Validated Questionnaires and an Ambulatory Monitor in the Diagnosis of Obstructive Sleep Apnea

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Category: I- Sleep Breathing Disorders

ABSTRACT

Introduction & Objectives: Screening questionnaires have been validated in populations at risk for obstructive sleep apnea (OSA). Simplified ambulatory monitors have become accepted for confirmation of OSA in patients with a high pre-test probability. Advantages of an alternative algorithm to in-lab polysomnography (PSG) include timely access to diagnosis and reduced costs. This study compared the diagnostic utility of three validated questionnaires and a Level III portable monitor (PM), in the diagnosis and exclusion of OSA.

Materials & Methods: One hundred and fifty patients recruited from the Kingston General Hospital Sleep Clinic completed (i) three validated questionnaires (Sleep Apnea Clinical Score, Stop-Bang Questionnaire, and Berlin Questionnaire), (ii) wore a Level III PM device (MediByte®, Braebon, Kanata), and (iii) underwent in-lab polysomnography. Downloaded Medibyte* data, including oximetry, nasal pressure airflow, and respiratory inductance plethysmography, were manually scored by an experienced scorer, blind to in-lab PSG results. Questionnaire and PM data were then compared with Level I in-laboratory overnight PSG.

Results: Of 150 patients recruited, data for 117 patients (77 M, 40 F), mean age 50 ± SD 12.6 years, mean BMI 31 ± SD 6.6 kg/m², is available. At a diagnostic threshold AHI of 10 (based on in-lab polysomnography) the PM had slightly lower sensitivity (79%) but greater specificity (88%) than any of the questionnaires. The sensitivity and specificity for each of the questionnaires was as follows: Sleep Apnea Clinical Score 89%, 52%; Stop-Bang 89%, 24%; Berlin 89%, 28%. For a diagnostic threshold AHI of 15, the sensitivity and specificity were as follows: MediByte 79%, 94%; Sleep Apnea Clinical Score 91%, 50%; Stop-Bang 91%, 28%; Berlin 91%, 28%.

Conclusions: Our findings underscore the importance of objective measurement of respiration in the assessment of OSA, rather than reliance on validated questionnaires.
ACKNOWLEDGMENTS

This research was funded by the Innovation Fund, Ontario Ministry of Health and the WM Spear Foundation, Queen's University. The authors thank BRAEBON® Medical Corporation for providing 3 MediByte® units, and technologists at Kingston General Hospital Sleep Laboratory for assistance.

FIGURES

Figure 1: ROC curves for the MediByte and three validated questionnaires -- Sleep Apnea Clinical Score, Stop-Bang Questionnaire, and the Berlin Questionnaire -- with a polysomnography AHI cutoff of 10 events/hr.