e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(8); 23-26

Original Research Article

Incidence of COVID-19 Positivity with RT PCR in All Pediatric Patients Admitted in a Tertiary Care Teaching Hospital Located in Tribal District of Telangana

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Received: 10-06-2023 / Revised: 11-07-2023 / Accepted: 02-08-2023
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Conflict of interest: Nil

Abstract:

Corona Virus disease (2019) is an illness caused by severe acute respiratory syndrome coronavirus [SARS-COV-2].In India and throughout the world fewer cases of covid 19 have been reported in children than in adults. This study is to investigate Pediatric COVID-19 incidence with RT PCR for early diagnosis and Treatment. Total 7590 children were tested with RTPCR. 2.75% children were RTPCR test positive. To gain a better understanding of children's COVID-19 infection outcome, more detailed information on clinical outcomes needs to be further elucidated.

Keywords: COVID -19, RTPCR test , Incidence , Pediatric Patients.

Introduction

In December 2019, pneumonia due to a novel coronavirus(SARS-COV-2) emerged in the city of Wuhan in China and caused increased number of cases and deaths worldwide [1]. Interestingly, data from the Chinese CDC showed that the fatality rate of COVID-19 varies tremendously according to the age of the patient, with a higher mortality rate among the older population (>50 years) having co-morbidities. However, the precise estimate of mortality rate might not be accurate due to the lack of estimation of the infection in the community. Recently, a large amount of data from the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19)suggested a fatality rate of 14.8% in ≥80 years, 8% in 70-79 years,3.6% in 60-69 years, 13% in 50-59 years, 0.2-0.4% in 10-40 years of age and no deaths rates in ≤9 years of age [2–3].

Genetic analyses of novel coronavirus, severe acute respiratory syndrome coronavirus [4] (SARS-CoV-2), showed that SARS-CoV-2 viruses evolved into two major types of L and S. Although L type newly evolved from the ancient S type, the L type (~70%) is more prevalent and aggressive than the S type (70% vs 30%) and transmits or replicates faster in human populations. Despite the worldwide spread, the epidemiological and clinical patterns of the COVID-19 remain largely unclear, particularly among children.[5] Pediatric patients with COVID-19 have their own clinical features and therapeutic responses.[6] However, in contrast to adult patients, clinical manifestations of children with COVID-19 infection might be less severe. Children might be less likely to become infected or, if infected, may show milder symptoms.[7,8] It is suggested that children were less sensitive to COVID-19 due to several factors including the lower maturity and binding ability of Angiotensin converting enzyme II (ACE2), which is known as a cell receptor for SARS-CoV-2. In addition, higher levels of antibody against respiratory infection viruses including respiratory syncytial virus and different immune responses to pathogens than adults might be another possible explanation. However, the mechanisms for the differences in clinical manifestations between children and adults are unclear.

Although the diagnosis of COVID-19 must be confirmed by reverse transcription polymerase chain reaction (RT-PCR), a total positive rate of RT-PCR for throat swab samples was about 30% to 60% at initial presentation. On the other hand, radiological characteristics can provide important evidence for the clinical diagnosis of COVID- 19 and chest computed tomography (CT) might reveal pulmonary abnormalities consistent with COVID-19 even in patients with initial negative RT-PCR results.[9] The newly emerging SARS-CoV-2 comes from the same genus of the coronaviridae family (beta coronavirus) with 90% genomic similarity to (SARS-CoV) and 50% to MERS-CoV, causing severe res-piratory illness and ARDS [10].

However, the pediatric population is less commonly affected by COVID-19. Published reports from different countries have mostly shown that pediatric patients represent a marginal proportion of COVID-19 cases, representing less than 2% of the reported ones. Moreover, they are less symptomatic and fatal as compared to the adult population. This is concordant to previous epidemic out-breaks of SARS-CoV and MERS-CoV in 2002 and 2012, respectively[11–14].

Corona Virus disease (2019) is an illness caused by severe acute respiratory syndrome coronavirus [SARS-COV-2].In India and throughout the world fewer cases of covid 19 have been reported in children than in adults. Whereas children comprises of 13.12 of Indian population, approximately 1-2% of all cases of covid-19 reported were among children 2-6% of them requiring management in intensive care unit. Most cases in children are mild and vary from that in adults. This study is to investigate Pediatric Covid-19 incidence with RT PCR for early diagnosis and Treatment.

