E-cigarettes in the COVID-19 era

Sir,

We read with great interest the article entitled "E-cigarettes: A novel therapy or a looming catastrophe" by Hussain *et al*. that was published in *Annals of Thoracic Medicine*.[1] The manuscript highlights the impact of e-cigarettes on the respiratory and cardiovascular system in active and passive smokers and their impact on young adults. Nevertheless, due to the current coronavirus disease-2019 (COVID-19) pandemic situation, we would like to raise some questions.

COVID-19 systemic and respiratory disease is generated by infection with severe acute respiratory syndrome coronavirus-2 that infects cells via the angiotensin-converting enzyme 2 (ACE2) receptor. It is clear that tobacco smoking is a risk factor for severe COVID-19,[2] but the exact mechanism is not clear. Some shreds of evidence support that smoking increases the expression of the ACE2 receptor in the lungs[3] and also increases the systemic inflammation in COVID-19 patients.[2]

Hussain *et al*. highlighted that e-cigarettes may be used with a wide range of substances from nicotine, common in tobacco cigarettes, to butane hash oils and cannabidiol.[1] In addition, the amount of each toxic compound may vary between products, which could impact the immune response differently. Since it is not established which compounds present in the tobacco cigarettes modulate the ACE2 receptor in the lungs, it is possible that e-cigarettes smoking also increases ACE2 expression in the lungs.

In addition, a recent report identified the risk for the development of severe lung injury due to e-cigarette smoking,[4] a syndrome described as vaping use-associated acute lung injury (EVALI).[5] EVALI contributes to the compromise of the lung capacity due to remodeling and inflammation, further increasing the risk for respiratory disorders and/or compromising established ones.

Hussain *et al*. presented evidence that vaping can increase the airway inflammation and type-2 cytokines in the lungs of mice submitted to an allergic lung inflammation protocol.[1] Moreover, a recent report identified a lethal case of influenza in a patient with EVALI,[5] indicating a possible link between e-cigarettes and severe response to respiratory viral infections.

Due to the lack of current information, we believe that e-cigarettes could represent an important risk factor for COVID-19, especially for young adults. However, the impact of vaping on respiratory viral infections and COVID-19 still needs to be further discussed and explored.

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Conflicts of interest

There are no conflicts of interest.

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References

1. Hussain S, Shahid Z, Foroozesh M, Sofi U. E-cigarettes: A novel therapy or a looming catastrophe. Ann Thorac Med 2021;16:73-80. [doi: 10.4103/atm.atm_190_20].
2. Alberca RW, Lima JC, Oliveira EA de, Gozzi-Silva SC, Ramos YÁL, Andrade MM de S, *et al*. COVID-19 Disease course in former smokers, smokers and COPD patients. Front Physiol 2021;11:637627. Available from: https://www.frontiersin.org/articles/100.3389/fphys. 2020.637627/full. [Last accessed on 2021 Jan 31].
3. Jacobs M, Van Eeckhoutte HP, Wijnant SR, Janssens W, Joos GF, Brusselle GG, *et al*. Increased expression of ACE2, the SARS-CoV-2 entry receptor, in alveolar and bronchial epithelium of smokers and COPD subjects. Eur Respir J 2020;56:2002378.
4. Layden JE, Ghinai I, Pray I, Kimball A, Layer M, Tenforde MW, *et al*. Pulmonary illness related to E-cigarette use in illinois and wisconsin – Final report. N Engl J Med 2020;382:903-16.
5. Akkanti BH, Hussain R, Patel MK, Patel JA, Dinh K, Zhao B, *et al*. Deadly combination of vaping-lnduced lung injury and Influenza: Case report. Diagn Pathol 2020;15:83.

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