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Immediate Outcome of Intrauterine Growth Restricted Infants

Md. Tariqul Islam[1], A.N.M. Nurul Haque Bhuiyan[2], Md. Shameem[3], Shamima Akter Sumi[4] , Roushan Jahan[5], Mohammad Majharul Islam[6], Lutfor Rahman[7]

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Key words:
Intrauterine growth Restriction, Immediate outcome

Abstract:

Background: *Intrauterine growth restriction (IUGR) is one of the major public health issues in developing countries like Bangladesh. IUGR has got significant importance due to its approach towards post neonatal, infant and childhood mortality and morbidity.*

Objective: *To identify immediate outcome of IUGR infants.*

Methods: *This case control study was conducted in department of Neonatology at BSMMU, Dhaka from August 2015 to July 2016, where 98 newborns in the NICU during study period were the study population. All the IUGR babies were labeled as case (Group- A), n=49 and the babies of the same gestational age were labeled as control (Group-B), n=49. The outcome was observed by the caution and careful NICU follow up of the baby. After collection, data were entered into a personal computer and were edited, analyzed, plotted in graphs and tables. Data were analyzed by chi square test, Mann Whitney U tests, using the statistical package for social sciences (SPSS) version 20. P values less than 0.05 (95% CI) were considered statistically significant.*

Result: *During the study in case group, hypoglycemia (p=0.007) & hyperbilirubinemia (P=<0.001) were statistically significant complication. Length of hospital stay was more (P=0.001) in IUGR group which was also significant. Death was more in IUGR than AGA group.*

Conclusion*: From our result, we can conclude that Hypoglycemia and hyperbilirubinemia were significant complication of IUGR babies. IUGR babies had longer hospital stay than AGA babies. Death were more in IUGR babies but was not statistically significant.*

Introduction

Intrauterine growth restriction (IUGR) is one of the major public health issues in developing countries like Bangladesh. It may be defined as the rate of fetal growth that is subnormal form the perspective of the growth potential of a specific infant according to race and gender.[1] Some authors defined it as the weight of the fetus below the 10th percentile of appropriate gestational time and gender.[2] IUGR has got significant importance due to its approach towards post neonatal, infant and childhood mortality and morbidity.[3]

1. Assistant Professor (Neonatology), Sir Salimullah Medical College, Mitford, Dhaka
2. Assistant Professor (Neonatology), Sir Salimullah Medical College, Mitford, Dhaka
3. Associate Professor (Neonatology), Sir Salimullah Medical College, Mitford, Dhaka
4. FCPS (Gynaecology & Obstretrics) Trainee, BSMMU, Dhaka
5. Junior Consultant (Pediatrics), General (Victoria) Hospital, Narayangonj
6. Assistant Professor (Pediatric Nephrology), Patuakhali Medical College & Hospital, Patuakhali
7. Assistant Professor (Pediatric Hematology & Oncology), Sir Salimullah Medical College, Mitford, Dhaka

Correspondence: Dr. Md.Tariqul Islam, Assistant Professor (Neonatology), Sir Salimullah Medical College, Mitford, Dhaka. Email: tareq.cmc@gmail.com, Mobile: 01717860574. ORCID : 0009-0004-4898-7219

IUGR incidence is singleton pregnancies is 3-7%.[4] Among them IUGR infants are frequently observed in Asian continent accounting for approximately 75% of all affected infants.[1] Bangladesh claimed the highest rank in the statistics of IUGR babies in Asian continent.[5]

This in born infantile clinical condition predisposes the child to metabolic disturbances during the neonatal period and to alterations in somatic and neurocognitive development during childhood.[6,7]

It is well known that IUGR infants experience higher rates of mortality and morbidity and survivors have higher rates of physical, neurological and mental impairment than normal weight babies.[8] Infants weighing less than 2.5kg at birth have a perinatal mortality rate 5-30 times higher than babies with birth weights on the 50th centile.[9]

The aim of this study is to identify the immediate outcome of IUGR infants.

Methodology

This case control study was conducted from August 2015 to July 2016 in the department of Neonatology, Bangabandhu Sheikh Mujib Medical University (BSMMU).

All 98 Newborn in the NICU during study period were the study population. All the IUGR babies were labeled as case (Group- A) n = 49 and the babies of the same gestational age were labeled as control (Group-B) n = 49. After taking consent from the parents/guardians, particulars of the neonates, antenatal, natal and postnatal history were recorded in a data collection form.

The infant's medical records were reviewed and recorded in data collection form. Here the mothers who's antenatal records properly maintained were included in the study. Information from ultrasonography report during pregnancy were collected.

