

Coronavirus Pandemic

Increase in rabies cases during COVID-19 pandemic: Is there a connection?

Reyhaneh Rasizadeh^{1,2,3}, Hossein Bannazadeh Baghi^{1,2,3}

¹ *Infectious and Tropical Diseases Research Center, Tabriz University of Medical Sciences, Tabriz, Iran*

² *Immunology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran*

³ *Department of Virology, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

Key words: Rabies; COVID-19; rabid dogs.

J Infect Dev Ctries 2023; 17(3):335-336. doi:10.3855/jidc.17537

(Received 12 October 2022 – Accepted 31 December 2022)

Copyright © 2023 Rasizadeh *et al.* This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Dear Editor,

Human rabies is a major public health problem that exists in 150 nations and on every continent except Antarctica. Currently, the Middle East has 300 recorded annual human cases of rabies, with hundreds of post-exposure treatments [1]. It has existed for 4,000 years [2]. Controlling and preventing rabies in the Middle East is challenging due to the area's transnational nature, covering areas of Africa, Asia, and Europe. One major issue is the lack of precise rabies data from this area [3].

Although rabies has been reported to be the cause of death for nine individuals in Iran every year on average [4], according to the Department of Zoonotic Diseases Center for Communicable Diseases Control and Prevention of Iran, 16 human rabies cases have been reported in 2021 and six in 2018. Moreover, the number of animal bites in 2021 has increased to 260,471 cases, compared to 182,818 cases in 2018.

The Coronavirus Disease 2019 (COVID-19) is one of the deadliest coronavirus epidemics in the last two decades, presenting a significant danger to global health worldwide. Numerous inflammatory reactions brought on by the new coronavirus illness can result in lung failure and severe damage to the respiratory system. This is due to the fact that this virus has a faster rate of transmission than other members of the Coronaviridae family [5]. In response to the COVID-19 pandemic, most governments have implemented strategies, such as stay-at-home orders, to restrict person-to-person contact and disrupt disease transmission [6]. In order to study the possible correlation between rabies and COVID-19, Bhutan serves as a great case study. Bhutan, a small country neighboring India, chose to

control the spread of the disease and the case fatality rate by completely locking down its borders. However, in the meantime, rabies could enter easily via free-roaming dogs, and in the words of a Bhutanese field veterinary officer: “due to COVID-19, human movements on the borders are now carefully restricted, but for dogs, it's simple to pass”[7]. Furthermore, due to the interrupted annual mass dog vaccinations and continuous surveillance for rabid dogs in the COVID-19 era, the progress made in Latin America to eradicate canine-mediated human rabies was affected and caused a rise in reported rabies cases in Arequipa, Peru [8].

Nevertheless, the era of pandemics has not only brought with it individuals staying at home, telecommuting, and the restriction of human transportation, but it also has led to the creation of vacuum areas for dogs. This, in return, has led to an increase in stray dogs and increased animal bites, interrupted rabies surveillance, and rabies vaccine shortage, which ultimately has also led to an increase in the incidences of rabies infections.

References

1. Bannazadeh Baghi H, Bazmani A, Aghazadeh M (2016) The fight against rabies: the Middle East needs to step up its game. *Lancet* 388: 1880.
2. Bannazadeh Baghi H, Rupprecht CE (2021) Notes on three periods of rabies focus in the Middle East: From progress during the cradle of civilization to neglected current history. *Zoonoses Public Health* 68: 697-703.
3. Bannazadeh Baghi H, Alinezhad F, Kuzmin I, Rupprecht CE (2018) A perspective on rabies in the Middle East—Beyond neglect. *Vet Sci* 5: 67.

4. Leylabadlo HE, Bannazadeh Baghi H (2020) Rabies elimination by 2030: What challenges does Iran face? *Iran J Public Health* 49: 1397.
5. Farzi R, Aghbash PS, Eslami N, Azadi A, Shamekh A, Hemmat N, Entezari-Maleki T, Baghi HB (2022) The role of antigen-presenting cells in the pathogenesis of COVID-19. *Pathol Res Pract* 233: 153848.
6. Tully MA, McMaw L, Adlakha D, Blair N, McAneney J, McAneney H, Carmichael C, Cunningham C, Armstrong NC, Smith L (2021) The effect of different COVID-19 public health restrictions on mobility: A systematic review. *PloS one* 16: e0260919.
7. Newsroom W (2021) COVID-19 and rabies: Bhutan highlights the importance of cross-border dog vaccination. Available: <https://www.who.int/news-room/feature-stories/detail/covid-19-and-rabies-bhutan-highlights-the-importance-of-cross-border-dog-vaccination>. Accessed: 27 September 2021.
8. Raynor B, Díaz EW, Shinnick J, Zegarra E, Monroy Y, Mena C, De la Puente-León M, Levy MZ, Castillo-Neyra R (2021) The impact of the COVID-19 pandemic on rabies reemergence in Latin America: the case of Arequipa, Peru. *PLoS Negl Trop Dis* 15: e0009414.

Corresponding author

Hossein Bannazadeh Baghi, PhD,
Associate Professor,
Infectious and Tropical Diseases Research Center,
Tabriz University of Medical Sciences,
5166/15731 Tabriz, Iran
Tel /Fax: +98 -41-33364661
E-mail: hbannazadeh@tbzmed.ac.ir; hb.zadeh@gmail.com

Conflict of interests: No conflict of interests is declared.