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LETTERS TO THE EDITOR

Apnea-hypopnea index vs oxygen desaturation index for diagnosis of obstructive sleep apnea in patients with atrial fibrillation: six of one, half a dozen of the other?

Response to Mohammadieh AM, Sutherland K, Kanagaratnam LB, Whalley DW, Gillett MJ, Cistulli PA. Clinical screening tools for obstructive sleep apnea in a population with atrial fibrillation: a diagnostic accuracy trial. *J Clin Sleep Med.* 2021;17(5):1015–1024.

Chou-Han Lin, MD[1]; Chih-Chieh Yu, MD[2]

[1]*Division of Respiratory Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan;* [2]*Division of Cardiology, Department of Internal Medicine, National Taiwan University Hospital, Taipei City, Taiwan*

Mohammadieh et al[1] evaluated the validity of several clinical tools against polysomnography for diagnosis of obstructive sleep apnea (OSA) in patients with atrial fibrillation (AF) and demonstrated that a level 3 home sleep apnea test yielded the best diagnostic accuracy. We congratulate Mohammadieh et al on their work for patients with AF who urgently need a streamlined diagnostic pathway.[2] However, as compelling as their data appear, a number of issues not reflected in the article need to be addressed.

First, the authors report only the results of the apnea-hypopnea index (AHI) from "automated scoring" but not from manual scoring. Also, the version of automated scoring is not disclosed. This is important because there are substantial differences between manual and automated scoring or different versions of the automated algorithms. In a recent study using the same device, Cho and Kim[3] found manual scoring yielded the best diagnostic accuracy, followed by 2 different versions of automated scoring. In fact, automated scoring without manual scoring in a home sleep apnea test is not recommended by the American Academy of Sleep Medicine.[4] Therefore, it would be anticipated that the accuracy of AHI in this study could be underestimated.

Second, oxygen desaturation index (ODI) but not AHI was described as "performed best for moderate to severe and severe OSA" in the abstract. However, this result should be viewed cautiously given that the statistical difference between these 2 close values of area under the curve from AHI and ODI was not calculated. In addition, the diagnostic accuracy of ODI did not outperform AHI in other parameters or other groups of patients. For instance, sensitivity and negative predictive value of AHI is the same as those in ODI in groups with severe OSA (83.3% vs 83.3%; 97.0% vs 97.4%). In the group with any OSA, area under the curve of AHI is higher than that of ODI (0.896 vs 0.874).

Third, in the discussion, the authors chose to emphasize ODI rather than AHI by concluding "Our study of ODI via polygraphy … represents an important next step for OSA diagnosis in AF patients." Nevertheless, readers should note that current guidelines do not recommend ODI for diagnosis of OSA in general practice.[5] Moreover, the evidence in the literature to support ODI as a metric to be associated with AF is sparse. Only the Multi-Ethnic Study of Atherosclerosis revealed an association between AF and ODI.[6] Importantly, the ODI in this population-based study was defined by using a 4% criterion but not 3% in the study by Mohammadieh et al. On the other hand, a recent interventional diagnostic study showed a sensitivity of 91% and 83% specificity of ODI to detect moderate-to-severe OSA, but it was concluded that ODI should be regarded merely as a screening tool to rule out OSA in patients with AF.[7]

In conclusion, the study by Mohammadieh et al proves the applicability of home sleep apnea tests in patients with AF, but these data should not be used to justify ODI as a sole diagnostic tool in patients with AF in clinical practice or further research.

CITATION

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Address correspondence to: Chih-Chieh Yu, Division of Cardiology, Department of Internal Medicine, National Taiwan University College of Medicine and Hospital, No. 7, Chung-Chan South Road, Taipei 100, Taiwan; Tel: +886-2-23123456 ext. 62152; Fax: +886-2-23951841; Email: ccyu@ntuh.gov.tw

DISCLOSURE STATEMENT

All the authors have seen and approved this manuscript. Work for this study was performed at Far Eastern Memorial Hospital and National Taiwan University Hospital, Taiwan. The authors report no conflicts of interest.

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