

Research Article**A Study of Short Term Outcome of Late Preterm Babies****Tamil Selvan*, Pawan Kumar S, Joy LPD Souza, Naresh, Narayana Swamy, Anjan**

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Abstract: Late preterms are babies born between 34 to <37 weeks of gestation and are associated with adverse short term and long term outcomes and an increased burden on health care. To evaluate the short term outcome of late preterm babies in comparison with term babies and to study the maternal risk factors involved in late preterm. Prospective study was conducted over a period of 3 years from Jan 2012 to Dec 2014. Cases included was late preterm babies and control was term babies. The Results are in this study shows, term was 91.5%(1869),preterm was 6.8%(140),post term was 1.6%(33) and late preterm was 3.9%(80).Among late preterm babies,the common maternal risk factors were PIH in 29.3%(17/80),PPROM in 17.2%(10/80) and antepartum hemorrhage in 13.7%(8/80) of the cases. Based on gestational age, majority of them were between 35-<36 weeks in 38.7 % (31/80). Based on birth weight, most of them were between 1.5-2.5 kg in 63.7 % (42/80). Among gender majority of them were males in 57.5 % (46/80) of the cases. Late preterm babies had more morbidities and mortality compared to term babies. The common morbidities observed were jaundice in 67.5 % (54/80), hypoglycemia in 27.5 % (22/80) and sepsis in 23.7 % (19/80).Overall late preterm mortality rate was 0.9% compared to term which was 0.48%. In Conclusion of this study shows both morbidities and mortality rate was high in late preterm babies compared to term babies with significant maternal risk factors. Adequate antenatal care and postnatal care to the high risk mothers and babies will improve the late preterm outcome.

Keywords: Term, Preterm, Late preterm, PPRM.

INTRODUCTION

In India alone, of the 25 million babies who are born every year, one million die, accounting for 25% of the mortality around the world. According to the National Family Health Survey (NFHS-3) report, the current neonatal mortality rate (NMR) in India of 39 per 1, 000 live births, accounts for nearly 77% of all the infant deaths (57/1000) and nearly half of the under-five child deaths (74/1000) [1]. The rate of the neonatal mortality varies widely among the different states of India, ranging from 11 per 1000 live births in Kerala to 48 per 1000 live births in Uttar Pradesh. The neonatal mortality rate in Karnataka is 38 per 1000 live births. Preterm birth is one of the major clinical problems in obstetrics and neonatology, as it is associated with increased perinatal mortality and morbidity [2]. Preterm birth rates continue to rise. Many reasons account for this increase, such as demographic changes, infertility treatments, increases in maternal age, more multiple gestations, increasing obesity rates, and maternal co morbid conditions. In a report which was published in The Lancet, the major direct causes of the deaths were preterm birth (27%), infection (26%), asphyxia (23%), congenital anomalies (7%), others (7%), tetanus (7%) and diarrhea (3%) [3]. The data from the tertiary care NICUs in the rural areas which primarily serve the very poor people is scarce. The American College of

Obstetricians and Gynecologists suggests that preterm birth rates have also increased because of a dramatic rise in late preterm births, defined as births between 34 weeks and 36-<37 weeks of gestation. Late preterm newborns are the fastest growing subset of neonates, accounting for approximately 74% of all preterm births and about 8% of total births [4]. This study aims to evaluate the short term outcome of late preterm babies in comparison with term babies and to study the maternal risk factors causing preterm births.

MATERIALS & METHODS

This hospital based prospective study was carried out in the Narayana superspeciality hospital, Bangalore, Karnataka, India, for a period of 3 years from January 2012 to December 2014. The hospital ethical committee approved the study protocol.

Inclusion criteria:

1. Cases; Late preterm babies (34-<37 weeks of gestation).
2. Control; Term babies (37-41 weeks of gestation).

Exclusion Criteria:

1. Post term babies (>41 weeks of gestation)
2. Preterm babies (<34 weeks of gestation)

3. Any baby who could not be successfully resuscitated in labor room.

The babies were either shifted to NICU or to mother's side based on the baby's condition and was followed up till discharge. All the neonates were enrolled on a structured protocol, which included the data on antenatal care, maternal risk factors, mode and place of delivery, birth weight, gestational age, gender, diagnosis, relevant investigations, duration of stay and outcome.

