

COMPARISON OF MORBIDITIES IN LATE PRETERM AND TERM NEONATES: A STUDY CONDUCTED IN A TERTIARY CARE HOSPITAL IN DELHI**Dr. Mayank Jain^{*1}, Dr. Poonam Sidana², Dr. Shailabh Gupta¹, Dr. Arvind Kant Manipal¹, Dr. A. P. Mehta³ and Anubhav Singhal⁴**¹Fellow, Department of Neonatology, Max Hospital, Shalimar Bagh, Delhi.²Head and Consultant, Department of Neonatology, Max Hospital, Shalimar Bagh, Delhi.³Consultant, Department of Neonatology, Max Hospital, Shalimar Bagh, Delhi.⁴Data Analyst, Ghaziabad.***Corresponding Author: Dr. Mayank Jain**

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ABSTRACT

This is a retrospective study to evaluate clinical outcome of late preterm (LPT) infants (34 to 36 weeks at birth) in comparison to term babies in a tertiary care hospital in Delhi from January 2019 to October 2019. Total of 863 babies were born in this period. Out of these, 650 were term and 205 were preterm babies. Out of these preterm babies, 158 babies were born as late preterm. Majority late preterm babies were admitted in NICU for complications like Respiratory distress syndrome (RDS), Sepsis, Transient tachypnea of newborn (TTNB), Neonatal jaundice (NNH), Feeding issue, Hypoglycemia. Morbidities were compared between term and late preterm (LPT) babies in this study of sick neonates. In our study we conclude that late preterm is associated with significant morbidity compared to term babies and need more supportive and supervised care.

KEYWORDS: Late preterm, Respiratory distress syndrome, Sepsis, Transient tachypnea of newborn, Neonatal jaundice.**INTRODUCTION**

Late preterm infants are the newborns with gestational age of 34 week 0 day to 36 weeks 6 days at birth.^{[1][2]} Preterm birth is considered to be a major cause of increased neonatal morbidity and mortality. Higher risk of morbidity and mortality for preterm infants less than 34 weeks of gestational age is well accepted. However preterm infants of more than 34 weeks gestational age are often treated as equivalent to early term infants. In fact, they are more likely to develop complications like respiratory distress, sepsis, jaundice, feeding issues, hypoglycemia as compared to term babies.^[3] These infants often require respiratory support and longer duration of hospital stay. Study of risk factors in late preterm infants may help in improving the treatment approach, reduce morbidity and mortality, duration of hospital stay and overall improved outcome.

MATERIAL AND METHODS

We conducted a retrospective study from January 2019 to October 2019 in a tertiary care hospital's neonatal intensive care unit (NICU) over a period of 8 months.

Inclusion criteria

We included all the babies admitted to NICU, both inborn and outborn babies.

Case: Late preterm babies admitted to NICU between 34 to <37 weeks

Control: Term babies admitted to NICU between 37 to 41 weeks.

Exclusion criteria

Post term babies >41 weeks of gestation

Preterm babies <34 weeks of gestation

A total 863 babies were delivered. Out of these, 650 were term and 205 were preterm. Out of these 205 preterm, 158(77%) were late preterms. 151 out of total 650 (23%) term and 93 out of 158 (59%) late preterm admitted to NICU.

Beside this we also had active admissions for outborn babies. 31 term babies and 20 late preterm babies who were born outside and admitted to NICU during this study period, were also included in the study.

Clinical complications seen in 113 late preterm were compared to 182 term babies admitted in NICU. Morbidities studied were RDS, TTNB, pneumonia, sepsis, feeding problems, hypoglycemia and jaundice. Newborns requiring ventilatory support were also studied. Chi square test was used to compare two groups.

p value less than 0.05 was considered statistically significant.

We also had free beds for lower socioeconomic strata. So study population includes babies from all socioeconomic groups.

RESULTS

We observed that during the study period from January 2019 to October 2019, a total 182 term and 113 late preterm babies admitted to NICU. This study population includes both inborn and outborn babies admitted to NICU of our hospital during study period.

