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A STUDY ON SHORT TERM OUTCOMES OF IUGR BABIES DELIVERED IN A TERTIARY CARE HOSPITAL

Paediatrics

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ABSTRACT

Background: Intrauterine growth restriction (IUGR) is an important health problem of developing countries around the world. IUGR a condition that occurs due to various reasons is an important cause of fetal, neonatal morbidity and mortality, associated with several health problems throughout life.National Neonatal Perinatal Database of India reported the incidence of IUGR to be 9.65% among hospital born live birth infants. **Aim:** To study short term outcomes in IUGR babies **Objectives:** To study and compare short term outcomes between term and preterm IUGR To study both maternal and foetal risk factors associated with IUGR **Methodology:** This was a prospective observational study conducted for 6 months from June 2022 to November 2022 with sample size of 40 which included newborns whose birth weight <10th centile delivered in our hospital and excluded newborns with chromosomal abnormalities, congenital anomalies and parents of newborns who are not willing to give consent. A pre-structured proforma was used, thorough history was taken and clinical examination done. Babies were managed as per protocol, subjected to need based investigations and followed during hospital stay. **Results:** Out of 40 IUGR babies 28 were term, 12 were preterm and 26(65%) developed complications such as jaundice(52.5%), hypoglycaemia(20%), LONS(12.5%), meconium aspiration(10%), hypocalcemia(10%),NEC(7.5%), perinatal asphyxia(2.5%), feedintolerance(2.5%), polycythemia(2.5%), 1 died and 2 referred. Maternal risk factors were primi (72.5%), multipara(2.5%), gestational HTN (2.5%), GDM (5%), preeclampsia (2.5%), SLE (2.5%). Foetal risk factor noted was multiple gestation (7.5%). **Conclusion:** Term IUGR was common than preterm IUGR and there was no significant difference amongcomorbidities between two groups.

KEYWORDS

INTRODUCTION:

Intrauterine growth restriction (IUGR) is an important health problem of developing countries around the world. Intrauterine growth restriction (IUGR) is considered the most common cause of low birth weight or small for gestational age (SGA).[1] Approximately one-third of LBW infants are SGA/IUGR.[2] IUGR, a condition that occurs due to various reasons is an important cause of fetal and neonatal morbidity and mortality.[3,4] IUGR is a major cause of perinatal mortality and morbidity and it is associated with several health problems throughout life.[5]

National Neonatal Perinatal Database of India reported the incidence of IUGR to be 9.65% among hospital born live birth infants.[6] Intrauterine growth restriction (IUGR), also known as "intrauterine growth retardation" or "fetal growth restriction", is a term applied to a condition of poor growth of the fetus in utero.[1] UGR describes diminished growth velocity in the fetus as documented by at least two intrauterine growth assessments (e.g., a fetus that is "falling off" its own growth curve).[2] Although many use the terms "SGA" and "IUGR" interchangeably, they refer to two different concepts.[2]

SGA describes a neonate whose birth weight or birth crown heel length is <10th percentile for GA or <2 standard deviations (SDs) below mean for infant's GA.[2,7,8] IUGR is associated with increased risk of premature birth, increased morbidity among premature neonates, including necrotizing enterocolitis; low Apgar score; hypoxic brain injury and its long-term sequelae; the need for respiratory support and chronic lung disease; retinopathy of prematurity; prolonged neonatal intensive care unit (NICU), and mortality.[9]

Furthermore, a number of causes of IUGR are associated with an increased risk of IUGR and intrauterine death (IUD) in mother's subsequent pregnancy.[10] Short term complications of IUGR include perinatal asphyxia, meconium aspiration, persistent pulmonary hypertension, hypothermia, hypoglycemia, hyperglycemia, hypocalcemia, polycythemia, jaundice, feeding difficulties, feed intolerance, necrotizing enterocolitis, late-onset sepsis, pulmonary hemorrhage.[3]

There are mainly two types of IUGR, symmetrical and asymmetrical depending on the gestation of onset and etiology of IUGR.[2] Causes of IUGR are maternal, placental, fetal, endocrine and genetic causes.

At the outset, this study will help us to identify the short term outcomes of IUGR babies in our center and determine the strategies to improve the outcomes in these babies.

AIM:

- To study short term outcomes in IUGR babies

OBJECTIVES:

- To study and compare short term outcomes between term and preterm IUGR
- To study both maternal and foetal risk factors associated with IUGR

SUBJECTS AND METHODS:

Type Of Study:
PROSPECTIVE OBSERVATIONAL STUDY

Sample Size: 40

Study Period:
6 months (June 2022 to November 2022)

Study Population:
Neonates whose birth weight or birth crown–heel length is <10th percentile for GA

Place Of Study:
Department of Paediatrics, ASRAM, ELURU

Inclusion Criteria:

- Newborns with IUGR defined by Birth weight less than 10th percentile

Exclusion Criteria:

- Newborns with chromosomal abnormalities.
- Newborns with congenital anomalies.
- Parents of newborns who are not willing to give consent.

