

Analysis of Prevalence of Neonatal Hypoglycaemia: An Institutional Based Study

Sanjulata Singh¹, S P Singh^{2*}

¹Assistant Professor, Department of Paediatrics,
Narayan Medical College & Hospital, Rohtas, Sasaram, Bihar, India.

²Associate Professor, Department of Anaesthesiology,
Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh, India.

ABSTRACT

Background: Hypoglycaemia, the most common metabolic abnormality in neonates, is associated with neuronal damage and death especially when it occurs during the 1st few days of life. The present study was conducted to assess prevalence of neonatal hypoglycaemia in a tertiary care centre.

Materials and Methods: This prospective study was conducted in among neonates over a period of 6 months. 280 neonates were admitted and screened for hypoglycaemia irrespective of gestational age. A detailed antenatal, natal and postnatal history of all cases was taken. The risk factors were recorded. The details of cases were recorded in a predesigned and pretested proforma. Glucometer was used for measuring the blood glucose levels. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

Results: A Total of 280 cases were admitted during the study period out of which 62.85% were males and 37.14% were females. Neonatal hypoglycaemia was present 140 patients. Symptomatic hypoglycaemia was present in 17.85% neonates and asymptomatic hypoglycaemia was present in 32.14% neonates. In maximum patients Jitteriness & Tremor was

present. Jitteriness and Tremor, Tachypnea and Cyanosis were common clinical features.

Conclusion: The study concluded that Symptomatic hypoglycaemia was present in 17.85% neonates and asymptomatic hypoglycaemia was present in 32.14% neonates.

Keywords: Neonatal Hypoglycaemia, Symptomatic, Asymptomatic, Jitteriness & Tremor.

*Correspondence to:

Dr. S P Singh,
Associate Professor, Department of Anaesthesiology,
Heritage Institute of Medical Sciences, Varanasi, Uttar Pradesh, India.

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INTRODUCTION

Hypoglycaemia is one of the commonest metabolic emergencies in a neonatal unit.¹ Neonatal hypoglycaemia is a common metabolic problem especially in the presence of risk factors for hypoglycaemia. Hypoglycaemia in newborn is defined as blood glucose level below 47 mg/dl.² The stated incidence is estimated at 1 to 5 per 1000 births, but it is significantly higher in certain subgroups, 8% in LGA (large for gestational age) infants and about 15% in SGA (small for gestational age) infants (i.e. those with intrauterine growth retardation).³ Hypoglycaemia in neonates can be symptomatic or asymptomatic. The most common symptoms such as convulsion, apathy, hypotonia, coma, refusal to feeds, cyanosis, high pitched cry, and hypothermia are very nonspecific and especially in small sick neonates, these symptoms may be easily missed.⁴⁻⁶ Neonatal hypoglycaemia represents an urgent diagnostic and therapeutic challenge that

must be answered promptly to avoid the adverse consequences of hypoglycaemia, most importantly damage to CNS leading to abnormal neurodevelopmental outcome, decreased overall IQ, reading and learning ability, arithmetic proficiency and motor performance over long term.⁷ Symptomatic hypoglycaemia should be treated with parenteral continuous glucose infusion. Breastfeeding is the initial management of asymptomatic hypoglycaemia. Infants on exclusive breastfeeding tend to have lower blood glucose concentrations than infants on formula feeding.⁸⁻¹⁰ The present study was conducted to assess prevalence of neonatal hypoglycaemia in a tertiary care centre.

MATERIALS AND METHODS

This prospective study was conducted in among neonates over a period of 6 months. Before the commencement of the study

ethical approval was taken from the Ethical Committee of the institute and written consent was taken from the guardian after explaining the study. All neonates born in the hospital either by vaginal or LSCS delivery during study period were included and those born outside were excluded. Babies with Congenital malformations, Neonatal cord injuries, inborn errors of metabolism, maternal history of oral hypoglycaemic agents, beta sympathomimetics and maternal glucose infusions during delivery were excluded from the study. 280 neonates were admitted and screened for hypoglycaemia irrespective of gestational age with operational threshold for hypoglycaemia of blood glucose level < 40 mg/dl formed the study group. A detailed antenatal, natal and postnatal history of all cases was taken. The risk factors like consanguinity, unregistered/ unbooked pregnancies, diabetes, toxemia, premature rupture of membrane, maternal fever, dysuria, antepartum hemorrhage (APH), mode of delivery, type of delivery, meconium-stained liquor were recorded. The details of cases were recorded in a predesigned and pretested proforma. Glucometer was used for measuring the blood glucose levels. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA).

