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ORIGINAL ARTICLE

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A comparison of the Fujita classification of awake and drug-induced sleep endoscopy patients

Fabio Augusto Winckler Rabelo[1], Daniel Salgado Küpper[2], Heidi Haueisen Sander[3], Vanier dos Santos Júnior[4], Eric Thuler[4], Regina Maria França Fernandes[5], Fabiana Cardoso Pereira Valera[6]

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Abstract

Only a few studies have compared the outcomes of patients kept awake during endoscopic examination and subjects submitted to drug-induced sleep endoscopy.

Objective: This study aimed to compare the endoscopic findings of patients submitted to outpatient endoscopy and endoscopic examination with sedation by propofol based on the Fujita Classification.

Method: This cross-sectional cohort study enrolled 34 patients. The subjects underwent ENT examination, nasal endoscopy with Müller's maneuver, and drug-induced sleep endoscopy with propofol. The Fujita Classification was used to compare the two modes of endoscopic examination. The examinations were correlated to patient clinical data such as BMI, age, and OSAS severity.

Results: There was no agreement between the two modes of endoscopic examination, whether for the group in general or for the analyzed subgroups.

Conclusion: There was no agreement between the endoscopic findings of endoscopic examinations done with the patient awake or in drug-induced sleep.

[1] PhD in ENT by FMRP-USP (MD, ENT).
[2] MSc in ENT by FMRP-USP (Assistant Physician in the ENT Service of HC-FMRP-USP).
[3] PhD in Neurology by FMRP-USP (Assistant Physician in the Neurology Service of HC-FMRP-USP).
[4] MD, ENT (MD, ENT).
[5] PhD in Neurology by FMRP-USP (Professor of Neurology at FMRP - USP).
[6] Post-doctoral degree holder (Professor at FMRP - USP).
Medical School of Ribeirão Preto - University of São Paulo.
Send correspondence to: Fabiana Cardoso Pereira Valera. Faculdade de Medicina de Ribeirão Preto - Universidade de São Paulo. Av. Bandeirantes, nº 3900, 12º andar.
Ribeirão Preto - SP. Brazil. CEP: 14049-900.
Tel: (16) 36022862. Fax: (16) 36022860. E-mai: facpvalera@fmrp.usp.br
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INTRODUCTION

The studies performed on obstructive sleep apnea syndrome (OSAS) have enhanced the understanding of symptoms, facilitated diagnosis, and demonstrated the effectiveness of positive airway pressure therapies[1]. Nonetheless, the difficulties inherent to complying with this mode of treatment have called the attention to other therapeutic possibilities - surgery in particular[1].

The vast array of approaches and the scarce controlled randomized trials hinder the demonstration of surgery effectiveness. Reviews and meta-analyses aimed at assessing OSAS surgery have presented inconsistent results: Sher et al.[2] and Sundaram et al.[3] published meta-analyses on OSAS therapies and found inconsistent results for surgical treatments. Yet, the authors reported that the failure to observe all obstructed sites in the pharynx was the main reason for surgery unsatisfactory results, and that the determination of the site of obstruction should be the main focus of OSAS studies, given its strong correlation with treatment success. In 2010, the American Academy of Sleep Medicine published a review[4] on various surgical treatments for OSAS and the authors concluded that future studies should focus on the standardization of preoperative evaluation and better patient selection.

In these three important reviews, the authors inferred that the main cause for surgery failure is inaccurate identification of the site of obstruction in the upper airway and, consequently, poor patient selection. The complexity of the upper airways and the multifactorial character of sleep apnea explain the difficulties related to this assessment. The following tests are currently available to aid in patient evaluation: cephalometric measurements, computerized tomography, magnetic resonance imaging, airway manometry, fiberoptic laryngoscopy using Müller's maneuver, and drug-induced sleep endoscopy (DISE).

DISE with propofol has been increasingly used, and is currently considered as the endoscopic examination mode that more closely resembles natural sleep and allows for better location of the site of obstruction in the upper airways. Recent studies have ranked highly the effectiveness of this examination in terms of accurately locating sites of obstruction[5,6], outcome reproducibility[7,8], and patient outcome[9,10]. Our group recently published a paper[11] on the polysomnographic alterations introduced by propofol-induced sleep, adding to the reliability of this mode of examination.

However, only a few studies have compared the outcomes of patients kept awake during endoscopic examination and subjects submitted to drug-induced sleep endoscopy. This study is essential in the assessment of whether endoscopic examination under sedation is required.

This study aimed to compare the endoscopic findings of patients submitted to outpatient endoscopy and endoscopic examination with sedation by propofol based on the Fujita Classification.

METHOD

This is a multicentric study, with the following participating hospitals: University Hospital of the Medical School of Ribeirão Preto - University of São Paulo and the Samaritan Hospital between July of 2006 and January of 2010. All the enrolled patients were educated as to the nature of the study and signed an Informed Consent Form. The research protocol was assessed and approved by the hospital's Ethics Committee in Research with Humans (# 5620/2006).

The sample was made up of patients with a history of snoring and diurnal hypersomnia previously submitted to diagnostic nocturnal polysomnography at the hospital's Sleep Lab using a digital polygraph (Bio- Logic®) equipped with analytical software program Sleepscan Vision Analysis version 2.03.05. The following were recorded: electroencephalogram (F3-M2, F4-M1, C3-M2, C4-M1, O1-M2, O2-M1 as per the 10-20 International System), bilateral electrooculograms (E1-M2, E2-M1), electrocardiogram (modified V2), surface EMG of the mental and submental muscle, bilateral EMG of the anterior tibial muscle, synchronized digital video (infrared camera - Elbex Inc™), and body position (Netlink body sensor position™). Breathing was monitored as follows: a pressure transducer cannula recorded the flow of air through the nose (Ac Sleep 119, Biolink Medical Br®) in combination with a nasal and oral thermal air flow sensor (Pro-Tech thermal air flow sensor™); respiratory inductance plethysmography belts were used to measure respiratory effort (Pro-Tech zRIP respiratory inductance plethysmography™); an oximeter (Netlink Head Box™) was used to assess blood oxygen saturation (O_2 Sat) and a laryngeal microphone to record respiratory noises. All technical parameters were in accordance with the 2007 Manual of the AASM.

The study enrolled patients with sleep respiratory disorders willing to undergo the tests described below. Thirty-four males (73%) and 12 females (27%) with a mean age of 41.35 ± 7.96 years and a mean BMI of 26.82 ± 3.62 were included. Based on polysomnographic testing, eight patients (17.4%) snored but did not have apnea, 19 (41.3%) had mild OSAS, 10 (21.7%) had moderate OSAS, and nine (19.6%) had severe OSAS.

The exclusion criteria were: age under 18 and above 60 years and patients with cardiorespiratory comorbidities that increased the risk of sedation: previous AMI, congestive heart failure (CHF), severe chronic obstructive pulmonary disease (COPD), etc.

The Fujita Classification was described in 1987 by Fujita and Simmons, and has since been widely utilized in the topographic description of upper airway obstruction. Type I includes isolated oropharyngeal obstruction (and