The majority of febrile seizures occur in children between 12 and 18 months of age. They are triggered by a fever above 38.3 degrees Celsius (101 degrees Fahrenheit). Febrile seizures can occur due to the fever accompanying bacterial or viral infections or as a side effect of certain vaccines. In this study, the authors from Japan investigated the association between the Omicron variant or non-Omicron variants of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the occurrence of simple or complex febrile seizures in infected children.

Of note, a recent Japanese nationwide study that investigated epidemiological differences in acute encephalopathy in children infected with the Omicron variant of SARS-CoV-2 revealed that in more than 90% of pediatric cases infected with Omicron variants, the first symptoms of acute encephalopathy, the most serious complication of common infectious diseases, were seizures, impaired consciousness, and abnormal speech and behavior. The BA.5 subvariant was associated with a higher risk of seizures. The percentage of patients who developed seizures as the first neurological symptom increased by 23.5% during the period when BA.5 was prevalent.

https://discovermednews.com/acute-encephalopathy-associated-with-sars-cov-2-infection-in-children-during-the-omicron-period/

About the study

The study included 557 children infected with the Omicron variant of SARS-CoV-2 and 214 children infected with the non-Omicron variants of SARS-CoV-2, hospitalized from January 2020 to October 2022. The infection was diagnosed by reverse transcription polymerase chain reaction for SARS-CoV-2 or antigen test. Children were aged 0–15 years, the children in the Omicron group were significantly younger, with a mean age of 5.3 ± 4.4 years, whereas in the non-Omicron group, the mean age was 6.1 ± 4.7 years.

The authors collected data from the medical records such as age, date of hospital admission, gender, and neurological and clinical symptoms, such as seizures and disorders of consciousness. The seizures were categorized as follows: 1. the seizure that occurred once and stopped within five minutes was categorized as a simple febrile seizure, 2. the seizure that occurred more than twice within 24 hours was categorized as a complex seizure, and 3. prolonged seizure was categorized as *status epilepticus*.

The findings revealed that the two groups had significantly different rates of simple or complex febrile seizures. In the non-Omicron group, simple or complex febrile seizures occurred in one of 133 children. In the Omicron group, 92 of 534 children experienced febrile seizures, 49% had simple febrile seizures, 25% had complex febrile seizures, 11% had *status epilepticus*, and 2% had encephalopathy.

Conclusion

This study has shown that pediatric patients infected with the Omicron variant of SARS-CoV-2 have a higher rate of simple or complex febrile seizures compared to children infected with non-Omicron variants. The authors emphasized a need for further research involving more institutions and larger sample sizes.

This study was published in Frontiers in Pediatrics.

Journal Reference

Tokuyama K, Kitamura T, Maruyama K, et al. High number of seizures and unconsciousness in patients with SARSCoV-2 Omicron variants: a retrospective study. Front. Pediatr. 2023; 11:1273464. (Open Access).
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