The data was recorded on proforma and analysed using descriptive statistics. Survival was defined as the discharge of a live infant from the hospital. The aim of the study was to evaluate the short term outcome of late preterm babies in comparison with term babies and to study the maternal risk factors causing preterm births.

RESULTS

Out of 2051 babies delivered, 9 babies discharged on request on day 1. Out of remaining 2042 babies, term were 1869 (91.5%), preterm were 140 (6.8%), post term were 33 (1.6%) and late preterm were 80 (3.9%). Among 140 preterms, 80 (57.1%) of them were late preterm and remaining 60 (42.9%) of them were less than 34 weeks of gestation.

Among the 80 late preterm babies studied, the results are as follows;

Table 1: Maternal Risk factors of late preterm babies

Maternal Risk factors	No. of patients	%
PIH	17	29.3
Eclampsia	3	5.1
Antepartum haemorrhage	8	13.7
Twin Gestation	2	3.4
MSAF	1	1.7
IDM	6	10.3
PPROM	10	17.2
Oligohydramnios	1	1.7

The common maternal risk factors were PIH in 29.3% (17/80) followed by PPROM in 17.2% (10/80) and antepartum hemorrhage in 13.7% (8/80) of the cases.

Table 2: Mode of delivery of late preterm babies

Mode of Delivery	No. of late preterm	%
Vaginal	42	52.5
LSCS	33	41.2
Instrumental	5	6.
Total	80	100.0

Most of the late preterm were born by vaginal delivery in 52.5% (42/80) of the cases.

Table 3: Gestational age of late preterm babies

Gestational age(weeks)	No. of late preterm	%
34-<35	28	35
35-<36	31	38.7
36-<37	21	26.3
Total	80	100.0

Based on gestational age majority of them were between 35-<36 weeks, [38.7% (31/80)], followed by 34-<35 weeks [35% (28/80)] of the cases.

Table 4: Birth weight of late preterm babies

Birth weight(kg)	No. of late preterm	%
1-<1.5	9	11.2
1.5-<2.5	42	63.7
2.5-4	29	36.2
Total	80	100.0

Based on birth weight, most of them were between 1.5-2.5 kg in 63.7% (42/80), followed by babies between 2.5-4 kg in 36.2% (29/80) of the cases.

Table 5: Gender distribution of late preterm babies

Gender	No. of late preterm	%
Male	46	57.5
Female	34	49.4
Total	80	100.0

Among gender majority of them were males in 57.5% (46/80) of the cases.

Table 6: Comparison late preterm VS term babies in NICU admission

NICU admission	Late Preterm	%	Term	%
No	22	17.2	1869	90.6
Yes	58	82.8	176	9.4

Compared to term babies, preterm babies required NICU admission in 82.8% (58/80) as against 9.4% (176/1869) in term babies.

Table7: Comparison of morbidity of late preterm with term babies

Neonatal morbidity & mortality	Late preterm N=80	Term babies N=1869
Jaundice	54(67.5%)	814(43.5%)
RDS	14(17.5%)	25(1.3%)
Surfactant therapy	2(2.5%)	0
sepsis	19(23.7%)	56(2.9%)
NEC	4(5%)	0
Hypoglycemia	22(27.5%)	30(1.6%)
Hypocalcaemia	8(10%)	20(1%)
convulsions	11(13.7%)	15(0.8%)
Feed intolerance	15(18.7%)	13(0.7%)
Apnoea	9(11.2%)	3(0.16)
PDA	5(6.2%)	21(1.1%)
Anaemia	11(13.7%)	16(0.8)
Polycythemia	5(6.2%)	11(0.5%)
Congenital pneumonia	1(1.2%)	12(0.6%)
Birth asphyxia	13(16.2)	21(1.1%)
CPAP	6(7.5%)	13(0.7%)
Ventilator	4(5%)	15(0.8%)
Hood Oxygen	10(12.5%)	35(1.8%)
TTNB	4(5%)	40(2.1%)

Among late preterm common morbidities observed were jaundice in 67.5%(54/80),hypoglycemia in 27.5%(22/80) and sepsis in 23.7%(19/80),where as common morbidities observed in term were jaundice in 43.5%(814/1869),sepsis in 2.9%(56/1869) and TTNB in 2.1%(40/1869) of the cases.

