



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



LETTER TO THE EDITOR

Do young women with COVID-19 have a higher risk of presenting olfactory dysfunction?☆



¿Tienen las mujeres jóvenes con COVID-19, mayor riesgo de presentar disfunción olfatoria?

Dear Editor,

We have read with great care the article “Olfactory disturbances in COVID-19, review of the evidence and implications for pandemic management”, in which the authors report a higher prevalence of post-viral olfactory dysfunction (OD) in female patients and in individuals older than 50 years.¹ During the COVID-19 pandemic, some reports confirm a higher prevalence of olfactory dysfunction among women with COVID-19, aged 30–40 years.² If the above assumes that gender and age could influence the incidence and evolution of OD in COVID-19 patients, the question arises: are young women with COVID-19 at greater risk for olfactory dysfunction?

Given this, and because the pathophysiology of OD by sex and age is not clearly established, with weak information, due to the presence of selection and reporting biases, its higher prevalence must be analysed and the existence of other factors present in young women be proposed.

During COVID-19, it has been postulated that the higher number of female patients with OD is due to the fact that they, presenting mainly mild disease, are more likely to participate in studies *versus* male patients, especially older ones.² They could not report OD in most cross-sectional studies using self-report instruments because they belong to the group of patients with greater severity, multiple risk factors, higher risk of hospitalization, and higher mortality,² giving rise to a selection bias, which supports the findings of Lop Gros et al.¹

Furthermore, the higher prevalence of OD in women may be the result of: 1) Sex differences in inflammatory responses to infections. Males have higher levels of

inflammatory cytokines than females, who, having a lower inflammatory response, would have a better clinical course during COVID-19.³ 2) The presence of greater pharyngeal resistance between the choanae and epiglottis in men compared to women, which increases with age.⁴ This lower pharyngeal resistance in women would facilitate the presence of turbulent nasal airflow that increases the contact time between the virus and the olfactory mucosa, facilitating early presentation. 3) The nasopharyngeal microbiota plays an important role in the clinical expression of respiratory diseases from childhood onwards. Because the nasopharyngeal microbiota is more changeable at a younger age and has been associated with a marked presentation of respiratory symptoms,⁵ it would be easier for young women to present OD at an early age. This might also account for the higher prevalence of OD, but lower severity of COVID-19 in young, female patients.

Finally, the higher prevalence and lower severity of OD in young women with COVID-19 suggest the need for further research on OD by gender and age, which may help to diagnose severity, clinically manage, and establish the prognosis of these patients.

Funding

This work has not received any funding.

Conflict of interests

The authors have no conflicts of interest to declare.

References

1. Lop Gros J, Iglesias Coma M, González Farré M, Serra Pujadas C. Alteraciones del olfato en la COVID-19, revisión de la evidencia e implicaciones en el manejo de la pandemia. *Acta Otorrinolaringol Esp.* 2020;71:379–85.
2. Rocke J, Hopkins C, Philpott C, Kumar N. Is loss of sense of smell a diagnostic marker in COVID-19: a systematic review and meta-analysis. *Clin Otolaryngol.* 2020;45:914–22.
3. Lefèvre N, Corazza F, Valsamis J, Delbaere A, De Maertelaer V, Duchateau J, et al. The number of X chromosomes influences inflammatory cytokine production following toll-like receptor stimulation. *Front Immunol.* 2019;10:1052.
4. White DP, Lombard RM, Cadieux RJ, Zwillich CW. Pharyngeal resistance in normal humans: influence of gender, age, and obesity. *J Appl Physiol.* 1985;58:365–71.

☆ Please cite this article as: Vergara-de la Rosa E, Aguilar-Urbina EW, Gálvez-Olortegui J. ¿Tienen las mujeres jóvenes con COVID-19, mayor riesgo de presentar disfunción olfatoria? *Acta Otorrinolaringol. Esp.* 2022;73:66–67.

5. Dubourg G, Edouard S, Raoult D. Relationship between nasopharyngeal microbiota and patient's susceptibility to viral infection. *Expert Rev Anti Infect Ther.* 2019;17:437–47.

Esteban Vergara-de la Rosa,^{a,b,c,*} Edi William Aguilar-Urbina,^{c,d} José Gálvez-Olortegui^{e,f}

^a *Servicio de Otorrinolaringología, Hospital Regional Docente de Trujillo, Trujillo, Peru*

^b *Unidad de Investigación Clínica, Scientia Clinical and Epidemiological Research Institute, Trujillo, Peru*

^c *Facultad de Medicina, Universidad Nacional de Trujillo, Trujillo, Peru*

^d *Servicio de Medicina Interna, Hospital Regional Docente de Trujillo, Trujillo, Peru*

^e *Unidad de Oftalmología Basada en Evidencias (Oftalmoevidencia), Scientia Clinical and Epidemiological Research Institute, Trujillo, Peru*

^f *Hospital Universitario Central de Asturias, Oviedo, Spain*

* Corresponding author.

E-mail address: estebanvergara@scientiaceri.com (E. Vergara-de la Rosa).