Ethical Consideration:
Institutional Ethical committee permission was taken prior to the commencement of the study.

METHODOLOGY:
- Data will be collected for all newborns included in the study.
- General information, socioeconomic status, detailed history of mother during her pregnancy and delivery details will be documented.
- Anthropometry, Ponderal index and clinical examination findings of the baby will be documented.
- Depending on the history and clinical examination, relevant investigations will be sent newborns will be managed as per protocol.
- Neonates will be followed up during the hospital stay.
- Risk factors, short term outcomes and reasons for death will be documented to assess the clinical outcome against final diagnosis.

Stastical Analysis:
- All the variables collected in the data will be entered in the MS EXCEL and will be analyzed by using SPSS ver 20.
- Results will be displayed in tables and graphs.
- Chi square test was usedwherever required to know the significance and to find out correlation between different variables.
- A p-value <0.05 was considered as statistically significant.

OBSERVATIONS & RESULTS:
- 40 newborns whose birth weight less than 10th percentile were included in the study.
- Out of 40 IUGR babies 27 were male and 13 were female, 28 were term and 12 were preterm
- Out of 40 IUGR babies 25 were symmetrical and 15 were asymmetrical.

Table 1: Frequency of male and female neonates according to gestational age and IUGR

Sex	Gestational age		IUGR	
	Term	Preterm	Symmetrical	Asymmetrical
Male	18	9	7	6
Female	10	3	18	9
Total	28	12	25	15

- Out of 40 IUGR babies 27 were male and 13 were female.
- Out of 40 IUGR babies 28 were term and 12 were preterm, 25 were symmetrical and asymmetrical.

Table 2: Frequency of shortterm outcomes among term and preterm neonates

Short term outcomes	Term		Preterm	
	Frequency	Percentage	Frequency	Percentage
Perinatal asphyxia	1	2	0	0
Meconium aspiration	4	8	0	0
PPHN	0	0	0	0
Hypothermia	0	0	0	0
Hypoglycaemia	4	8	4	8.2
Hyperglycaemia	0	0	0	0
Hypocalcemia	3	6	1	2
Polycythaemia	1	2	0	0
Jaundice	16	32.64	5	10.2
Feed intolerance	0	0	1	2
NEC	1	2	2	4
LONS	1	2	4	8.2
Pulmonary haemorrhage	0	0	0	0

Out of total 40 IUGR babies 26(65%) developed complications such as jaundice(52.5%), hypoglycaemia(20%), LONS(12.5%), meconium aspiration (10%), hypocalcemia (10%), NEC (7.5%), perinatal asphyxia(2.5%), feed intolerance(2.5%), polycythemia(2.5%),

Table 3: Frequency ofmaternal and foetal risk factors of IUGR

RISK FACTORS		
Maternal risk factors	Frequency	Percentage
Age < 16 years and > 35 years	1	2.5
Parity – None	29	72.5
Parity >5	1	2.5
Hypertension	1	2.5
Gestational diabetes mellitus	2	5
Pre-eclampsia	2	5
SLE	1	2.5
Maternal medication	0	0
Maternal infection	0	0
Haematological disorders	0	0
Foetal risk factors	Frequency	Percentage
Chromosomal abnormalities	0	0
Genetic syndromes	0	0
Major congenital anomalies	0	0
Multiple gestation	3	7.5
Congenital infection	0	0
Metabolic disorder	0	0

Out of 40 IUGR babies 37 were cured and discharged, 2 were referred to higher centre and 1 died.

DISCUSSION:
The present study isa prospective observational study, in which maternal, foetal risk factors and immediate short term outcomes of 40 IUGR neonates were evaluated.

Out of 40 IUGR babies 26 developed complications of which jaundice(52.5%) was the most common complication contrast to other studies and hypoglycaemia was second most common complication which was similar to study conducted by **DeebaShafi** et al[11]and by **Monica G et al**[12]

In a retrospective study conducted by **DeebaShafiet al**[11] 36% of infants in study group were asphyxiated, 10% had hypoglycaemia, 12% had hypocalcemia, 6% had pulmonary complications, 10% were hypothermic, 5% had congenital malformations, 20.5% had infections and 5% patients were normal.

