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RESEARCH ARTICLE

COVID-19 AMONG NEONATES: EXPERIENCE FROM AN SNCU OF A TERTIARY CARE HOSPITAL IN EASTERN INDIA

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Abstract

Background: Coronavirus disease 2019 (COVID-19) pandemic has spread to every corner of the globe with immense rapidity. The clinical presentation of neonates due to COVID-19 is poorly understood.

Aim and Objectives: The study assessed the clinical profile of neonates with COVID-19 from the Special Newborn Care Unit (SNCU) of a tertiary care hospital in eastern India.

Materials and Methods: Data from the hospital record section was retrieved and bed head tickets (BHT) were collected. A thorough review of the BHTs was done. Retrieved data was presented in tabulated form and analyzed.

Results: Out of the 285 neonates tested for COVID-19 by reverse transcriptase-polymerase chain reaction (RT-PCR) from the nasopharyngeal swab, 23 tested positive. Fever was the most common presenting complaint in 9 cases (39.13%). Respiratory distress was the clinical presentation in 5 cases (21.73%), while 4 cases (17.39%) presented with diarrhea. The other symptoms included fever and cough with nasal congestion, found in 2 cases (8.69%). Mother being positive for COVID-19 was found to be a risk factor for COVID-19 in 3 (13.04%) cases.

Conclusions: It is essential to screen neonates not only with the history of COVID-19 positive mothers but also other neonates presenting with symptoms suggestive of COVID-19.

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Introduction:-

COVID-19 pandemic proved as a Public Health Emergency of International Concern (PHEIC). Moreover, the emergence of newer variants frequently has been making the fight against COVID-19 a really challenging one. We have numerous publications from different regions of the world, describing many aspects of the virus and disease. However, initial studies showed globally, children were less frequently affected by the disease. As per the WHO-China joint mission report, children <18 years of age accounted for only 2.4% of 55,924 laboratory-confirmed cases of COVID-19 in china, most of whom were household contacts of positive cases.¹ Similarly, the Centre for Disease Control (CDC) from the USA reposted 2572 patients aged <18 years amounting to 1.7% of total COVID-19 cases.² Data from India, however, showed comparatively higher incidence among children. Indian Council of Medical Research (ICMR) laboratory surveillance network reported 3.6% and 8.1% of total cases in group 0-9 y and 10-19 y, respectively between 22 January 2020 and 30 April 2020.³ Despite several studies eventually focusing on the effects of COVID-19 disease among children, few aspects have been less well elucidated.⁴ Eventually, studies have

described the clinical profile of children with COVID-19, however, obtaining data pertaining to clinical profiling of neonates with COVID-19 remains a challenge.

It is known that the risk of in-utero transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is low.⁵ The risk of perinatal transmission, especially during breastfeeding, and the neonate's risk of developing COVID-19 during the perinatal period have also been known to be low.⁶

Aims and objectives:-

Our present study is to describe the clinical profile of neonates with COVID-19 from SNCU of a tertiary care hospital in eastern India.

Materials And Methods:-

A detailed research proposal was submitted to the Institutional Scientific Review Committee of ** India. Following their approval, the proposal was forwarded to the Institutional Ethics Committee. Upon their approval, data from the hospital record section was recovered and bed head tickets were collected. We had done a detailed review of the BHTs and collected the necessary data. Collected data was presented in tabulated form and was analyzed using Microsoft Excel 2016 software. We had done an observational study to find out the clinical profile of neonates with COVID-19. In this present study, we conducted a review of the data for a period of six months from May 2021 to November 2021. We had conducted RT-PCR on nasopharyngeal swabs from 285 neonates in our SNCU, based on their history and clinical features. In our SNCU, we screened all babies admitted to SNCU with a history of the mother being COVID-19 positive, babies who had come in close contact with COVID-19 positive patients, neonates with respiratory distress, fever and cough with nasal congestion, fever with convulsion, fever as the sole presentation, poor feeding, and lethargy, fever with vomiting and diarrhea.

Statistical analysis:-

Data were entered in Microsoft excel 2016 and analyzed.

