

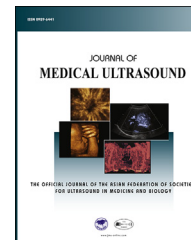


Chinese Taipei Society of
Ultrasound in Medicine

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.jmu-online.com



ORIGINAL ARTICLE

Submental Ultrasonography in Diagnosing Severe Obstructive Sleep Apnea Syndrome

Li-Jen Liao^{1,2}, Tsung-Yi Cho¹, Po-Wen Cheng¹, Chi-Te Wang¹,
Wu-Chia Lo¹, Tsung-Wei Huang^{1,2,3*}

¹ Department of Otolaryngology, Far Eastern Memorial Hospital, Taipei, ² Department of Electrical Engineering, Yuan Ze University, Taoyuan, and ³ Department of Health Care Administration, Oriental Institute of Technology, Taipei, Taiwan

Received 26 April 2016; accepted 17 June 2016

KEYWORDS

obstructive,
sleep apnea,
sleep disorders,
ultrasound

Abstract *Background:* The aim of this study was to compare multiple ultrasound parameters in diagnosing patients with severe obstructive sleep apnea syndrome (OSAS).

Methods: A submental ultrasonography was performed to measure the distance between the lingual arteries, the diameter of the retropalatal space in the transverse dimension, and the tongue base thickness in the sagittal plane. The diameter of the retropalatal space and tongue base thickness were measured in the resting state and under Müller's maneuver. Analyses were based on the means of the triplicate measurements and the severity of OSAS.

Results: Based on ultrasound data, patients with severe OSAS had a significantly larger mean tongue base thickness in the resting state and under Müller's maneuver and a larger mean distance between the lingual arteries. The mean tongue base thickness (≥ 60 mm, odds ratio 5.18; 1.07–25.0) is the sole independent predictor for severe OSAS. The resting tongue base thickness (≥ 60 mm) had a diagnostic performance of 84.9% sensitivity, 59.3% specificity, 75.0% positive predictive value, 72.7% negative predictive value, and 74.2% accuracy for severe OSAS.

Conclusion: Submental ultrasonography is a noninvasive, convenient, and effective tool in diagnosing severe OSAS.

© 2016, Elsevier Taiwan LLC and the Chinese Taipei Society of Ultrasound in Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Conflict of interest: The authors declare that they have no conflicts of interest relevant to this article.

* Correspondence to: Dr Tsung-Wei Huang, Department of Otolaryngology, Far Eastern Memorial Hospital, Number 21, Section 2, Nan-Ya South Road Pan Chiao, Taipei 220, Taiwan.

E-mail address: huangtw28@gmail.com (T.-W. Huang).

<http://dx.doi.org/10.1016/j.jmu.2016.06.002>

0929-6441/© 2016, Elsevier Taiwan LLC and the Chinese Taipei Society of Ultrasound in Medicine. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Liao L-J, et al., Submental Ultrasonography in Diagnosing Severe Obstructive Sleep Apnea Syndrome, Journal of Medical Ultrasound (2016), <http://dx.doi.org/10.1016/j.jmu.2016.06.002>

Introduction

Sleep-disordered breathing is becoming more common and it is related to increased morbidity and mortality in the general population [1]. According to previous literature reports, 9% of women and 24% of men have sleep-disordered breathing [2].

Obstructive sleep apnea syndrome (OSAS) is independently associated with increased carotid intima-media thickness and plaque, which could increase future cardiovascular disease risk [3–5].

The management of OSAS is not easy to assess. It involves specialist referrals, and the diagnosis and grading of OSAS depends on polysomnography data that can only be

collected after an overnight examination [6]. When the Apnea–Hypopnea Index (AHI) or Respiratory Disturbance Index contains >30 events/h, it is classified as severe OSAS [7]. Severe OSAS increases the risk of cardiovascular disease, and it is indicative of the need for further treatment. Surgical treatment or positive pressure during sleep can decrease the AHI, minimum and mean oxygen saturation, blood pressure, and carotid intima-media thickness, which can attenuate the risk of morbidity and mortality [8–10].

