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Risk Factors and Outcome of Hypoglycemia in Newborn

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ABSRACT:BACKGROUND :Neonatal hypoglycemia is the most common form of metabolic disturbance in newborns . Persistent hypoglycemia is more likely to be associated with abnormal endocrine condition and possible neurological damage, mental retardation, epilepsy, personality disorders, impaired cardiac performance and muscle weakness.
OBJECTIVE :To access the risk factors and outcome of neonatal hypoglycemia.
METHOD :Neonates admitted in pediatrics in-patient department with hypoglycemia were enrolled. They were clinically accessed and perinatal and maternal history was recorded and analyzed. After discharge they asked to come for follow up for neurodevelopmental assessment.
STUDY DESIGN: Hospital based Prospective study at Hi-Tech Medical College and Hospital from September 2019 to August 2020.
RESULT:Out of 54 children with symptomatic hypoglycemia, 88.88% of the babies were premature. The mean birthweight was 1790 grams, mean gestational age was 32weeks 5days. HIE was found in 3 children, infection in 22 children, respiratory distress syndrome in 9 patients, intracranial hemorrhage in 2 patient. There were 2 deaths.
CONCLUSION: Neonatal hypoglycemia is a significant factor of neonatal mortality. Infection, low birth weight and low gestational age were most commonly associated with neonatal hypoglycemia. Pediatrician must be aware of risk factors of hypoglycemia in newborns that can be both maternal and neonatal. Though neonatal hypoglycemia is treatable but can be fatal if gone untreated.
Key words- neonates,hypoglycemia,HIE,low birth weight,seizure

I. INTRODUCTION:

Glucose is an essential molecule that supplies energy to the brain for its utilization. For its normal functioning, the brain highly depends on the ATP produced via the continuous supply of glucose. Neurons and glial cells in the brain are sensitive to hypoglycemia.Neonatal hypoglycemia is the most common form of metabolic disturbance in newborns. Neonatal hypoglycemia is defined as plasma or whole blood glucose concentration at which a clinician should consider intervention i.e. BGL of less than 40 mg/dl & plasma glucose less than 45 mg/dl [1]. Persistent hypoglycemia is more likely to be associated with abnormal endocrine condition and possible neurological damage, mental retardation, epilepsy, personality disorders, impaired cardiac performance and muscle weakness.

II. METHODOLOGY:

This study had covered all the neonates admitted in the neonatal ward and the neonatal intensive care unit(NICU) of Hi-tech Medical College and Hospital (HMCH), Bhubaneshwar (BBSR) during study period. During admission, the parents or guardian were informed about the study and consent was taken from them. Detailed maternal history like maternal age,no of pregnancy, gestational diabetes or overt diabetes, hypertension, antepartum hemorrhage, perinatal history (gestational age, no of pregnancy,birth weight of baby in grams, small for gestational age or large for gestational age, intrauterine growth restriction, birth asphyxia , APGAR score) and neonatal data (gender, any history of sepsis i.e. early onset of neonatal sepsis (EONS) or Late onset of neonatal sepsis (LONS), prematurity, seizure, lethargy, jitteriness, inborn error of metabolism, storage disorders)was taken.The outcome of neonatal hypoglycemia was determined by factors like duration & severity of hypoglycemia. The infant need to be assessed at one month corrected age of vision. At 3,6,9 & 12 months corrected age, they need to be followed up for growth, neuro-development, vision & hearing loss [2]. Data was analyzed according to the objectives of the study and by using appropriate statistical techniques in the form of tables, graphs and diagrams.

III. RESULTS :

We investigated 54 neonates as a random group born at Obstetrics and Gynaecology dept. Of

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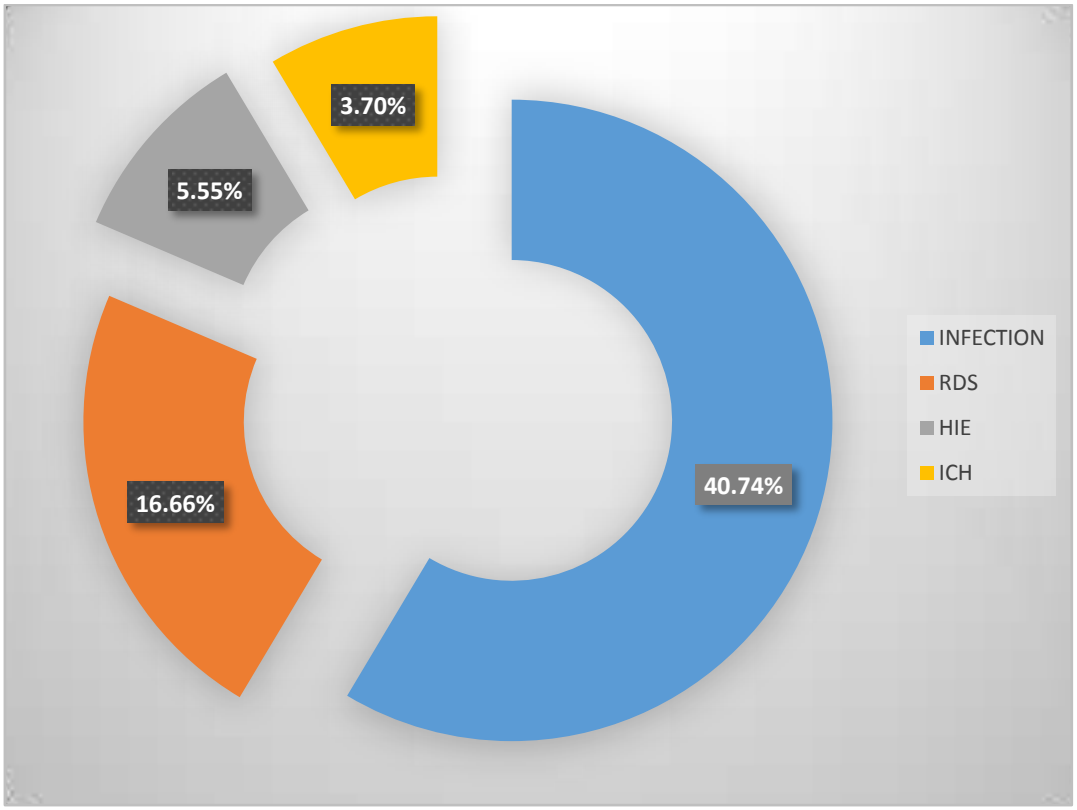
HMCH,BBSR and admitted neonates at NICU of HMCH,BBSR. Among the babies, 48 (88.88%)were preterm. The mean birth weight was 1790 grams. 21 babies (38.8%) were very low birth weight (<1500g), 24 babies (44.44%) were low birth weight (1500 - 2500g) and 9 babies (16.66%) were above 2500gm.Mean gestational age was 32weeks 5days. HIE was found in 3 babies(5.55%), infection in 22 babies(40.74%), respiratory distress syndrome in 9 babies(16.66%), intracranial hemorrhage in 2 babies(3.70%). There were 2 deaths(3.70%).

