

Perinatal Mortality and Morbidity in Live Low Birth Weight Babies

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OBJECTIVE - To study the perinatal mortality and morbidity in live born low birth weight babies. **METHODS** - Live born singleton babies without gross congenital abnormality and weighting >1kg but < 2.5kg were enrolled for the study. Singleton babies with birth weight \geq 2.5kg formed the control group for the perinatal mortality. **RESULTS** - During the study period there were 5938 singleton deliveries of which 1681 were low birth weight (LBW) giving the "crude" incidence of LBW babies as 28.3% while the "true" incidence was 23.8% (excluding the constitutional small but healthy LBW babies - 15.78%), 20.16% were preterm, 59.48% were growth restricted (IUGR), and 4.58% were with coexistent prematurity and growth restriction. Amongst the booked mothers, 24.81% delivered LBW babies against 35.59% in the unbooked category ($p < 0.001$). 86.46% of the LBW babies had good Apgar scores. Birth asphyxia, was the commonest perinatal morbidity 15.9%, followed by polycythemia and hyperbilirubinemia. Hypoglycemia, hypothermia, hypocalcemia, RDS, and septicemia were less commonly observed. 13.5% of the LBW babies studied were lost against 2.09% in the control group. **CONCLUSION** - Antenatal care reduces the incidence of LBW babies. In the LBW group IUGR babies have a better chance of survival.

Key words - perinatal mortality, perinatal morbidity, live low birth weight

Introduction

The mature healthy newborn is equipped with adequate adaptive mechanisms to cope with the sudden change in its environment from an intrauterine existence to an extrauterine one. However, the low birth weight newborn comes into this world insufficiently equipped and has a lower chance of survival. This study was undertaken to find the perinatal mortality and morbidity in the live low birth weight (LBW) babies.

Material and Methods

This was a prospective study conducted from August 1996 to August 1998 and included booked, unbooked and referred cases. A booked case was taken as one with a minimum of three antenatal visits. All live singleton LBW babies < 2.5kg but >1.0kg born during this period were enrolled from the labour room. LBW babies with gross congenital malformations, twins and stillbirths were excluded. The babies born with birth weight \geq 2.5 kg during the same period formed the control group to compare the perinatal mortality. The enrolled babies were closely followed into the perinatal period extending to the 7th perinatal day.

Results

During the study period there were 5938 singleton

deliveries of which 1681 (28.3%) were LBW. Of 5938 cases, 4011 were booked while 1927 were un-booked (Table I). In the booked category, 995 (24.8%) were LBW, while in the unbooked 686 (35.5%) were LBW (Odds ratio 2.08, $p < 0.001$ thus statistically highly significant)

Table - I : Distribution According to Booked and Unbooked Status

Type	Booked		Unbooked		Total
	(N)	%	(N)	%	
LBW	995	24.81	686	35.59	1681
Birth Weight >2.5	3016	75.19	1241	64.41	4257
Total	4011	100	1927	100	5938
Odds Ratio	2.08		$p < 0.001$		

Table II shows that of the 1681 LBW babies, 1000 (59.48%) were IUGR, 339 (20.16%) were preterm, 265 (15.78%) were constitutionally small healthy babies while 77 (4.58%) had co-existent prematurity and growth restriction. Excluding the constitutionally small healthy babies the incidence of the true LBW babies was 23.8% (n=1416).

For better understanding of the problems the preterm, the growth restricted and those with co-existent prematurity and growth restriction were further excluded and we focused on the 1339 babies i.e the IUGR (n=1000) and the preterm (n=339) to study their perinatal mortality and morbidity, mode of delivery and Apgar scores.

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Table - II : Break up of 1681 LBW Neonates

Type	Number	%
Preterm	339	20.16
IUGR	1000	59.48
Preterm+IUGR	77	4.58
Constitutionally Small	265	15.78
Total	1681	100

True LBW (excluding) constitutionally small 23.8% (1416/5938).

Of 1339 babies 1059 (79.09%) were delivered vaginally spontaneously, 29 (2.16%) by forceps, 5 (0.37%) by vacuum extraction, and 246 (18.37%) by cesarean section. The indications for cesarean delivery were fetal distress (71 cases), placenta praevia (47 cases), previous uterine scar with unfavourable cervix (43 cases), severe PIH/eclampsia (24 cases) and miscellaneous conditions (61 cases).

Table III shows the Apgar scores. 86.41% (n=1157) babies had good Apgar scores (≥ 7) while 13.5% (n=182) had unsatisfactory Apgar scores. Of the latter 83 babies had very low Apgar scores viz. less than 4; while in 99 the Apgar score ranged between 4-6.

Table - III : Distribution of 1339 LBW Newborns by Apgar Scores

Apgar score	No. of babies	%
(≥ 7) Good	1157	86.41
(≤ 6) Unsatisfactory mild asphyxia (4-6) N=99 severe asphyxia (< 4) N = 83	182	13.59
Total	1339	100.00

It was interesting to note that 105 (57.69%) of the 182 babies with unsatisfactory Apgar scores had been delivered vaginally spontaneously while 64 (35.17%) were delivered by cesarean section, 9 (4.93%) by forceps and 4 (2.19%) by vacuum extraction.

Table IV shows the perinatal morbidity. It is seen that of the 1339 babies 507 (37.9%) were without perinatal complications while 832 (62.1%) had perinatal morbidity. Of the latter, 525 were IUGR and 307 were preterm babies. Thus the IUGR babies formed the greater component in the perinatal morbidity.

Of the 1000 IUGR babies 165 had birth asphyxia 118 had polycythemia and 87 had hyperbilirubinemia i.e. 12.32%, 8.81% and 6.49% of 1339 LBW babies respectively. Hypoglycemia, hypothermia,

hypocalcemia and septicemia were seen to a smaller extent.