Results:-

In this present study, we had found that out of 285 neonates tested for COVID-19 by RT-PCR of nasopharyngeal swabs, 23 neonates tested positive (8.07%). Among the RT-PCR for COVID-19 tested positive neonates, fever was the most common presenting feature, found in 9 neonates (39.13%). Respiratory distress was the presenting complaint in 5 babies (21.73%), while 4 cases (17.39%) presented with diarrhea. The other symptoms included fever and cough with nasal congestion which was found in 2 neonates (8.69%). Mother being positive for COVID-19 was found to be a risk factor for COVID-19 in neonates in 3 cases (13.04%). Five out of 23 babies were preterm (21.73%). Details of our findings from this study are depicted in Table 1.1.

Table 1.1:- Result of COVID 19 screening in the neonates admitted to SNCU.

| Symptoms | RT-PCR result Positive | RT-PCR result Negative | Total |
|--------------------------------------------------|------------------------|------------------------|-------|
| Mother being COVID-19 Positive | 3 | 17 | 20 |
| Respiratory distress | 5 | 100 | 105 |
| Diarrhoea | 4 | 15 | 19 |
| Fever and cough with nasal congestion | 2 | 18 | 20 |
| Fever with convulsion | 0 | 5 | 5 |
| Poor sucking and lethargy | 0 | 8 | 8 |
| Household Contact with COVID-19 positive patient | 0 | 13 | 13 |
| Fever | 9 | 85 | 94 |
| Fever with vomiting | 0 | 1 | 1 |
| Total | 23 | 262 | 285 |

All the neonates were closely monitored, and none were associated with any adverse outcome. All the babies were managed conservatively and were discharged eventually as their symptoms subsided.

Discussion:-

Infant and children show a milder form of COVID-19 illness compared to adults due to immature immune system, passive transfer of maternally derived IgG antibodies, and lower Angiotensin-Converting Enzyme 2 (ACE-2) expression.⁷ Several studies have elaborated epidemiological and clinical characteristics of COVID-19 disease mainly among children.^{8,9} However, there has been a lack of data regarding clinical features of COVID-19 in neonates. Globally, several studies are going on to explore epidemiology, clinical manifestations, and outcomes of SARS-CoV-2 infection among neonates. Therefore, when to suspect and screen for COVID-19 in neonates has remained lesser explored. Studies on neonates infected with SARS-CoV-2 showed that neonates may be asymptomatic or have mild to moderate forms of symptoms. Symptomatology includes rhinorrhea and cough (40%–50%) and fever (15%–45%). respiratory distress, poor feeding, lethargy, vomiting, and diarrhea. Few cases of multiple organ dysfunction were also seen.^{10,11}

A cohort study was conducted on 61 neonates with COVID-19 who required in-patient care, fever, coryza, mild respiratory symptoms, poor feeding or vomiting lethargy, and apnea were reported.¹² Our present study found out that, diarrhea, fever, respiratory distress are associated with COVID-19 disease in the neonatal age groups. While fever (9, 39.13%) was the most common presenting symptom in neonates with COVID-19. The other symptoms were respiratory distress (5, 21.73%) and diarrhea (4, 17.39%), fever, and cough with nasal congestion (2, 8.69%) in our present study. Maternal COVID-19 disease was associated with COVID-19 in neonates in 3 (13.04%) cases. In our study, we did not find any case of multiple organ dysfunction.

A Cohort Study done by Zeng et al.¹³ reported that out of 33 infants from mothers with COVID-19: three were symptomatic and tested positive for SARS-CoV-2 virus in nasopharyngeal and rectal swab test, with a radiological picture of pneumonia. Though the clinical course was worse in those infants whoever the outcome was favorable. None of the neonates died in this study. In our study, we observed no adverse outcomes in neonates. Babies were managed conservatively and were discharged successfully as their symptoms subsided.

Limitations of our study:-

A large-scale multicentre study of a longer duration will be more helpful to explore the detailed clinical manifestation of neonatal COVID-19.

Authors Contribution:-

AD- Concept, design of the study, manuscript preparation; NB- Statistical analysis, Interpreted the results; reviewed the literature;

MM- Manuscript preparation and drafting, Revision of draft

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Source of Support:-

Nil.

Conflicts of Interest:-

None declared.

Conclusions:-

It is essential to screen neonates not only with the history of COVID-19 positive mothers but also other neonates presenting with symptoms suggestive of COVID-19. However, many neonates may remain asymptomatic with COVID-19 infection. Moreover, the symptomatology of COVID-19 in neonates is not very well understood. In this context, our experience suggests, it is probably beneficial to keep a high index of suspicion while screening neonates for COVID-19. Although larger studies are necessary for describing a more detailed clinical profile among neonates.

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