International Journal of Pharmacological Research
ISSN: 2277-3312 (Online)
Journal DOI: https://doi.org/10.7439/ijpr **Review Article**

Prospects of Second Wave of COVID-19?

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Abstract

The 2019 coronavirus disease (COVID-19) pandemic has already had a major impact on the world at large. In the face of a rapid explosion of cases everything is overwhelmed. Despite global attempts to avoid the epidemic extend, the outbreak continues to ascend the graph as this infection's trend is transmitted by population. Countries that have already registered the transmission peak should ease their protective measures while still expecting a second wave of infection. When the virus triggers the next surge, are we ready enough to tackle it? In response to the emerging circumstances, this article endeavors to provide a timely and comprehensive analysis of the history of pandemics, its further wave possibility, and potential uncertainty of the future.

Keywords: Second Wave, COVID-19, Corona virus, Pandemics.

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***Article History:**
Received: 11/07/2020
Revised: 26/08/2020
Accepted: 27/08/2020
DOI: https://doi.org/10.7439/ijpr.v10i8.5502

QR Code

How to cite: Munjamkar P. Prospects of Second Wave of COVID-19?. *International Journal of Pharmacological Research* 2020; 10(08): e5502. Doi: 10.7439/ijpr.v10i8.5502 Available from: https://ssjournals.com/index.php/ijpr/article/view/5502

1. Background

The global outbreak of the severe acute respiratory syndrome related coronavirus-2 (SARS-CoV2) and associated coronavirus disease 2019 (COVID)-19 has crippled major health care systems and economies in a way that no one could have imagined.[1]

Most of us in India are beginning to participate millions around the globe in wondering about a possible COVID-19 second wave. Frequently the question arises, Isn't COVID-19's first wave enough or even do we need to concern about a second wave? The response is yes because, considering the key factors, it's not only beyond the realm of imagination but something that is certainly possible. Indeed, second pandemic waves have already appeared in China and Japan.

In December 2019, the SARS-CoV-2 virus first infected China, and the government imposed stringent restrictions in the Hubei region (epicenter of the infection) that could helped manage the infection by March 2020.

If the situation is already overwhelming, how significant are the impacts that COVID-19 can have if a second virus wave occurs? While the future is unknown, uncertain, and difficult to predict, there are enough historical examples to understand the scale of a viral pandemic's impacts. For example, the second wave was much worse than the first during great influenza (Spanish flu) pandemic of 1918, due to a more virulent strain of the virus.

Spanish flu provides a very relevant analogy due to the complex nature and scale, and the fact that while both infections give rise to pneumonia and involve respiratory diseases. Approximately 50 million people died from the Spanish flu pandemic, much more than COVID-19 is still counting.[2.3]

It is likely that the coronavirus may do the same, a risk that we try to discuss in this article because our media and government are constantly promising that all will soon be fine, at least in the first group of countries that have already apparently passed the peak. What if they didn't? Are we ready for this? The COVID-19 second wave pandemic can have even more devastating effects.

2. Pandemic History that changed the world

The source of information related to pandemic history was obtained from the website https://www.history.com/topics/middle-ages/pandemics-timeline.[4] In 430 BC during the Peloponnesian War the Athens plague was became pandemics. Passing through Libya, Ethiopia and Egypt, the disease crossed the walls of Athens as the Spartans laid siege and two-thirds of the population died. In 165 AD Antonine Plague became pandemics and passed it to the Romans and then returning troops spread it throughout the Roman empire. This plague continued until about 180 A.D., claiming Emperor Marcus Aurelius as one of its victims. Later on 250 A.D. Cyprian Plague, 444 AD Cyprian Plague (recurring outbreaks after three centuries); 541 A.D. Justinian Plague were become pandemics. The Recurrences of Justinian Plague occurred over the next two centuries. The symptoms were enlarged lymphatic gland and throughout the world the pandemic killed about 50 million people, 26 percent of the world population. In 11th Century, a slow-developing bacterial disease that causes sores and deformities called Leprosy becomes the pandemics which affected throughout the world. The thousands of people in a year were affected with leprosy. The Black Death is the second major outbreak of the bubonic plague that started in Asia in 1350, and spread west in caravans. Entering through Sicily in 1347 A.D. when plague sufferers arrived in the port of Messina, it spread throughout Europe rapidly. It responsible for the death of one-third of the world population.