RESULTS

A Total of 280 cases were admitted during the study period out of which 62.85% were males and 37.14% were females. Neonatal hypoglycaemia was present 140 patients. Symptomatic hypoglycaemia was present in 17.85% neonates and asymptomatic hypoglycaemia was present in 32.14% neonates. In maximum patients Jitteriness & Tremor was present. Jitteriness and Tremor, Tachypnea and Cyanosis were common clinical features.

Table 1: Distribution of neonates according to gender

Gender	N(%)
Male	176(62.85%)
Female	104(37.14%)
Total	280(100)

Table 2: Prevalence of hypoglycaemia among neonates

Nature of hypoglycaemia	N(%)
Symptomatic	50(17.85%)
Asymptomatic	90(32.14%)
Absence of hypoglycaemia	140(50%)

Table 3: Symptoms of hypoglycaemia among neonates

Symptoms of hypoglycaemia	N
Jitteriness & Tremor	21
Convulsions	14
Apneic spells	3
Lethargy	5
Tachypnea	18
Cyanosis	11
Convulsions	12
High pitched Cry	4
Asymptomatic	90

DISCUSSION

Neonatal hypoglycaemia is a common metabolic disease due to inability to maintain glucose homeostasis. The overall prevalence depends on definition of hypoglycaemia, criteria for diagnosis of hypoglycaemia, diagnostic methods and other factors. Hence there is wide range of difference in incidence of hypoglycaemia ranging from 4 to 15%. Hypoglycaemia can be symptomatic and asymptomatic. Undiagnosed Hypoglycaemia can have long term neurological consequences; thus the emphasis is on prevention and early detection along with treatment of hypoglycaemia. A study from Iran has taken blood sugar levels less than 50mg/dl as criteria for diagnosis of hypoglycaemia.¹¹

Kaiser et al reported incidence of hypoglycaemia of 19.3% in 1395 newborns with GA's between 23 and 42 weeks using a cutoff of <45mg/dl.¹²

Lubchenko et al (1971) in his study reported 20.3% incidence of hypoglycaemia in low birth weight or premature infants.¹³

Hawdon et al, in their study found the incidence of hypoglycaemia in term infants to be 0.8% and incidence of hypoglycaemia in preterm infants 3.15%.¹⁴

Munir Akmal, Nasir Ali Shah & Ghulam Sahir in 2006, found that 46.53% of all hypoglycaemic babies were low birth weight, 6.93% had birth asphyxia and 4.95% had neonatal sepsis.¹⁵

A western study noticed jitteriness in about 62.7% of cases, convulsions in about 37.5% and Apneic spells 17.3%.¹⁶

Kumar TJ et al found that the incidence of hypoglycaemia in newborns with risk factors was 33.3%. Out of 1883 Babies born with risk factors, 627 Babies developed at least one episode of hypoglycaemia. Of these, 576 (30.3%) were asymptomatic hypoglycaemia and 51 (3.0%) symptomatic hypoglycaemias. Hypoglycaemia was seen in 42% of SGA, 33% of IDM, 19% of preterm and 10% of LGA babies. About 51% of newborns developed hypoglycaemia at 2 hours of life and about 31% of newborns at 6 hours of life. No hypoglycaemic episodes were noted after 24 hours of life.¹⁷

Efe A et al found that out of 220 neonates 67 neonates had hypoglycaemia giving a prevalence of 30.5%. Hypoglycaemia was significantly associated with macrosomic neonates and neonates who were not on oral feeds at presentation.¹⁸

Kumar V et al found that the incidence of neonatal hypoglycaemia was 41/1000 live births. Eight variables strongly and independently predicted the risk of neonatal hypoglycaemia, at least one being present in 89.1% of the hypoglycaemic neonates.¹⁹

CONCLUSION

The study concluded that Symptomatic hypoglycaemia was present in 17.85% neonates and asymptomatic hypoglycaemia was present in 32.14% neonates.

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