32 babies had come for follow up after being discharged from NICU. Till 3 months of age all were developmentally normal. 5 babies who had come at 6 months age were assessed, 3 of them with HIE had not attained neck control and 5 babies with normal development were having intermittent spasms after 3 months of age. 3 out of those 5 babies who came at 1 year of age continued having infantile spasms .



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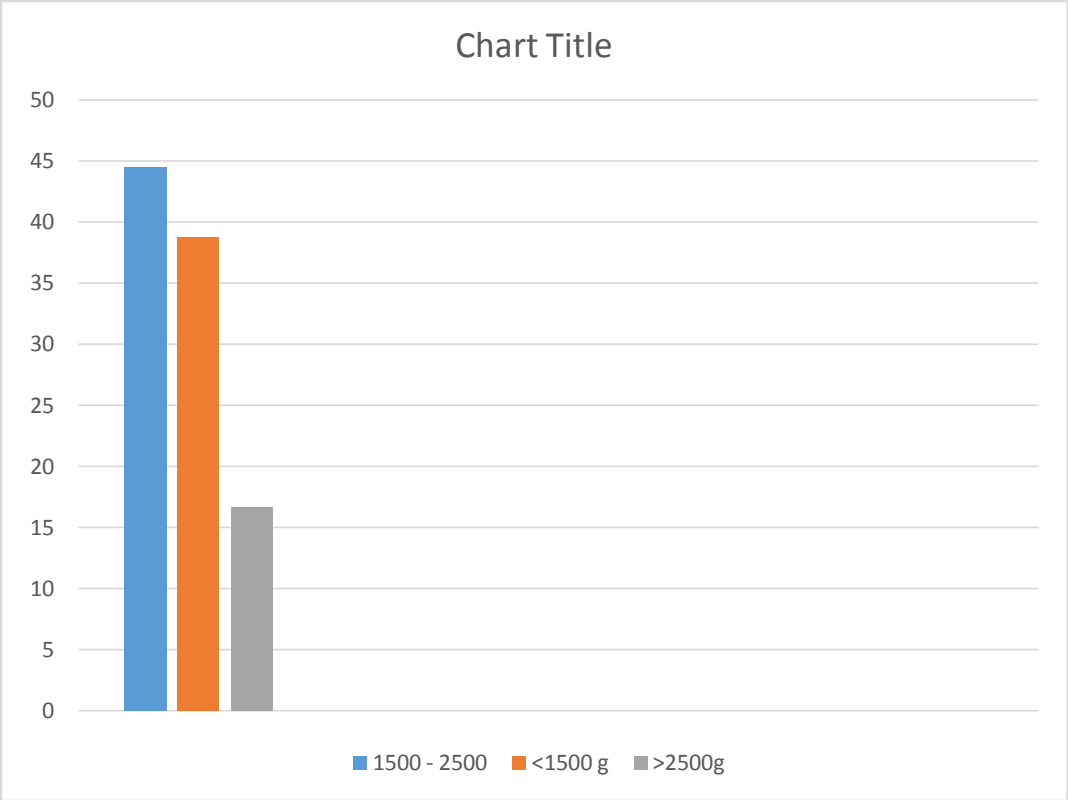

Birth weight distribution

IV. DISCUSSION:

In neonates long term sequelae can occur within a wide range of low serum glucose values. Even transient moderate hypoglycemia can results in neurological damage[3]. The duration and severity of neonatal hypoglycemia greatly influences the creation of a permanent neurological damage[4,5].Serum glucose levels in neonates normally decline until age 1-3 hours and spontaneously increase afterwards.In fact, there is no rigorously determined specific blood glucose concentration for a definition of NH for infants [6-12]. Neonatal hypoglycemia is a significant factor of neonatal mortality. Infection, low birth weight and low gestational age were most commonly associated with neonatal hypoglycemia. Paediatrician must be aware of risk factors of hypoglycemia in newborns that can be both maternal and neonatal. Though neonatal hypoglycemia is treatable but can be fatal if left untreated.

V. CONCLUSION:

Neonatal hypoglycemia is a significant factor of neonatal mortality. Infection, low birth weight and low gestational age were most commonly associated with neonatal hypoglycemia. Paediatrician must be aware of risk factors of hypoglycemia in newborns that can be both maternal and neonatal. Though neonatal hypoglycemia is treatable but can be fatal if gone untreated .

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