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Original Research Article

A study of short term outcome of late preterm babies

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ABSTRACT

Background: Late preterm babies born between 34 to <37 weeks of gestation are associated with adverse short term and long term outcomes and an increased burden on health care. Aim was to study the short term outcome of late preterm babies in comparison with term babies and to study the maternal risk factors involved in late preterm.
Methods: Prospective and descriptive study was conducted on the late preterm babies born at SIMS & RC over a period of 15 months from October 2015 to December 2016. Cases included were late preterm newborns and control was term newborns.
Results: Among late preterm babies, the common maternal risk factors observed was PIH in 35.3% (40/113), antepartum haemorrhage in 20.3% (23/113) and PPROM in 19.4% (22/113) of the cases. Based on gestational age, majority of them were between 35≤36 weeks in 38.9% (44/113). Based on birth weight, most of them were between 1.5-2.5 kg in 85.8% (97/113). Among gender majority of them were males in 56.6% (64/113) of the cases. Late preterm babies had more morbidities and mortality compared to term babies. The common morbidities observed were jaundice in 63.7% (72/113), feed intolerance in 28.3% (32/113), hypoglycemia in 27.4% (31/113) and sepsis in 22.1% (25/113) of the cases when compared to term babies jaundice were noted in 62% (1228/1978), sepsis in 5.7% (113/1978), hypoglycaemia in 3.4% (68/1978), respiratory distress in 3.1% (63/1978) of the cases respectively. The late preterm mortality was 1.7% (2/113) compared term mortality of 0.45% (9/1978). Overall late preterm mortality rate was 0.86% (2/2311) compared to term which was 3.89%(9/2311) of the total live births.
Conclusions: This study shows morbidity and mortality was high in late preterm babies compared to term babies with significant maternal risk factors.

Keywords: Late preterm, Preterm, PPROM, Term

INTRODUCTION

An estimated 5.9 million children under 5 years of age died in 2015, with a global under-five mortality rate of 42.5 per 1000 live births. Of those deaths, 45% were newborns, with a neonatal mortality rate of 19 per 1000 live births. Levels of child mortality are highest in sub-Saharan Africa, where 1 child in 12 dies before their fifth birthday, followed by South Asia where 1 in 19 dies before age five. The major causes of neonatal mortality in 2015 were prematurity, birth-related complications (birth asphyxia) and neonatal sepsis.[1] 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-4) report, the current neonatal mortality rate (NMR) in India of 27.7 per 1,000 live births.[2] The rate of the neonatal mortality varies widely among the different states of India, ranging from 10 per 1000 live births in Andaman and Nicobar to 51 per 1000 live births in Madhya Pradesh. The neonatal mortality rate in Karnataka is 28 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.[3] Preterm birth rates continue to rise due to demographic changes, infertility treatments, increases in maternal age, multiple gestations, increasing obesity rates, and maternal comorbid conditions. In a report 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%)[4]. The data from the tertiary care NICU 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.[5] Reducing newborn mortality will require better prevention and management of preterm births, inpatient supportive care of ill and small newborn babies, the management of severe infections and the promotion of kangaroo mother care. 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.

METHODS

Prospective and descriptive study was conducted on the late preterm babies born at SIMS and RC over a period of 15 months from October 2015 to December 2016.

This study was undertaken following approval from hospital ethical committee.

Inclusion criteria

- Cases: Late pretem babies (34-<37 weeks of gestation).
- Control: Term babies (37-41 weeks of gestation).

Exclusion criteria

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

The neonates were either shifted to NICU or to mother's side based on the baby's general condition and was followed up till discharge.

All the babies were enrolled on a structured protocol, which included the maternal risk factors, antenatal care, mode and place of delivery, gestational age, birth weight, gender, diagnosis, relevant investigations, duration of stay and the final outcome. The data was recorded on proforma and analysed using descriptive statistics.