In 1492, The Columbian Exchange pandemics occurred in Europeans, island of Hispaniola and 90 percent dying throughout the north and south continents. Later in 1665, the Great Plague of London became pandemic and nearly 20 percent of London's population was died. After one year the worst of the outbreak tapered off in the fall of 1666, around the same time as another destructive event. In 1817 the first Cholera pandemic originated in Russia, which infects small intestine, spread to Spain, Africa, Indonesia, China, Japan, Italy, Germany and America. One million people died of Pandemic Cholera.

The third plague pandemic was deemed active until 1960, beginning in China and spreading to India and Hong Kong in 1855. The casualties of the third plague pandemic were about 15 million. The pandemics related to respiratory syndromes was started with Russian Flu in 1889, Spanish Flu in 1918, Asian flu 1957 and second wave followed in early 1958, SARS in 2003 and recently the COVID-19 in 2019.

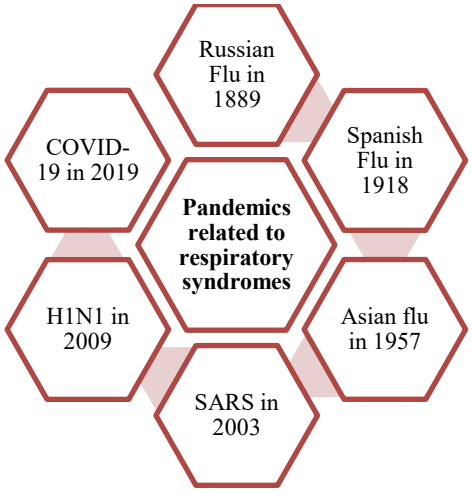

Figure 1: Pandemic history related to respiratory syndromes

(Source: https://www.history.com/topics/middle-ages/pandemics-timeline)

3. Correlation of Second wave of COVID with other pandemics

History teaches us that the damage caused by the second virus outbreak may be huge, as it was in the Spanish flu pandemic of 1918-20 and the 2009-10 H1N1 epidemic. Although New Zealand and Slovenia managed to eliminate Coronavirus, much progress has been made in arresting the virus by the UK and India. The increased understanding of preventive measures such as masks and hand washing will greatly benefit. The governments, however, may consider enforcing repeated restrictions that citizens do not genuinely adhere to because of the tired lockdown.

Returning to the coronavirus outbreak, it should be noted that the damage to the respiratory system caused by the coronavirus and the Spanish flu virus, including acute respiratory distress syndrome, is very similar.[5]

While the Spanish flu pandemic differs from the current coronavirus pandemic due to a significant increase in middle-age mortality, the COVID-19 pandemic causes a more pronounced rise in mortality among elderly people. Despite that, the COVID-19 pandemic is more like the latest flu outbreak than the Spanish flu pandemic previously.[6]

Approximately 50 million people died from the Spanish flu pandemic, far more than COVID-19 is causing. It's important to understand that the Spanish flu pandemic has not been eradicated quickly, as we seem to expect COVID-19 to be. Then it lasted for 2 y, spreading throughout the world in successive waves of infection.[7]

It is possible that the coronavirus will do the same, a danger that I seek to highlight in this article because our governments and media are continually insisting that everything will soon be well, at least in the first group of countries that have already apparently passed the peak. What if they didn't? Are we ready for this?

The elderly were fairly protected during the 2009 H1N1 pandemic because they had archived immunity to H1N1epitopes after exposure to the similar 1918 strain earlier in life.[8] Apart from those already infected with SARS-CoV2, the entire population is naïve and at risk of infection. Although some degree of cross-protection with other coronaviruses may be possible, the rapid spread of SARS-CoV2 suggests otherwise.

Data from the 1918 pandemic suggest that American cities that instituted earlier and longer-term social distancing and school closures had fewer overall cases and better long-term economic outcomes.[9,10] It is certainly possible that a second wave of cases will occur once social distancing measures for COVID-19 are lifted, and school or summer activities resume. Hong Kong has already seen this second wave. Given how immune-naïve the population is to this virus and how much more infectious SARS-CoV2 has become than seasonal influenza, a second wave of cases is a near certainty.[11,12]

4. Conclusion

The Spanish flue pandemic of 1918 and the 2009 H1N1 pandemic experience offers a clear illustration of what is likely to happen if the new COVID-19 pandemic lifts social distancing or school closures too early. Such acts would potentially cause a serious second wave of infections. Governments will urgently act and plan to ensure that the health-care system has enough manpower, services and infrastructure to reduce the risk of COVID-19 mortality.

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