In control group 10%, 4%, 3.5%, 1%, 6%, 0.5%, and 18% of the patients had hypoglycaemia, hypocalcemia, pulmonary complications, hypothermia, congenital malformations and infection respectively and incidence of complications was statistically significant (P<0.001) which was contrast to present study and incidence of complications doesn't show any statistical significance due to small study population. It was noted in our study that hypoglycemia was the 2nd most common complication and no statistical significance was found which was in contrast to study conducted by **Monica G et al**[12]reported a significantly higher percentage of hypoglycemia or intraventricular hemorrhage in IUGR group compared to the control group (p<0.05) and hypoglycemia proved a significant factor for IUGR.

In our study term IUGR babies developed more complications than preterm.

Among total 40 IUGR babies 28(70%) were symmetrical IUGR and 12(30%) were asymmetrical IUGR.

In ourstudy maternal risk factors noted were primi (72.5%) and multipara(2.5%), gestational HTN (2.5%), GDM (5%), preeclampsia (2.5%), SLE (2.5%) and foetal risk factor noted was multiple gestation (7.5%).

In our study there was no significant difference among co morbidities between term and preterm groups.

CONCLUSION:
- In present study term IUGR was common than preterm IUGR.
- Symmetrical IUGR was common than asymmetrical IUGR.
- Incidence of male was more than female.
- In our study jaundice was the most common complication.
- There was no significant difference among co morbidities between the two groups.
- Primi para was the most common maternal risk factor and multiple gestation was the foetal risk factor noticed.

Limitations:
- Study population was small.
- Outborn babies were not included.

REFERENCES:

1) Rahul Surve, Dr Abhay Jain Risk Factors Associated With Intrauterine Growth Restriction (IUGR) in Neonates: Pravara Med Rev 2019; 11(3) September – November 2019.
2) Vincent C Smith and Vikram Datta,The High-Risk Newborn: Anticipation, Evaluation, Management, and Outcome: Cloherty and Starks manual of neonatal care South Asian edition pg no: 103-106.
3) Murki S and Sharma D (2014) Intrauterine Growth Retardation - A Review Article. J Neonatal Biol 3: 135. doi: 10.4172/2167-0897.1000135.
4) Radulescu L, Ferechide D, Popa F: The importance of fetal gender in intrauterine growth restriction. J Med Life,2013, 6(1): 38-39.
5) Sharma et al. Intrauterine Growth Restriction: Antenatal and Postnatal Aspects. *Clinical Medicine Insights: Pediatrics* 2016:10 67–83 doi: 10.4137/CMPed.S40070.
6) Erich Cosmi, Tiziana Fanelli, Silvia Visentin, et. al. Consequences in Infants That Were Intrauterine Growth Restricted Hindawi Publishing Corporation Journal of Pregnancy Volume 2011, Article ID 364381, 6 pages doi:10.1155/2011/364381
7) Sharma D, Shastri S, Farahbakhsh N, Sharma P. Intrauterine growth restriction– part 1. J MaternFetal Neonatal Med. 2016; 7:1–11. 3.
8) Sharma D, Farahbakhsh N, Shastri S, Sharma P. Intrauterine growth restriction – part 2. J MaternFetal Neonatal Med. 2016;0(0):1–12Fanaroff AA, Hack M, Walsh MC (2003) The NICHD neonatal research network: changes in practice and outcomes during the first 15 years. Semin Perinatol 27: 281-287.
9) D.G. Jang,Y. S. Jo, S. J.Lee,N.Kim, and G. S. R. Lee, "Perinatal outcomes and maternal clinical characteristics in IUGR with absent or reversed end-diastolic flow velocity in the umbilical artery," *Archives of Gynecology and Obstetrics*. In press.
10) P. Cox and T.Marton, "Pathological assessment of intrauterine growth restriction," *Best Practice and Research: Clinical Obstetrics and Gynaecology*, vol. 23, no. 6, pp. 751–764, 2009.
11) Zubair DS Comparison of outcome in IUGR and Normal Pregnancies- A retrospective study, April 2016/ Vol 4/Issue 4
12) Monica G. Hasmasanu Neonatal short-term outcomes in infants with intrauterine growth restriction Saudi Med J 2015; Vol. 36 (8) www.smj.org.sa.
13) Mandruzzato G, Antsaklis A, Botet F, et al. Intrauterine restriction (IUGR). J Perinat Med 2008;36(4):277–281
14) Miller J, Turan S, Baschat AA. Fetal growth restriction. Semin Perinatol. 2008;32(4):274–80.
15) Wollmann HA (1998) Intrauterine growth restriction: definition and etiology. Horm Res 1998; 49 Suppl 2:1