In the 339 preterm babies RDS was the commonest perinatal morbidity seen in 55 babies followed by, hyperbilirubinemia in 49 and polycythemia in 47 i.e. 4.10%, 3.65% and 3.51% of 1339 LBW babies respectively. Hypothermia, hypocalcemia, septicemia were less commonly seen.

Table - IV : Perinatal Morbidity

Morbidity	Preterm		IUGR		IUGR+Preterm	
	No.	Percent of 1339 LBW Babies	No.	Percent of 1339 LBW Babies	No.	Percent of 1339 LBW Babies.
Birth Asphyxia	48	3.58	165	12.32	213	15.9
Polycythemia	47	3.51	118	8.81	165	12.32
Hyperbilirubinemia	49	3.65	87	6.49	136	10.15
Hypoglycemia	26	1.94	63	4.70	89	6.64
Hypothermia	34	2.53	45	3.36	79	5.89
Hypocalcemia	34	2.53	26	1.94	60	4.48
Septicemia	14	1.04	21	1.57	35	2.61
RDS	55	4.10	-	-	55	4.10
Total	307	22.93	525	39.21	832	62.14

Thus overall amongst the 1339 LBW babies studied, birth asphyxia was seen in 15.9%, polycythemia in 12.32%, hyperbilirubinemia in 10.15%, Hypoglycemia, hypothermia, hypocalcemia, RDS and septicemia were less common.

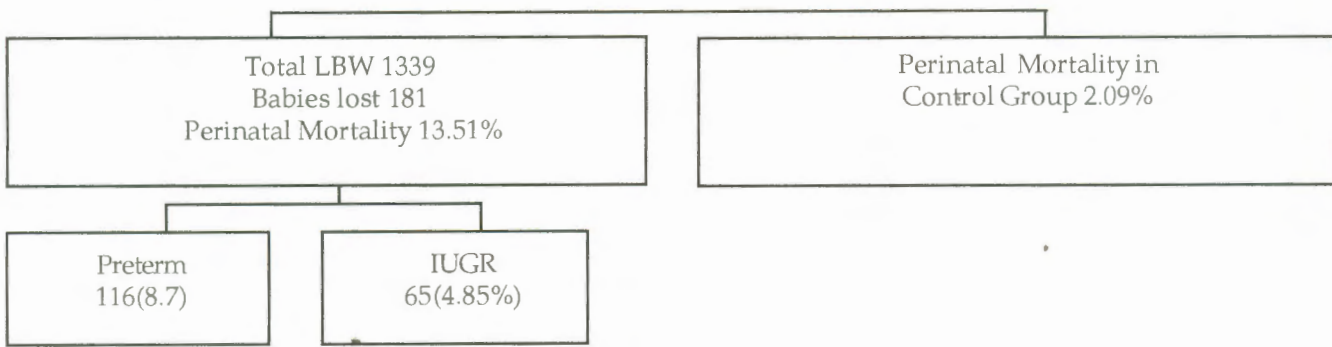
Table V shows that of the 1139 LBW babies 181 (13.5%) were lost against 2.09% in the control group. Of these 181 babies lost 116 (8.7%) were preterm while 65 (4.8%) were IUGR babies. Thus, although the perinatal morbidity was higher in the IUGR category, IUGR babies had better chances of surviving the perinatal period than the preterm babies.

Discussion

The present study shows that the incidence of the LBW babies stands at 28.3% (Table I). This is comparable to 30.3% reported by Deshmukh et al¹. However, excluding the constitutionally small but healthy newborns the incidence stood at 23.8%.

Of the 1339 live LBW babies 20.16% (n=339) studied were preterm and 59.48% (n=1000) were IUGR (Table III); the incidence of both categories were lower than that

Table - V : Perinatal Mortality in LBW Babies - Versus - Control Group



Odds Ratio-7.31

p<0.001 statistically significant

reported by Narang et al² i.e. 31% preterm and 68.39% IUGR. Our lower incidence could be explained by the fact this study focused on the live LBW babies excluding those with coexisting prematurity and IUGR, twins, and stillborns.

This study exemplifies the importance of antenatal care. Among the 4011 booked cases 24.81% [n=995] were LBW whereas amongst the unbooked cases 35.59% (n=686) were LBW (Table I). This was statistically highly significant (P<0.001). The study by Kamaladoss et al³ also similarly substantiated the benefit of antenatal care, wherein, they reported 23.3% LBW babies in those under antenatal care against 32% in those who had not received antenatal care. Although the Kleigman et al's⁴ study also reveals the beneficial effect of antenatal care, their incidence of LBW was 6% in those who received antenatal care against our 24.81%; and 21% amongst those who did not receive antenatal care against our 35.59%.

Our observations on the perinatal morbidity in this study showed birth asphyxia in 15.9% of the LBW babies (Table IV) followed by polycythemia 12.32%, and hyperbilirubinemia 10.15% as the three leading perinatal problem. Higher incidences are reported by Narang et al² in their study i.e. 21.36%, 24.5% and 21.36% respectively. Our lower figures could be because in this study LBW babies with co-existent prematurity and growth restriction, twins and babies <1kg were excluded. The commonest perinatal morbidity observed amongst the preterm babies was RDS [4.10%]. This in

close agreement to that reported by Sood et al⁵ [4.31%]

Studying the perinatal mortality in this series showed that 13.5% of the LBW babies (n=1339) were lost against 2.09% in the control group. Salam⁶ reported a loss of 22.3% which is higher than that in our study. This could be because of difference in study design, as this study took into consideration only singleton deliveries and also excluded those LBW babies with gross congenital malformations.

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