European Archives of Oto-Rhino-Laryngology (2019) 276:3559–3560
https://doi.org/10.1007/s00405-019-05673-5

LETTER TO THE EDITOR

In response to the 'Letter to the Editor' on the paper 'Aging effect on sleepiness and apneas severity in patients with obstructive sleep apnea syndrome: a meta-analysis study'

Giannicola Iannella[1,2] · Giuseppe Magliulo[1] · Andrea De Vito[2] · Claudio Vicini[2,3]

Received: 20 September 2019 / Accepted: 24 September 2019 / Published online: 4 October 2019
© Springer-Verlag GmbH Germany, part of Springer Nature 2019

Dear Editor,

First, we thank for giving us the opportunity to comment the observations on our paper entitled 'Aging effect on sleepiness and apneas severity in patients with obstructive sleep apnea syndrome: a meta-analysis study' [1]. As it appears clearly, this was a meta-analysis study carried out to evaluate the perception of sleepiness and its severity [1] comparing over and under 65-year-old patients suffering from obstructive sleep apnea syndrome (OSA).

It is a common knowledge that the Epworth Sleepiness Scale (ESS) is based on subjective reports. However, various considerations should be stressed:

1. ESS is a standardized item measuring the general levels of perceived sleepiness. It has been validated in elderly populations with good sensitivity and specificity [2]. Although other objective sleepiness screening measures, such as the Multiple Sleep Latency Test and Maintenance of Wakefulness test, are available, their use is difficult and expensive [2, 3]. Thus, ESS still represents the most reliable method used in clinical practice to evaluate the daytime sleepiness of OSA patients.
2. ESS has a high internal consistency between eight items with a Cronbach's α of 0.88 [2] and, in normal subjects, its test–retest reliability remains at high levels over a period of 5 months.
3. In our study, the Epworth Scale has been used to compare two groups of patients. The letter cited Kendzerska et al. [4] stating that the conclusions of this paper are against the use of the ESS, but these authors [4] suggested the exact opposite: this instrument can be used for group comparisons. In fact, its internal consistency (Cronbach's α ranged from 0.7 to 0.9) makes it ideal for group comparisons.
4. With regard to the risk of bias due to cognitive impairment of patients > 65 years, we must remember that this is a meta-analysis study on 1869 patients. The selected studies had strict inclusion criteria excluding patients with serious cognitive impairment. This aspect was emphasized, in our study, by the QUADAS-2 graph (low risk of bias in the patient's selection for each study considered).
5. A potential increase of the AHI with aging has been analyzed. There were no statistical differences ($p = 0.8$) between the two groups. Moreover, using random-effects modeling, our meta-analysis did not show aging effect on AHI ($k = 6$ studies; 95% CI − 0.01 to 0.12; $p = 0.001$) [1].
6. Although there was no significant difference of AHI between elderly and younger patients, the lower daytime sleepiness in the elderly was present. How can they be explained? This is a source of debate in the literature [5–7] and merits further considerations. Sforza et al. [6] have analyzed sleepiness and their risk factors in the elderly. They did not find out significant data for confirming the role of apnea severity, hypoxemia, and sleep fragmentation on the development of sleepiness and suggested that sleepiness in elderly may be related to other mechanisms such as mood disorders, differences

This reply refers to the article available at https://doi.org/10.1007/s00405-019-05641-z.

✉ Giannicola Iannella
giannicolaiannella@hotmail.it

[1] Department of 'Organi di Senso', University "Sapienza", Via Satrico 7, 00183 Rome, Italy

[2] Department of Head-Neck Surgery, Otolaryngology, Head-Neck and Oral Surgery Unit, Morgagni Pierantoni Hospital, Forlì, Italy

[3] Department ENT and Audiology, University of Ferrara, Ferrara, Italy

in lifestyle and sleep habits, reduced professional activity, and increased social and physical activity, increasing the chance to stay awake. Lifestyle modifications for reducing the impact of nocturnal sleep disturbances on the sleepiness of the elderly OSA patients have been also reported by other authors [5, 7]. Daytime napping may be a factor involving the symptoms of sleepiness. Older people have more opportunities for napping, whereas younger people in full-time employment have less chances of nocturnal sleep disruption (due to sleep-disorder breathing or other causes) [5].

All of these observations induced us to the following conclusions:

1. ESS, despite being a method of subjective evaluation, provides reliable information for assessing daytime sleepiness in different groups of patients.

The reduction in daytime sleepiness of the elderly OSA patients is linked to multiple factors. One of these is, of course, AHI, but is not the only one. Other factors (i.e., socio-demographic, lifestyle-related, and sleep habits) involved in the mechanisms of sleepiness of the elderly OSA patients merit further investigations.

Funding None.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Iannella G, Vicini C, Colizza A et al (2019) Aging effect on sleepiness and apneas severity in patients with obstructive sleep apnea syndrome: a meta-analysis study. Eur Arch Otorhinolaryngol 2019:3
2. Johns MW (1993) Daytime sleepiness, snoring, and obstructive sleep apnea. The Epworth Sleepiness Scale. Chest. 103:30–36
3. Nishiyama T, Mizuno T, Kojima M et al (2014) Criterion validity of the Pittsburgh Sleep Quality Index and Epworth Sleepiness Scale for the diagnosis of sleep disorders. Sleep Med 15:422–429
4. Kendzerska TB, Smith PM, Brignardello-Petersen R, Leung RS, Tomlinson GA (2014) Evaluation of the measurement properties of the Epworth sleepiness scale: a systematic review. Sleep Med Rev 18:321–331
5. Morrell MJ, Finn L, McMillan A, Peppard PE (2012) The impact of ageing and sex on the association between sleepiness and sleep disordered breathing. Eur Respir J 40:386–393
6. Sforza E, Pichot V, Martin MS, Barthélémy JC, Roche F (2015) Prevalence and determinants of subjective sleepiness in healthy elderly with unrecognized obstructive sleep apnea. Sleep Med 16(8):981–986
7. Edwards BA, O'Driscoll DM, Ali A, Jordan AS, Trinder J, Malhotra A (2010) Aging and sleep: physiology and pathophysiology. Semin Respir Crit Care Med 31:618–633

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.