Table 8: Outcome based on gestational age of late preterm babies

Groups	Numbers	Survival	%
34-<35	28	27	96.4
35-<36	31	30	96.7
36-<37	21	21	100

Overall survival was 97.5% (78/80), where as survival of between 36-<37weeks was 100%(21/21) of the cases.

Table 9: Outcome based on birth weight of late preterm babies

Groups	Numbers	Survival	%
1-<1.5 kg	28	27	96.4
1.5-<2.5 kg	31	30	96.7
2.5-4 kg	21	21	100

Overall survival was 97.5 % (78/80), where as survival between 2.5-<4 kg was 100%.

Table 10: NICU outcome between late preterm and term babies

Outcome	Late	%	Term	%
Discharge	56	98.2	175	99.4
Death	2	1.7	1	0.56

Mortality observed in late preterm was 3.4 % (2/58) compared to 0.56 % (1/176) in term babies. Late preterm mortality rate was 0.9% compared to term mortality rate of 0.48%.

Table 11: Primary cause of death

Primary cause of death	Late preterm	Term
Birth asphyxia	1	0
Pulmonary Haemorrhage	1	0
Persistent Pulmonary hypertension	0	1
Total	2	1

The primary cause of death in late preterm was pulmonary haemorrhage and birth asphyxia and in term babies was PPHN.

DISCUSSION

Late preterm's are at higher risk for neonatal morbidities and mortality contrary to the belief that they are nearly mature. The aim of the study was to evaluate short term outcome of late preterm's as compared with term gestation and to study the maternal risk factor associated with late preterm births. This is a prospective case control study done over a period of 3 years.

This study shows, term births were 91.5%, preterm births were 6.8%, post term births were 1.6% and late preterm births were 3.9 % of the babies showing increase in proportion of late preterm similar to study in USA where the proportion of late preterm babies has increased from 6.2 % in 1995 to 7.5 % in 2008 [9]. These changes are due to obstetric interventions.

Among the preterms, 57.1% were late preterm and remaining 42.9% were less than 34 weeks which is close to the study in USA in 2005, where late preterm babies constituted 70 % of premature births and 30 % less than 34 weeks⁵. With reference to maternal risk factors, commonest risk factor was PIH in 29.3% followed by preterm premature rupture of membranes in 17.2% and APH in 13.7%, similar to the studies by various authors [6, 7, 8]. With reference to the gender, males were more common (57.5%). A similar pattern was seen by Nath Roy *et al.*; [9], which may be related to the preference for the male child in the society and the biological vulnerability of the males to infection. With reference to the neonatal morbidities and NICU admission, the late preterm babies were at increased risk.

This study shows neonatal hyper bilirubinemia was the major morbidity in 67.5% compared to term babies in 43.5% & similar pattern was seen in study by Wang *et al* because of developmental immaturity in the liver and feeding difficulties. RDS was seen in 17.5% in late preterm compared to 1.3% in term babies and similar pattern was seen by a study in 19 US hospitals which was 10.5% in late preterms compared with 1.13% in term infants [10]. Respiratory issues are related to delayed transition to air breathing, delayed fluid clearance and surfactant deficiency. Further this study shows hypoglycaemia in 27.5% compared to 1.6% in term and sepsis was seen in 23.7% of the late preterm compared to 2.9% in term babies. These problems and their clinical implications have been extensively reviewed recently [11, 12].

With reference to the survival, survival was 97.5% compared to term babies with 99.6% and late preterm mortality rate was 0.9% compared to term which was 0.48%. And similar pattern was seen by Zullini *et al.*; [13] and there is a great variation in preterm mortality statistics between NICUs from different parts of the world. This variation probably reflects the difference in the attending population,

antenatal care, admission criteria, specific exclusion & inclusion criteria and level of neonatal care.

On analysis of the primary cause of death, in this study 2 babies, expired due to pulmonary haemorrhage and birth asphyxia in late preterm and only one death occurred in term babies due to persistent pulmonary hypertension, as opposed to birth asphyxia being the leading cause of death in the national perinatal database (28.8%). This may be due fewer number deaths noted in this study.

Further reports from USA states that the cost in treatment of late preterm neonates was three times greater [14]. The present study supports the above findings that late preterm newborns are a significantly vulnerable population involving both morbidity and mortality.

To conclude this study shows both morbidities and mortality rate was high in late preterm babies compared to term babies with significant maternal risk factors. Adequate antenatal care and postnatal care to the high risk mother's babies will improve the late preterm outcome.

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