



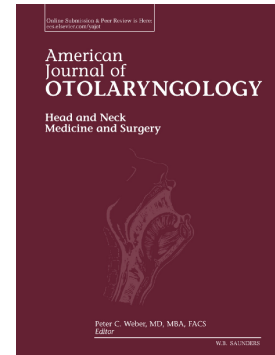
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## Journal Pre-proof

Letter to editor: New onset tinnitus in the absence of hearing changes following COVID-19 infection

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**Letter to editor: new onset tinnitus in the absence of hearing changes following COVID-19 infection**

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Dear editor:

We read with great interest the publication by Dr. Ghazal and colleagues titled “new onset tinnitus in the absence of hearing changes following COVID-19 infection”. We appreciate the authors for their efforts to share a case regarding the association of auditory symptoms and COVID -19. This case not only aims to report this association, even without having hearing loss in a tone audiometry, but also the use of gabapentin in the control of the intensity of tinnitus, even without having hearing loss in a tone audiometry. However; it raises some observations (1).

Firstly, the appearance of tinnitus in patients with COVID-19 is feasible according to the study of Viola et. Al., which indicates the neurotrophic and neuro invasive capacities of some coronaviruses (2); they reported that the effects of SARS-CoV-2 on neuronal tissue could be due to a direct infection of the central nervous system or be related to vascular damage caused by vasculitis or vasculopathy. It is also important to clarify the time of onset of otoneurologic symptoms since there are patients with pre-existing audio vestibular conditions that are still not well known (2).

Secondly, as it was mentioned on the study regarding the therapeutic test with a neuromodulator that is gabapentin, a drug that has not shown a significant change in its use in the improvement of this type of patients so far (3), hence It would be very premature to consider the effectiveness of this drug against tinnitus, since according to various theories proposed for the pathophysiology of tinnitus, the subsequent recovery of many of the symptoms and/or sequelae suffered by COVID-19 patient has been demonstrated to be more frequent in the first 6 months, and it has greater implication since his audiometric study had a normal result, which suggests that there is no permanent structural damage to hearing. It is important to mention that certain patients may present tinnitus and not be aware of it, since they experience a barely perceptible noise, which can progressively worsen due to various factors, increasing its intensity, such as: certain viral infections such as COVID-19, ototoxic drugs, age, persistent acoustic damage, etc(4).

It is important to rescue the evaluation of high-frequency audiometry as it helps to identify hidden cochlear damage or cochlear synaptopathy, even in the current pandemic and in those patients who had COVID -19, because it could show potential future damage from hearing disorders. such as hearing loss, vertigo and especially tinnitus in order to treat them in a timely manner (5).

Finally, although there might be a correlation between COVID-19 and hearing symptoms, it is important to verify the existence of a previous pattern that conditions its appearance and its persistence as sequel; in addition to the relevance of collecting a series of cases, in order to find the best alternatives for these discomforts.

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References

1. Daher GS, Nassiri AM, Vanichkachorn G, Carlson ML, Neff BA, Driscoll CLW. New onset tinnitus in the absence of hearing changes following COVID-19 infection. Am J Otolaryngol. enero de

2022;43(1):103208.

2. Viola P, Ralli M, Pisani D, Malanga D, Sculco D, Messina L, et al. Tinnitus and equilibrium disorders in COVID-19 patients: preliminary results. *Eur Arch Otorhinolaryngol.* 2021;278(10):3725-30.
3. Tavares MP, Bahmad F. Analysis of Gabapentin's Efficacy in Tinnitus Treatment: A Systematic Review. *Ann Otol Rhinol Laryngol.* marzo de 2022;131(3):303-11.
4. Kim D-K, Park S-N, Kim HM, Son HR, Kim N-G, Park K-H, et al. Prevalence and Significance of High-Frequency Hearing Loss in Subjectively Normal-Hearing Patients with Tinnitus. *Ann Otol Rhinol Laryngol.* agosto de 2011;120(8):523-8.
5. Xiong B, Liu Z, Liu Q, Peng Y, Wu H, Lin Y, et al. Missed hearing loss in tinnitus patients with normal audiograms. *Hear Res.* 1 de diciembre de 2019;384:107826.