTION

In patients with suspected obstructive sleep apnea (OSA), how accurate are physicians in predicting treatment response to autocontinuous positive airway pressure (CPAP) with oximeter-based home monitoring compared with laboratory polysomnography?

METHODS

Design: Randomized controlled trial.

Allocation: Concealed.*

Blinding: Unblinded.*

Follow-up period: 4 weeks.

Setting: Sleep center in Calgary, Alberta, Canada.

Patients: 307 patients with a history suggestive of OSA associated with somnolence or fatigue. Exclusion criteria were a nonrespiratory sleep disorder as the primary reason for referral, absence of daytime symptoms, important comorbid conditions, and physiologic consequences of OSA.

Intervention: Home monitoring (Snoresat [Sagatech, Calgary, Alberta]) ($n = 162$) or polysomnography (a standard full-night diagnostic study) ($n = 145$). All patients were assigned autotitrating CPAP therapy at home for 4 weeks. During the second week, overnight home monitoring was done to verify that the respiratory disturbance index (RDI) on treatment was < 5 .

Outcomes: Rate of physicians' correct predictions of treatment success, defined as an increase of ≥ 1.0 on the Sleep Apnea Quality of Life Index (SAQLI).

Patient follow-up: 288 patients (94%, mean age 47 y) began a trial of CPAP; 252 patients (82% of randomized patients) completed the follow-up SAQLI (intention-to-treat analysis).

MAIN RESULTS

Patients were evenly distributed among the prediction categories. Overall, physicians predicted success in 50% of patients, but only 42% met the criterion for improvement. The proportion of improved patients in each category was similar to the proportion predicted by physicians, except for the 50% to 75% category in which the rate of improvement was lower than predicted (Table). The correct prediction rate was 0.61 with polysomnography and 0.64 with home monitoring ($P = 0.72$). Correct prediction rates were

slightly higher for predictions in the lowest and highest categories (Table).

CONCLUSION

In patients with suspected obstructive sleep apnea, the accuracy of physicians to predict successful treatment response using oximeter-based home monitoring did not differ from their accuracy using laboratory polysomnography.

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*See Glossary.

Actual treatment success rates and correct prediction rates on the Sleep Apnea Quality of Life Index (SAQLI) for oximeter-based home monitoring or polysomnography for suspected obstructive sleep apnea at 4 weeks

Type of Patients	Predicted success rate			
	< 25%	25% to 50%	50% to 75%	> 75%
	Actual success rate*			
All	0.27	0.33	0.39	0.68
Polysomnography	0.32	0.27	0.43	0.63
Home monitoring	0.24	0.38	0.33	0.75
	Correct prediction rate			
All	0.73	0.67	0.40	0.68
Polysomnography	0.68	0.73	0.46	0.63
Home monitoring	0.76	0.63	0.33	0.75

*Actual success rate was significant increase in the SAQLI according to physician's prediction of the probability of improvement.

COMMENTARY

With the increasing recognition of OSA among health care providers and the general public, the shortfall in availability of diagnostic sleep centers remains. This pressure on resources has resulted in creative research, such as the study by Whitelaw and colleagues, suggesting that the diagnostic gold standard, the polysomnogram, may not be required as a means to render potentially effective treatment under all circumstances.

While showing noteworthy results, the study has limitations. The authors used subjective quality of life (QOL) outcomes and an arbitrary change in SAQLI score to gauge success. Acknowledging the importance of patient QOL, it can be argued that the most critical outcome of OSA treatment is vigilance while driving a motor vehicle, which may be better measured by such objective tools as a driving simulator. Also, because patients with important comorbid conditions were excluded, general applicability of the study is limited, particularly as data mount to implicate even milder forms of OSA in the pathophysiology of cardiovascular and metabolic disease.

Whitelaw and colleagues' data suggest that in a selected symptomatic

population of patients with OSA, unattended home oximetry is as informative as polysomnography for predicting CPAP treatment outcomes. It supports the widely held notion that patients with more severe and symptomatic OSA comply with and respond to CPAP, while those with milder disease do not. These represent 2 increasingly prevalent patient groups that may be identifiable with simple oximetry, thereby potentially unloading some of the burden on diagnostic sleep laboratories in the future. However, a recent systematic review and consensus statement concluded that insufficient evidence exists to support unattended sleep monitoring as a diagnostic tool for OSA (1). Further research that builds on the conclusions of Whitelaw and colleagues might provide more convincing evidence for home monitoring.

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Reference

1. Flemons WW, Littner MR, Rowley JA, et al. *Chest.* 2003;124:1543-79.