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 2192 babies delivered, term were 1978 (90.23%), preterm were 200 (9.1%), post term were 14 (0.6%). Among 200 preterms, 113 (56.5%) of them were late preterm and remaining 87 (43.5%) of them were less than 34 weeks of gestation. Among the 113 late preterm babies studied.

Table 1: Maternal risk factors of late preterm babies.

Maternal risk factors	No. of patients	%
PIH	40	35.3
Eclampsia	8	7.07
Antepartum haemorrhage	23	20.3
Twin Gestation	2	1.7
MSAF	1	0.8
IDM	13	11.5
PPROM	22	19.4
Oligohydramnios	4	3.5

The common maternal risk factors were PIH in 35.3% (40/113) followed by antepartum haemorrhage in 20.3% (23/113) and PPROM in 19.4% (22/113) of the cases.

Table 2: Mode of delivery of late preterm babies.

Mode of delivery	No. of late preterm	%
Vaginal	69	61.06
LSCS	38	33.6
Instrumental	6	5.3
Total	113	100.0

Most of the late preterm were born by vaginal delivery in 61.06% (69/113) of the cases.

Table 3: Gestational age of late preterm babies.

Gestational age (weeks)	No. of late preterm	%
34-<35	39	34.5
35-<36	44	38.9
36-<37	30	26.5
Total	113	100.0

Based on gestational age majority of them were between 35≤ 36 weeks (38.9% (44/113)), followed by 34≤35 weeks (34.5% (39/113)) of the cases.

Based on birth weight, most of them were between 1.5-2.5 kg in 85.8% (97/113), followed by babies between 2.5-4 kg in 7.9% (9/113) of the cases.

Table 4: Birth weight of late preterm babies.

Birth weight (kg)	No. of late preterm	%
1-<1.5	7	6.1
1.5-<2.5	97	85.8
2.5-4	9	7.9
Total	113	100.0

Table 5: Gender distribution of late preterm babies.

Gender	No. of late preterm	%
Male	64	56.6
Female	49	43.3
Total	113	100.0

Among gender majority of them were males in 56.6% (64/113) of the cases.

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

NICU admission	Late preterm	%	Term	%
No	10	8.8	1665	84.1
Yes	103	91.1	313	15.9

Compared to term babies, preterm babies required NICU admission in 91.1% (103/113) as against 15.9% (313/1978) in term babies.

Table7: Comparison of morbidity of late preterm with term babies.

Neonatal morbidity and mortality	l.ate preterm N=113	Term babies N=1978
Jaundice	72(63.7)	1228(62%)
Respiratory distress	22(19.4%)	63(3.1%)
Surfactant therapy	3(2.6%)	1(0.05%)
Sepsis	25(22.1%)	113 (5.7%)
NEC	4(3.5%)	0
Hypoglycemia	31(27.4%)	68(3.4%)
Hypocalcaemia	18(15.9%)	47 (2.3%)
Convulsions	15(13.2%)	53(2.6%)
Feed intolerance	32(28.3%)	23(1.1%)
Apnoea	8(7%)	4(0.2%)
PDA	8(7.07%)	54(2.7%)
Anaemia	15(13.2%)	53(2.3%)
Polycythemia	9(7.9%)	31(1.5%)
Congenital pneumonia	4(3.5%)	26(1.3%)
Birth ashphyxia	24(21.2%)	68(3.4%)
CPAP	11(9.7%)	23(1.1%)
Ventillator	6(5.3%)	22(1.1%)
Hood Oxygen	23(20%)	134(6.7%)
TTNB	1(0.8%)	51(2.5%)

Among late preterm common morbidities observed were jaundice in 63.7% (72/113), feed intolerance in 28.3% (32/113), hypoglycemia in 27.4% (31/113) and sepsis in 22.7% (25/311) which were higher than term babies.

