



Obstructive sleep apnea syndrome and life expectancy: Do pharyngeal evolutionary changes matter?

ARTICLE INFO

Keywords

Obstructive sleep apnea
OSAS
Life expectancy
Gender life gap
Upper airways

To the editor:

It is well known that the global average life expectancy is approximately 5.1 years less for men than for women [1]. What can explain such a higher fragility of men?

Several conditions have been identified as possible causes for the sex life gap [2]:

- Males are more prone to take part in life-threatening sports;
- Males drink alcohol and smoke more;
- Males usually tend to eat more and less healthily;
- Males more often drive faster and less cautiously, so they are more often involved in car accidents;
- Males experience fatal accidents during more dangerous work activities;
- Homicides and suicides are more frequent among males;
- Preventive medicine is less frequent among males than females;
- Females are greater health care utilizers;
- Coronary disease is more prevalent among males.

These are all evidence-based and verified reasons, but aren't we missing a further cause, which might explain the higher propensity to develop hypertension, coronary disease, heart attacks, cerebral vascular accidents?

Epidemiological studies show a two- to three-fold higher prevalence of OSAS in men than in women [2,3]. Women diagnosed with OSAS usually suffer from less severe sleep apnea and are on average older than their male counterparts [3]. The reasons for this relevant sex difference are still debated. However, it has been postulated that the human anatomical configuration of the upper airway, derived from evolutionary changes, that favored articulated speech development, may predispose to upper airway collapse [4], namely, to sleep apneas, and OSAS itself is currently considered a high-risk condition for cardiovascular disease, stroke, and car and occupational accidents and is recognized as a cause of increased morbidity and mortality [2,3].

OSAS is a relevant public health issue, especially in Western countries, having significant morbidity and generating high healthcare costs,

as it affects up to 24% of male subjects and 9% of female subjects [2]. Untreated severe OSAS could represent an independent predictor of higher mortality risk and this association could not be attributable to age, obesity, or other chronic medical conditions [1–3], nevertheless OSAS could also affect life expectancy indirectly, being a recognized risk factor for hypertension and cardiovascular accidents. The evolutionary change that caused a descent of the human larynx in the neck – much more relevant in males – caused elongation of the pharynx and retro-position of the tongue, thus creating a floppy oropharyngeal cavity prone to collapse during sleep [4,5]. This anatomical peculiarity is regarded as one of the causes for the higher prevalence of OSAS in males [4,5].

Thus, we think it is time to consider OSAS as one of the probable main conditions impacting life expectancy in males. It is time to promote better awareness of the possible consequences of OSAS on the life expectancy of the affected individuals.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.mehy.2022.110834>.

References

- [1] World Health Organization. (2018). The health and well-being of men in the WHO European region: better health through a gender approach. www.euro.who.int/en/publications/abstracts/the-health-and-well-being-of-men-in-the-who-european-region-better-health-through-a-gender-approach-2018.
- [2] Bonsignore MR, Saarela T, Riha RL. Sex differences in obstructive sleep apnoea. *Eur. Respir. Rev.* 2019;28:190030.
- [3] Redline S, Kump K, Tishler P, et al. Gender differences in sleep disordered breathing in a community-based sample. *Am. J. Respir. Crit. Care Med.* 1994;149:722–6.

<https://doi.org/10.1016/j.mehy.2022.110834>

Received 30 November 2021; Received in revised form 25 March 2022; Accepted 3 April 2022

Available online 9 April 2022

0306-9877/© 2022 Elsevier Ltd. All rights reserved.

- [4] Davidson TM. The Great Leap Forward: the anatomic basis for the acquisition of speech and obstructive sleep apnea. *Sleep. Med.* 2003;4:185–94.
- [5] Cantarella G, Pignataro LL, Rinaldi V. Larynx height and voice pitch: possible predictors of obstructive sleep apnea in adults? An intriguing hypothesis. *Sleep Breath.* 2021. <https://doi.org/10.1007/s11325-021-02457-2>.

Giovanna Cantarella^{a,1}, Lorenzo Pignataro^a, Vittorio Rinaldi^{b,*}

^a University of Milan, Department of Otolaryngology, Fondazione IRCCS
Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

^b Department of Otolaryngology and Head and Neck Surgery, Tiberia
Hospital – GVM Care & Research, Via Emilio Praga 26, Rome 00137, Italy

* Corresponding author.

E-mail address: rinaldivittorio@yahoo.it (V. Rinaldi).

¹ These authors equally contributed to this paper.