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Severe and rare neurological manifestations following COVID-19 infection in children: A Malaysian tertiary centre experience

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Abstract
Introduction: Since the emergence of COVID-19, we have experienced potent variants and sub-variants of the virus with non-specific neurological manifestations. We observed a surge of the Omicron variant of COVID-19 patients with neurological manifestations where less cases of multisystem inflammatory syndrome in children (MIS-C) were reported. This article describes our experience of children with severe and rare neurological manifestations following COVID-19 infection. Methods: This is a retrospective observational case series of patients under 18 years old who fulfilled the WHO COVID-19 case definition and were referred to our paediatric neurology unit at Hospital Tunku Azizah Kuala Lumpur. Their demographic data, neurological symptoms, laboratory and supporting investigations, neuroimaging, treatment and outcomes were collected and analysed. Results: There were eleven patients with neurological manifestations who fulfilled the WHO COVID-19 case definition. Nine patients presented with seizures and/or encephalopathy, one patient with eye opsoclonus and another patient with persistent limbs myokymia. Based on the history, clinical, electrophysiological and radiological findings, two of them had febrile infection-related epilepsy syndrome, two had acute disseminated encephalomyelitis, two had acute necrotising encephalopathy of childhood, one each had hemiconvulsion-hemiplegia-epilepsy syndrome, acute encephalopathy with bilateral striatal necrosis, hemi-acute encephalopathy with biphasic seizures and reduced diffusion, infection-associated opsoclonus and myokymia. Conclusions: This case series highlighted a wide spectrum of neurological manifestations of COVID-19 infection. Early recognition and prompt investigations are important to provide appropriate interventions. It is essential that these investigations should take place in a timely fashion and COVID-19 quarantine period should not hinder the confirmation of various presenting clinical syndromes. © 2023 The Japanese Society of Child Neurology

Author Keywords
Children; COVID-19; Encephalopathy; Myokymia; Neurological manifestations; Opsoclonus; Seizures

Index Keywords
biotin, immunoglobulin, levetiracetam, methylprednisolone, phenobarbital, phenytoin, prednisolone, SARS-CoV-2 vaccine, thiamine, tocilizumab, valproic acid; acute brain disease, acute disseminated encephalomyelitis, acute necrotizing encephalopathy of childhood, Article, child, clinical article, coronavirus disease 2019, demographics, febrile infection related epilepsy syndrome, female, fire, hemiplegia, human, infant, Malaysian, male, neuroimaging, neurologic disease, nonhuman, observational study, opsoclonus, retrospective study, seizure, World Health Organization, adolescent, brain disease, complication, coronavirus disease 2019, epilepsy, eye movement disorder, myokymia, seizure, Severe acute respiratory syndrome coronavirus 2; Adolescent, Brain Diseases, Child, COVID-19, Epileptic Syndromes, Humans, Myokymia, Ocular Motility Disorders, pediatric multisystem inflammatory disease, COVID-19 related, SARS-CoV-2, SARS-CoV-2 variants, Seizures

Chemicals/CAS
biotin, 58-85-5; immunoglobulin, 9007-83-4; levetiracetam, 102767-28-2; methylprednisolone, 6923-42-8, 83-43-2; phenobarbital, 50-06-6, 57-30-7, 8028-68-0; phenytoin, 57-41-0, 630-93-3; prednisolone, 50-24-8; thiamine, 59-43-8, 67-03-8; tocilizumab, 375823-41-9; valproic acid, 1069-66-5, 99-66-1

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