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Short Communication

Could COVID-19 be a latent viral infection?

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Dear Editor

COVID-19, a respiratory illness caused by a novel coronavirus, spread globally and emerged more than 6 million people by the beginning of June 2020.

Recently South Korean officials reported that nearly 100 people thought to be cured of the novel coronavirus have tested positive for COVID-19 again. Per Jeong Eun-kyeong, director of the Korea Centers for Disease Control and Prevention, the COVID-19 virus may have "reactivated" in the patients rather than them becoming re-infected [1].

A latent viral infection is an infection that is inactive or dormant. As opposed to active infections, where a virus is actively replicating and potentially causing symptoms, latent (or persistent; but not chronic) infections are essentially static which last the life of the host and occur when the primary infection is not cleared by the adaptive immune response [2]. Herpes simplex viruses type 1 and 2, varicella-zoster virus, HIV, Epstein-Barr virus (human herpesvirus 4), and cytomegalovirus are examples of viruses that are well known to cause typical latent infections in human [3-5].

Latent viral infections can be reactivated into a lytic form (the replication of a viral genome). The ability to move back and forth from latent to lytic infections helps the virus spread from infected individuals to uninfected individuals [6].

The brain is in many ways an immunologically and pharmacologically privileged site. The blood-brain barrier (BBB) restricts access of immune cells and immune mediators to the central nervous system (CNS) [7].

Anosmia has been reported in conjunction with well-reported symptoms of COVID-19 [8]. By Lechien, et al. (2020), anosmia even appeared before the other symptoms in 11.8% of COVID-19 cases [9].

Rabies is a fatal zoonotic neuroinfectious disorder caused by the RNA virus. It's well known that the rabies virus may cause a latent infection in both animals (commonly in bats) and human [10,11].

Could the SARS-CoV-2 virus (causative RNA virus for human COVID-19, which is currently thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats) be another latent viral infection by means of cytoplasmic episomal latency mechanism in the neurons of olfactory tract given the well-known fact that the BBB limits the entry of immune cells and immune mediators into the CNS that may prevent from eradication of this infection?

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