Due to the convenience, inexpensiveness, non-irradiation, and office-based procedure, an increasing number of ear, nose, and throat specialists use ultrasonography (US) to examine the neck [11]. US has been most

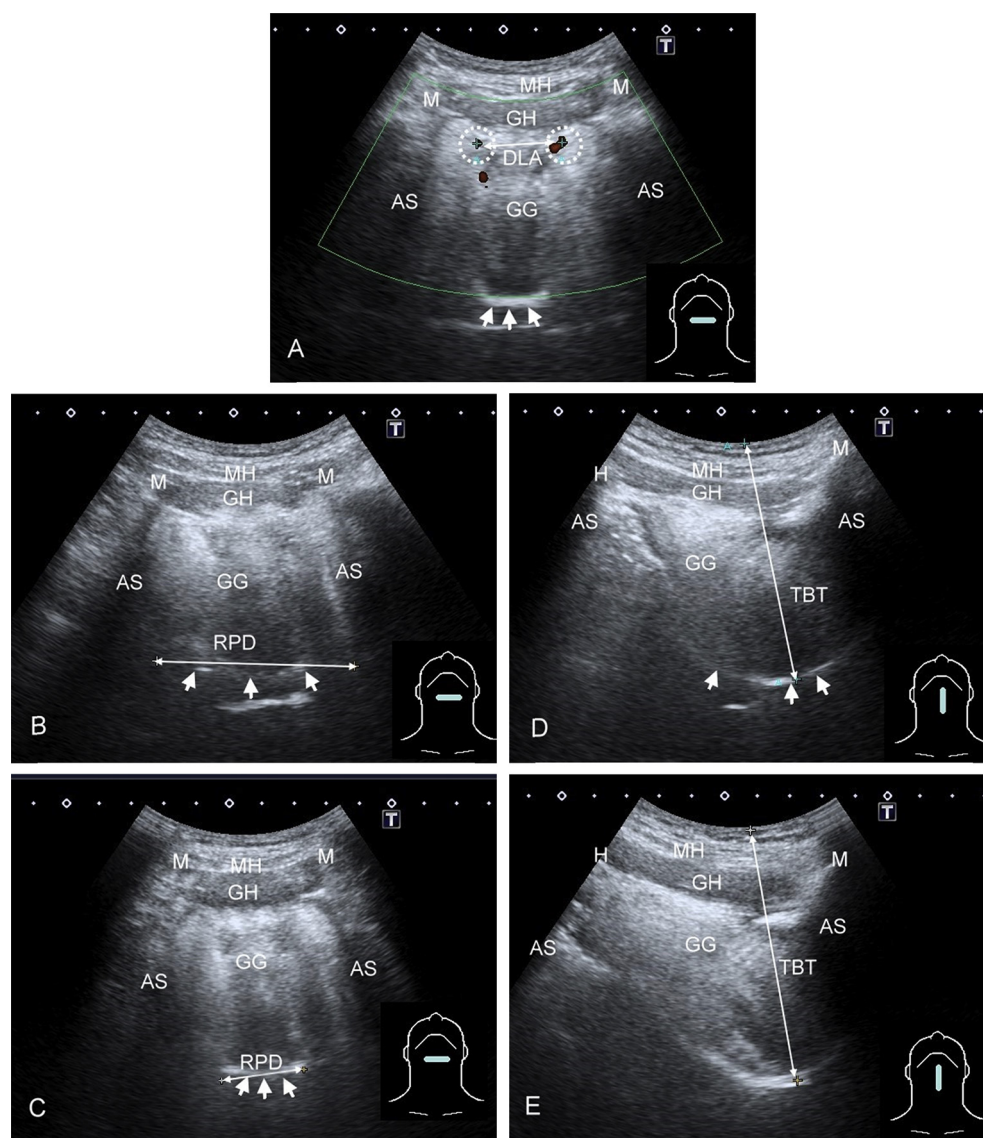


Figure 1 Submental ultrasonograms to delineate various ultrasound parameters in diagnosing severe obstructive sleep apnea syndrome. (A) Lingual arteries (dotted circles) were shown by Power Doppler scan on both sides of lower lateral border of tongue base. Distance between lingual arteries (DLA) was measured; (B) transverse diameter of rectopalatal pharynx (RPD) in resting and (C) under Müller's maneuver; (D) mid-tongue base thickness (TBT) in resting and (E) under Müller's maneuver. Other markings were seen as following: mucosa covering of tongue (whitish arrows), and geniohyoid muscle (GH), mylohyoid muscle (MH), geniohyoid muscle (GG), and acoustic shadow (AS) reflecting the mandible body (M) or hyoid bone (H).

Download English Version:

<https://daneshyari.com/en/article/8823600>

Download Persian Version:

<https://daneshyari.com/article/8823600>

[Daneshyari.com](https://daneshyari.com)