Review Article

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2024.58.009155

SARS-CoV-2 Omicron Variant and Subvariants: The New Emergence, Recent Distribution and Global Impact

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ARTICLE INFO

Received: August 21, 2024

Published: August 29, 2024

Citation: Chateen I Ali Pambuk and Fatma Mustafa Muhammad. SARS-CoV-2 Omicron Variant and Subvariants: The New Emergence, Recent Distribution and Global Impact. Biomed J Sci & Tech Res 58(3)-2024. BJSTR. MS.ID.009155.

ABSTRACT

KP.2, a new strain of the coronavirus, is attracting attention due to its advanced evolution relative to other Omicron variants. This strain effectively bypasses the established defenses against previous virus versions, resulting in a rise in reinfection cases, even among those recently vaccinated or previously infected. The "KP.2" strain, one of the "FLiRT" strains, is originally descended from the Omicron strain, according to data released by the Centers for Disease Control and Prevention. It is responsible for over 25% of cases that are currently occurring in the United States, which is roughly twice as many cases as the "JN.1" strain. The aim of this short descriptive review in general is to shed light on the occurrence and implications of various mutations in SARS-CoV-2 to date particularly a new KP.2 strain.

Keywords: SARS-Cov-2; Mutation; New Variant; Omicron New Variant; Covid-19; New KP.2 Strain

Introduction

Due to the SARS-CoV-2 virus's substantial evolution, new FLiRT variants have emerged. These variants are distinguished by particular, sharp mutations that improve the virus's capacity for immunological evasion and transmissibility. Because KP.2 is more able to evade vaccine-induced immunity and has a higher effective reproduction number than other original Omicron strains, it is notably showing a significant increase in cases in the United States, suggesting a potential shift in the epidemiological landscape. The dynamic nature of this situation highlights the necessity of ongoing surveillance and flexible reaction tactics to effectively tackle the obstacles presented by these novel variations. In light of the ongoing COVID-19 pandemic, this summary discusses the emergence of the FLiRT variants KP.2 and KP1.1, which are derived from the Omicron variant JN.1 [1-5].

Omicron Variant

A new SARS-CoV-2 variant of concern (VoC), omicron, was reported on November 25, 2021. This occurred approximately 23 months following the initial report of a COVID-19 case, and following an estimated 260 million cases and 5.2 million deaths globally. The world was still getting over COVID-19, and many people were angry and dissatisfied with the pandemic's detrimental effects on people's social, psychological, and financial well-being when Omicron first appeared. While earlier VoCs emerged in a world where natural immunity from COVID-19 infections was common, this fifth VoC has emerged at a time when vaccine immunity is increasing globally. There were new waves of infections linked to the appearance of the three types alpha, beta, and delta SARS-CoV-2 VoCs, sometimes affecting the entire world. Because of its capacity to evade natural immunity, the delta VoC, for instance, was more transmissible and was linked to a higher viral load, a longer period of infectiousness, and high rates of reinfection. At that point, the delta VoC quickly rose to prominence as the dominant variant in the world [6-10].

Recent Data

Because of the novel "FLiRT" variant of the coronavirus, which is now the primary cause of infections in the US, worries about the possibility of a summer wave of the virus spreading throughout the world

are growing. According to data from the Centers for Disease Control and Prevention, more than 25% of current cases in the United States are caused by the "KP.2" strain, one of the strains known as "FLiRT" that primarily originated from the Omicron strain.This is almost twice as many cases as the "JN.1" strain. The "FLiRT" variants are members of the larger "Omicron" family, which sparked a wave of incidences this winter. They are all modified versions of the "JN.1" strain. These variations either increase the virus's resistance to attaching to cells or render the antibodies you acquire from vaccination or infection ineffective in stopping the virus (a process known as immunological evasion). Though specialists tell the network that we still don't know enough to forecast exactly where the next changes will occur or how they will influence the way the virus is transmitted, this pattern in the evolution of the virus that causes Covid-19 has become familiar [11-17].

Transmissibility

The Covid-19 virus follows some seasonal patterns, which have included an increase in cases during the summer in previous years. However, the level of risk this year is still unknown. The changes in the FLiRT strains increase their transmissibility and raise the possibility of a summer wave, which poses a threat. Experts in infectious diseases note that "some variants have started spreading strongly in the past, and we were unable to control the situation." These substrains may account for 20–40% of cases and then stable at that level, or they may progressively develop into dominant strains.

Even though there hasn't been as much COVID-19 surveillance since the U.S. public health emergency ended a year ago, this still leaves room for uncertainty. However, the information that is currently available points to a current decline in cases. Hospitalization rates are still very low, and wastewater surveillance shows that viral activity is extremely low and declining nationwide. Studies have indicated a decrease in both virus counts and activity in wastewater across numerous states. Based on their transmissibility, it appears that the FLiRT variants seem to be just as infectious as other Omicron subvariants. They don't appear to cause a more serious illness or a different clinical presentation, though. According to the data, the number of COVID-19-related hospital admissions in the US dropped by the end of April, from approximately 8 new admissions per 100,000 people during the first week of the year to approximately 1 new admission per 100,000 people.

Even though there are some risks associated with the FLiRT variants this summer, scientists are still monitoring any potential fallout. It is probably reasonable to expect an increase in coronavirus cases in the autumn. Based on current projections and statistics, a larger fall spike is more likely if we have a new variant with a high frequency of these immunity-evading mutations. Fall and winter, according to experts, are the riskiest seasons because the virus needs better conditions to spread right now, and those conditions are most likely to materialize in the fall when the weather cools off, people spend more time indoors, and they are more likely to be in settings where the respiratory virus can spread more easily. According to experts, those who received the Covid-19 vaccination in the fall might be somewhat protected from the new strains. The Vaccine Advisory Committee of the US Food and Drug Administration will convene in June to deliberate on suggestions for a Covid-19 vaccine that is scheduled to launch this autumn. In order to guard against these new variants, it might be hopefully the best vaccine.

Conclusion

It is anticipated that the new strain of Corona will be more transmissible than the Covid-19 virus due to genetic mutations not found in the latter. However, these facts do not imply that the new strain of Corona will be more contagious or that it will cause a pandemic similar to the Corona pandemic; research into this strain, its ease of transmission, and its effects on humans is still ongoing. In order to provide enough information about the new strain of the novel Corona virus, it is necessary to closely monitor the viral, epidemiological, and clinical characteristics of this strain, which emerged quickly. There is currently no proof that the novel virus strain could result in a more serious illness or raise the chance of dying.

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ISSN: 2574-1241

DOI: 10.26717/BJSTR.2024.58.009155

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Submission Link: https://biomedres.us/submit-manuscript.php