Review of: "The α7 Nicotinic Acetylcholine Receptor: a Key Molecule in Post-COVID Syndrome?"

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Potential competing interests: No potential competing interests to declare.

The manuscript is well-written and proposes the hypothesis that the α7 nicotinic acetylcholine receptor may be targeted as a viable solution for the attenuation of symptoms associated with post-acute sequelae of COVID-19 (PASC). The manuscript provides ample documentation to support the association between the SARS-CoV-2 674-685 fragment and the 7 nAChR, where α7-specific anti-idiotypic antibodies is proposed to be able to stimulate the development of PASC-related symptoms.

It is widely accepted that the post-acute sequelae of COVID-19 (PASC) may include protracted symptoms of fatigue, dyspnea, cough, chest tightness, joint stiffness, olfactory dysfunction, and headache [Vehar et al. 2021], while pulmonary, cardiovascular, neuropsychiatric, and gastrointestinal syndromes can also remain as dominant manifestations of PASC [Mehandru 2022].

Nevertheless, this manuscript is mainly focused on the discussion of one particular neurological symptom of PASC—that of memory dysfunction—which may be induced by the interactions between 7 nAChR and specific spike protein fragments. Therefore, the author may wish to consider amending the title and the text to reflect the specific focus of this manuscript, or augment the content to discuss how the involvement of 7 nAChR upon SARS-CoV-2 infections can affect the progression of other symptoms observed in multiple organs and tissues, in addition to memory impairment.

References:

Vehar, S.; Boushra, M.; Ntiamoah, P.; Biehl, M. Post-Acute Sequelae of SARS-CoV-2 Infection: Caring for the “Long-Haulers.”. Cleve. Clin. J. Med. 2021, 88, 267–272.

Mehandru, S.; Merad, M. Pathological Sequelae of Long-Haul COVID. Nat. Immunol. 2022, 23, 194–202.