Clinical examination was done to search for any congenital anomalies, neurologic and metabolic abnormalities. The newborn infants were weighed without clothing soon after birth on an electronic scale (infant-type) with a precision of 10 g .[Model 914,SALTER]. The OFC of the infant was taken by measuring tape & length was taken by infantometer, expressed as centimeter. Gestational age was calculated on the basis of ultrasonography findings and New Ballard scoring. Newborns were classified as appropriate for gestational age and IUGR when their birth weight was respectively between the 90th and 10th percentiles and less than the 10th percentile of the weight for gestational age from the Lubchenco chart. The infant of both group were under follow up to find out complication and outcome during hospital stay.

Data analysis:

After collection, data were entered into a personal computer and were edited, analyzed, plotted in graphs and tables. Data were analyzed by Chi square test, Mann Whitney U tests, using the statistical package for social sciences (SPSS) version 20. P values less than 0.05 (95% CI) were considered statistically significant.

Result

In Table-1 Shows distribution of complications of neonates where in case group, hypoglycemia present in 20.4% cases where in control it was 2.1%. Hyperbiliribinemia present in 87.6% cases and in control it was 55.1%.

In Table-II Shows distribution of the patients according to hospital stay where most of the patients in case group, stayed in hospital for ≥14 days, 59.2%.

In Figure-1 Shows mortality rate of the patients where in case group 16.3% were died , where as in control group it was 8.2%.

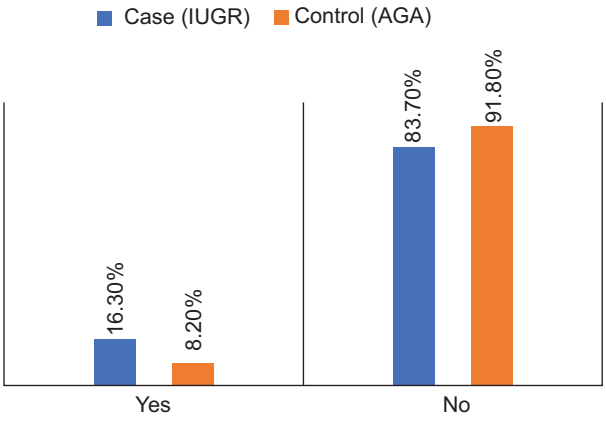

Figure-1: *Mortality rate of the patients*

Table-I: Distribution of Complications of neonates in both group (n=98; 49 in each group)

Complication	Case (IUGR) (n=49)	Control (AGA) (n=49)	P-value
Hypothermia			
Present	4 (8.2%)	2 (4.1%)	0.39^{NS}
Absent	45 (91.8%)	47 (95.9%)	
Hypoglycemia			
Present	10 (20.4%)	1 (2.1%)	**0.007^{S}**
Absent	39 (79.6%)	48 (97.9%)	
Perinatal Asphyxia			
Present	10 (20.4%)	8 (16.3%)	0.79^{NS}
Absent	39 (79.6%)	41 (83.7%)	
Sepsis			
Present	32 (65.3%)	22 (44.9%)	0.07^{NS}
Absent	17 (34.7%)	27 (55.1%)	
Polycythemia			
Present	3(6.1%)	1(2.1%)	0.31^{NS}
Absent	46(93.9%)	48(97.9%)	
Hyperbilirubinemia			
Present	43 (87.6%)	27 (55.1%)	**<0.001^{S}**
Absent	6 (12.4%)	22 (44.9%)	
Respiratory distress			
Present	24 (49%)	18 (36.7%)	0.23^{NS}
Absent	25 (51%)	31 (63.3%)	

Table-II: *Distribution of Hospital Stay (n=98, 49 in each group)*

Variables	Case (IUGR) (n=49)	Control (AGA) (n=49)	p value
Length of hospital stay			
24 - <72 hour	1 (2.1%)	6 (12.2%)	**0.001^{S}**
3 - <7 days	10 (20.4%)	17 (34.7%)	
7 - <14 days	9 (18.3%)	15 (30.6%)	
≥14 days	29 (59.2%)	11 (22.5%)	

Discussion

In this study, IUGR babies developed sepsis (65.3%), hypothermia (8.2%), hypoglycemia (20.4%), perinatal asphyxia (20.4%), polycythemia (6.1%), hyperbilirubinemia (87.6%) and respiratory distress (49%) during hospital stay. Among these hypoglycemia (P=0.007) & hyperbilirubinemia (P= <0.001) were statistically significant complication.

Nelson KB et al.[10] also found hypoglycemia and hyperbilirubinemia as statistically significant complications.

The overall outcome revealed that in IUGR group 8 (16.3%) babies died and 41(83.7%) were survived. Among them 6 babies died due to sepsis & congenital heart disease. Rest 2 babies died due to perinatal asphyxia. Though death was more in IUGR group but it was not found statistically significant but it was found significant by Peleg et al.[9] Length of hospital stay (p=0.001) were significantly more in IUGR group.

Conclusion

Hypoglycemia and hyperbilirubinemia were significant immediate complication of IUGR babies. IUGR babies had longer hospital stay than appropriate for gestational age (AGA) babies. Death were more in IUGR babies but was not statistically significant.

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