Material and Method

This Prospective study was done in the pediatric patients in Pediatrics department, RIMS Adilabad, Telangana. Real time reverse transcription polymerase chain reaction (rRT-PCR) RT-PCR based molecular tests are the gold standard for obtaining a verified diagnosis of COVID-19. It works by reverse transcription of SARS-CoV-2 RNA into cDNA followed by measuring viral load by the cycle threshold (Ct).

Data collection procedure

- After obtaining the IEC permission,
- All the patients admitted in paediatric ward were tested for covid-19 by RTPCR irrespective of symptoms,
- Demographic and clinical details of the patients were noted.
- If any result turns to be positive, the patient were treated accordingly.
- Follow up was done for the patients either through phone or review visit in the hospital, outcome of the positive patients was noted.
- Written informed consent from the participants parents was taken prior to study

Analysis

Data was entered in Excel and was analysed by SPSS version 20. The proportions was calculated in form of frequency and percentage.

Results

Table 1: Number of Subjects according to Gender

Gender	Frequency	Percentage
Female	3323	43.8 %
Male	4267	56.2 %
Total	7590	100 %

Total 7590 samples were tested with RTPCR 43.8 % were female children and 56.2 % were males .

Table 2: RTPCR Reports as per Gender

Gender	Positive	Negative	Repeat	Total
Female	84	3219	20	3323
Male	125	4125	17	4267
Total	209(2.75%)	7344	37	7590

Out of 7590 samples 209 were RTPCR positive out of which 84 were girls and 125 were boys. RTPCR tests of 7344 children were negative. 37 children samples RTPCR report was doubtful so it was repeated . 2.75 % children were RTPCR test positive.

Table 3: Age and Gender wise distribution of RTPCR Report

Age in years		RTPCR Report				Total
		Gender	Positive	Negative	Repeat Sample	
1		Female	12	611	5	628
		Male	25	826	1	852
		Total	37	1437	6	1480
2		Female	11	347	1	359
		Male	15	499	3	517
		Total	26	846	4	876
3		Female	7	307	3	317
		Male	11	350	1	362
		Total	18	657	4	679
4		Female	6	268	1	275
		Male	9	364	1	374
		Total	15	632	2	649

5		Female	7	263	1	271
		Male	4	326	4	334
		Total	11	589	5	605
6		Female	9	204	1	214
		Male	9	252	1	262
		Total	18	456	2	476
7		Female	8	231		239
		Male	4	292		296
		Total	12	523		535
8		Female	3	206		209
		Male	12	249		261
		Total	15	455		470
9		Female	9	175	1	185
		Male	10	205	3	218
		Total	19	380	4	403
10		Female	2	193	2	197
		Male	9	300	0	309
		Total	11	493	2	506
11		Female	7	204	2	213
		Male	6	222	1	229
		Total	13	426	3	442
12		Female	3	210	3	216
		Male	11	240	2	253
		Total	14	450	5	469

Table 3 shows age and gender wise distribution of RTPCR test results.

Discussion

Since the early days of a COVID-19 infection outbreak, it has been thought that pediatric patients were not susceptible to COVID-19. However, along with widespread spread of the virus, the number of infected children has gradually increased.[15] In a recent report, among 1099 laboratory-confirmed cases, only nine patients (0.9%) were younger than 15 years of age.[16] Males seem to be more susceptible to COVID-19 infection, which is similar to the recent epidemiological studies.[17]A higher incidence rate of COVID-19 infection in males and in Asia might be due to the higher expression level of ACE-2.[18,19] In ours study Total 7590 samples were tested with RTPCR 43.8 % were female children and 56.2 % were males . Out of 7590 samples 209 were RTPCR positive out of which 84 were girls and 125 were boys. RTPCR tests of 7344 children were negative. 37 children samples RTPCR report was doubtful so it was repeated. 2.75 % children were RTPCR test positive. Unlike adults, children rarely have comorbidities such ashypertension, cardiovascular disease, and diabetes [20]. The main reported risk factors for the pediatric population to be infected with COVID-19 were close contact with a family member with an infection and a history of travel or residence in an endemic area [21].

Conclusion

In ours study Total 7590 samples were tested with RTPCR. 2.75 % children were RTPCR test positive. To gain a better understanding of children's COVID-19 infection outcome, more detailed information on clinical outcomes including discharge, ICU admission and death, needs to be further elucidated.

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