Neurological Deficits in Very Low Birth Weight Preterm Infants Among Covid- 19 Affected Mothers

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Abstract

Introduction: Premature infants undergo a lot of stressful procedures during care and treatment procedure, which may lead to physiological and neurological changes. This study is based on analyzing the neurological deficits in preterm infants with low birth weight born to covid-19 affected mothers. The main purpose of this study was to analyze whether the preterm infants with low birth weight are prone to develop neurological deficits. The aim of this study was to evaluate the neurological effects in preterm infants admitted to the NICU.

Materials and Methods: Quasi experimental study design was used in this study; Total 30 Preterm infants admitted to the NICU who met the inclusion criteria were selected. All 30 preterm infants undergone screening for neurological deficits. All the data's were tabulated and statistically analyzed.

Results: In very low birth weight infants and risk factors for development delay and neurosensory disability are high. Infants with very early Preterm and extreme low birth weight have a higher risk of attention problems, languages difficulties and intellectual disabilities.

Conclusions. It concludes that preterm infants are at risk of developing neurological deficits and also concludes that early the identification in new born helps in early the intervention to the new born

Key words: Covid-19, Premature infant, NICU

Introduction

Coronavirus (COVID-19) is an infectious illness caused by a corona virus that was recently discovered[1]. The COVID-19 pandemic has had a significant mental health impact. It has a significant impact on normal persons and health-care personnel such as doctors, nurses, physiotherapists, and community health-care workers[2]. During the COVID-19 outbreak, many people were worried. They were also dealing with depression, and financial extremity was a difficult factor to deal with during COVID-19. Anxiety is a type of emotion marked by uncomfortable feelings of pressure, disrupted studies, and bodily changes such as elevated blood pressure. People with anxiety disorders have been subjected to numerous snooping studies or businesses. Out of concern, they may avoid particular circumstances. Sweating, pulsating, disorientation, or a rapid-fire twinkle are some of the sensations they may experience[3].

Preterm infants are those born before 37 weeks of gestation. This is further subdivided into extremely preterm infants (EPI), very preterm infants (VPI), moderately preterm infants (MPI), and late preterm infants (LPI) (LPI). It is defined as a baby born between the ages of 28 and 32, or 32 and 37 weeks. Several studies have found that preterm infants are more likely than full-term infants to have psychiatric problems [autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), anxiety, motor and sensory abnormalities [problems related to vestibular balance, cerebral palsy], developmental delay such as problems related to language, cognitive, sensory, and motor development, and poor academic performance[4].

There is mounting evidence that preterm infants are more likely to develop neurological impairments, developmental disabilities, and behavioral and psychiatric

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issues[5]. Preterm infant survival has increased as a result of advances in neonatal medicine. Despite an increase in survival and success, children born prematurely are still at a high risk of brain injury and long-term neurological deficits. Premature infants may have abnormal muscle tone or movements, cognitive deficits, language impairments, and behavioral issues[6].

Materials and Methods

30 samples were selected based on the inclusion and exclusion criteria. **Study design:** Observational study. **Study setting:** Samples will be selected from Saveetha Medical College Hospital, Thandalam, Chennai - 602 105 according to the inclusion and exclusion criteria. **Sampling method:** Convenient sampling. **Sample size:** 30 samples based on inclusion and exclusion criteria. **Inclusion criteria:** Preterm infants (23-35weeks), without any congenital abnormalities, born to covid-19 affected mother. **Exclusion criteria:** Term baby, Infants with congenital heart disease,in-utero infection, post natal infections. **Outcome measures:** The outcome measurement for the observational study will be from Hammer Smith Neurological Evaluation Scale.

Procedure

Total of 30 samples will be selected by convenient sampling according to the inclusion and exclusion criteria. The parents/caretaker of the infant were explained with the procedure, methods of the study, and the informed consent form were obtained. Hammer smith Neurological Evaluation Scale was used for infants to check the neurological deficits once the babies were stabilized. The results will be recorded, analysed and conclusion of the study will be made.

Statistical analysis

The collected data were tabulated and analysed using descriptive and inferential statistics. The mean values is tabulated below,

Result

From statistical analysis made with quantitative data the mean value for tone , is of 5 components that is flexor tone (value) is 2.38 , flexor tone (resting posture) value is 2.43 , leg tone value is 2.49 , head control value is 2.38 , neck and axial tone value is 2.43 and for reflex is of 5 components that is tendon reflex value is 2.18 , sucking value is 2.24 , palmer grasp value is 2.34 , plantar grasp value is 2.20 , Moro reflex value is 2.27 and for movements is of 3 components that is spontaneous movement {Upper Limb} value is 2.28 , spontaneous movement {Lower Limb} value is 2.31 , head raising value is 2.30. Based on the HNNE scores, low birth weight babies have neurological deficits.

Discussion

The purpose of the study is to find out the neurological deficits in preterm infants born to covid-19 affected mothers. The outcome measure is Hammer Smith Neurological Evaluation Scale. This study was conducted at the Saveetha Hospital. This study sample size is 30 infants according to the inclusion and exclusion criteria. We screened the new born and found the possible risks and seen deficits in preterm born. In this study the mother had depression post covid on the healthy life of newborn.

Table 1: Tone Value

FLEXOR TONE	FLEXOR TONE(RESTING POSTURE)	LEG TONE	HEAD CONTROL	NECK AND AXIAL TONE
2.38	2.43	2.49	2.38	2.43

Table 2: Reflex Value

MORO REFLEX	PALMAR GRASP	PLANTAR GRASP	TENDON REFLEX	SUCKING
2.27	2.34	2.20	2.18	2.24

Table 3: Movement Value

SPONTANEOUS MOVEMENT(UPPER LIMB)	SPONTANEOUS MOVEMENT(LOWER LIMB)	HEAD RAISING
2.28	2.31	2.30

Conclusion

From the results, it has been concluded that preterm infants are at risk of developing neurological deficits and also concludes that early the identification in new born helps in early the intervention to the new born which helps in reducing the risk of neurological deficits in preterm infants.

Conflict of interest

The authors declare no conflict of interest.

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