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

Groups	Numbers	Survival	%
34-<35	39	38	97.4
35-<36	44	43	97.7
36-<37	30	30	100
>37 weeks	113	111	98.2

Overall survival rate was 98.2%(111/113).

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

Groups	Numbers	Survival	%
1-<1.5 kg	7	6	85.7
1.5-<2.5 kg	97	96	98.9
2.5-4 kg	9	9	100
>4 kg	113	111	98.2%

Overall survival was 98.2% (111/113).

Table 10: Outcome between late preterm and term babies.

Outcome	Late preterm	%	Term	%
Death	2	1.7%	9	0.45%
Survival	111	98.2%	1969	99.54%
Total	113	100%	1978	100%

Mortality observed in late preterm was 1.7% (2/113) compared to 0.45% (9/1978) in term babies.

Table 11: Primary cause of death.

Primary cause of death	Late preterm	Term
Birth ashphyxia	1	6
sepsis	1	2
MAS	0	1
Total	2	9

The Major cause of death in late preterm was birth ashphyxia 50% (1/2) and sepsis 50% (1/2) and in term babies was birth ashphyxia 66% (6/9).

DISCUSSION

Late preterms 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 preterms as compared with term babies

and to study the maternal risk factor associated with late preterm births.

This is a prospective and descriptive case control study done over a period of 15 months at general hospital, SIMS&RC, Bangalore, India.

This study shows, term babies were 90.23% (1978/2192), preterm babies were 9.1% (200/2192), post term births were 0.6% (14/2192).

Among the preterms,56.5%(113/200) were late preterm and remaining 43.4%(87/200) were less than 34 weeks compared to the study in USA in 2005,where late preterm babies constituted 70 % of premature births and 30 % less than 34 weeks.[6]

With reference to maternal risk factors, the common maternal risk factors observed was PIH in 35.3% (40/113), antepartum haemorrhage in 20.3% (23/113) and PPROM in 19.4%(22/113) of the cases,similar to the studies by various authors.[7-9]

Among gender majority of them were males in 56.6% (64/113) of the cases, similar pattern was seen by Nath Roy et al, which may be related to the preference for the male child in the society.[10] With reference to the neonatal morbidities and NICU admission, the late preterm babies were at increased risk.

This study shows neonatal hyperbilirubinemia was the major morbitity in 63.7% (72/113) compared to term babies in 62% (1228/1978) and similar pattern was seen in study by Wang et al because of developmental immaturity in the liver and feeding difficulties. Feed intolerance was seen in 28.3% (32/113) compared to term 1.1% (23/1978), hypoglycaemia in 27.4% (31/113) compared to 3.4% (6/1978) in term and sepsis was seen in 22.1% (25/113) of the late preterm compared to 5.7% (113/1978) in term babies. Respiratory distress was seen in 19.4% (22/113) in late preterm compared to 3.1% (113/1978) 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.[11] Respiratory distress was related to delayed transition to air breathing, delayed fluid clearance and surfactant deficiency. These problems and their clinical implications have been extensively reviewed recently.[12,13]

With reference to the survival, survival was 98.05% (111/113) compared to term babies with 99.6% (1969/1978) and late preterm mortality was 1.7% (2/113) compared to term which was 0.45% (9/1978) and similar pattern was seen by Zullini et al and there is a great variation in preterm mortality statistics between NICU from different parts of the world.[14] This variation probably reflects the difference in the attending population, antenatal care, admission criteria, specific exclusion and inclusion criteria and level of neonatal care.

The primary causes of death were due to sepsis 50% (1/2) and birth asphyxia 50% (1/2) in late preterms and in term babies major cause was birth asphyxia 66.6% (6/1978) similar to the causes of death in the WHO, World health statistics 2016.

Further reports from USA states that the cost in treatment of late preterm neonates was three times greater.[15] Overall late preterm mortality rate was 0.86% (2/2311) compared to term which was 3.89% (9/2311) of the total live births.

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 and postnatal care are needed to improve the late preterm outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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