

Case Series of Paediatric Acute COVID-19 Infection that was Admitted with Seizures during the Month of January 2022 - A Single Centre Study

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Abstract: This study presents a retrospective analysis of paediatric patients admitted with seizures to a tertiary care hospital in Kollam during January 2022. The research primarily focuses on comparing the incidence, age and sex distribution, and recurrence rates of seizures in children with COVID-19 against those with non-COVID febrile illnesses. The study involved reviewing medical records of children aged less than 12 years, diagnosed with COVID-19 or tested negative for the virus. The results indicated a significantly higher incidence of seizures and recurrent seizures in children with COVID-19 compared to those with non-COVID febrile illnesses. Notably, children older than five years showed a higher frequency of fever-associated seizures in the COVID-19 category. This study underscores the need for larger, more comprehensive studies to understand the broader implications of these findings in the paediatric population during the pandemic.

Keywords: COVID-19, Paediatric Seizures, Febrile Illness, Neurological Complications, Recurrent seizures

1. Introduction

- COVID 19 disease is believed to cause a mild disease course in children.
- The common symptoms being fever and mild respiratory infection,
- Neuro invasive capabilities of coronaviruses have been described in humans(1)
- Neurological manifestations of COVID-19 described are headache, dizziness, impaired consciousness, ataxia, seizures, and acute cerebrovascular problems.
- There are few studies conducted so far, to investigate the underlying mechanism of neurological complications of COVID-19, especially seizures and epilepsy.
- Some possible mechanisms of seizures induced by COVID -19 are : (2)
- Entry of virus into the central nervous system either by infecting sensory or motor neurons or by anterograde transport (using kinesin and dynein) ,
 - Disruption of blood brain barrier.
 - Persistent inflammatory status in COVID-19 patients acting as an important stimulus for a coagulation cascade. (3)
 - Electrolyte imbalances.(4)

2. Objectives

- To determine the incidence of seizure in children admitted with fever (non COVID 19) and COVID 19 patients.
- To determine:Incidence,age distribution,sex distribution, recurrence rate (in the same episode of fever), of paediatric COVID-19 cases that were admitted with seizures in the month of January 2022.

3. Methodology

Study design: Retrospective study.

Reviewing medical records of all paediatric patients who were admitted with seizures in the month of January 2022,

Study setting: A Tertiary care Hospital, Kollam.

Study population: All children admitted with febrile illness to our hospital in the month of January.

Inclusion criteria: All children aged <12 years , who was admitted to the hospital with febrile illness.1. Those who presented with seizures and were diagnosed with COVID 19 infection. 2. Those who presented with seizures and was COVID 19 RTPCR negative.

4. Data Collection

Data was gathered from history, RT-PCR positive testing in participating children, and structured case report forms. Demographic, clinical and laboratory features were compared between patients with and without neurological manifestations

5. Results

COVID Cases:	N=	%
Total COVID Admissions :	55	
COVID 19 Seizures:	23	42%
Recurrent Seizures:	9	39%

Non COVID Cases :	N=	%
Total Ward IP With Fever:	180	
Febrile Seizures (Non COVID):	10	5%
All aged less than 5 years		
Recurrent Seizures:	2	20%

Age < 12 Years:	N=	%
Distribution:		
<1 yr	2	(8%)
1-5 yrs	15	(65%)
6-11 yrs	6	(26%)

Sex	N=	%
Male	15	(65%)
Female	8	(35%)

Diagnosis:	N=	%
Single episode seizure:	11	(47%)
Recurrent seizures: (2 or more recurrent seizure in same episode)	9	(39%)
Status epilepticus:	3	(13%)

6. Conclusion

- We observed an increased incidence of seizures in acute COVID 19 infection compared to non COVID febrile illness during this wave of the pandemic.
- We also observed an increased incidence of recurrent seizures (2 or more recurrent seizure in same episode) in COVID positive cases.
- Increased incidence of fever associated seizures in children older than 5 years (in COVID category)
- Larger, epidemiologically significant studies are to be conducted to understand the incidence.

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