Respiratory distress syndrome (RDS) developed in 15 late preterm (LPT) and 2 term (T) newborns (13.2 vs 1.1%). Transient tachypnea of new born (TTNB) developed in 22 LPT and 59 term babies (19.4 vs 32.4%). Pneumonia developed in 2 late preterm and 9

term babies (1.7% vs 4.9%). Sepsis was seen in 7 late preterm and 15 term babies (6.1% vs 8.2%). 43 late preterm and 68 term babies required phototherapy (NNH) (38vs 37.3%). Feeding issue developed in 15 late preterm and 15 term babies (15.1 versus 8.2%). Hypoglycemia developed in 2 late preterm and 7 term babies (1.7% versus 3.8%). 6 late preterm were invasively ventilated compared to 3 term babies (5.3 versus 1.65%). 25 late preterm were non-invasively ventilated (NIV) compared to 26 term babies (22.2 versus 14.2%). 1 late preterm died compared to 2 term babies (Mortality) (0.8 versus 1.1%). Respiratory problems including RDS, TTNB, Pneumonia were found significantly increased in late preterm compared to term babies. Neonatal jaundice was found increased in late preterm compared to term. Sepsis, feeding problems, hypoglycemia, ventilatory requirement and mortality were not comparable.

MASTERCHART

	T(N=182)	PT(N=113)	p	T(N=182)	PT(N=113)
				182	113
RDS	2	15	0.001616	1.10%	13.27%
TTN	59	22	<0.0001	32.42%	19.47%
PNEMO	9	2	0.034808	4.95%	1.77%
SEPSIS	15	7	0.088082	8.24%	6.19%
NNH	68	43	0.017649	37.36%	38.05%
FEED	15	17	0.723674	8.24%	15.04%
HYPOGLY	7	2	0.095581	3.85%	1.77%
NIV	26	25	0.888638	14.29%	22.12%
INVASIVE	3	6	0.317311	1.65%	5.31%
MORTALITY	2	1	0.563703	1.10%	0.88%

DISCUSSION

In this study we have compared morbidities and mortality of late preterm with term neonates admitted in NICU. Preterm births constitute almost 12.8% of all births and 75% of these are late preterm births.^[4] The rate of late preterm births has increased almost 25% due to various contributing factors like increased maternal age, increased use of assisted reproductive technologies, consequent multiple births as well as increased rates of induction of labor and cesarean section are all considered to have contributed to this rate.^[5]

Some of the studies consider babies born between 34 -36 weeks should not be considered near-term but need more emphasis as they are physiologically immature due to metabolic, neurological and immunological features.^[6] Therefore careful monitoring is required in these neonates.

In our study 13% of all births were late preterm which constitutes 71% of all preterm. Celik et al concluded that 60% of all preterm births were LPT.^[7] In a study conducted in the United States, this rate was found to be 71.4%.^[8] A study conducted in 2008, rate of preterm births was found to be 10% and rate of late preterm births was found to be 64% of preterm births.^[9] The most

common complications seen in these neonates were neonatal hyperbilirubinemia (38%), TTNB (19.4%), RDS (13.2%), feeding issue (15%) and sepsis (6.9%). Mortality rate was (0.8%) in late preterm. In our study late preterm had 2.5 times higher morbidity as compared to term babies.

45% of term babies and 55% of late preterm babies were male. In a study conducted by Sahana et al, there was nearly equal sex distribution in two groups.^[10]

LPT were more likely to be delivered by caesarian section (LSCS) as compared to vaginal delivery (NVD) (76% versus 24%). Results were comparable to other studies.^{[11][12]}

Respiratory disorders were among the most common morbidities including (Transient tachypnea of the newborn, respiratory distress syndrome, pneumonia) accounting for 34% of late preterm neonates compared to 38% term neonates. Bulut et al, in their study classified babies similarly, accounting for 39.4% of late preterm admissions to the NICU, compared to 19.4% in term infants. Similar to our study, Transient tachypnea of the newborn was the most common diagnosis, followed by RDS and pneumonia.^[11] RDS and pneumonia is

significantly high in late preterms compared to term neonates. The higher incidence of TTNB in term infants is attributed to cesarean sections in these babies. Kalyoncu et al have found a significantly increased rate of respiratory problems among late preterm infants compared to term infants.^[13] In the study by Atasay et al respiratory distress was seen in 30% of late preterm infants.^[14] Late preterm infants are at the saccular-alveolar stage of lung development and underdevelopment of the lung surfactant system, as well as defective fetal alveolar fluid resorption and prelabour cesarean section may have contributed to increased rate of respiratory distress.^[15]

27% of late preterm versus 16% term required ventilatory support. Picone et al studied that 20% of LPT had respiratory complications, of which 27.6% required ventilatory support.^[16]

In our study rate of infection in late preterm was 6.1%. No significant correlation was found between the two groups. This could be because most of the preterm babies were delivered to mothers who received antibiotics prophylactically before delivery. Term babies had increased rate of infection because some of the babies who were delivered outside had sepsis and later shifted to our NICU. Atasay et al have reported infection rate of 15% in LPT.^[14]

In our study 38% late preterm developed NNH compared to 37.3% in term babies. NNH is significantly higher in LPT could be due to immaturity of liver.^[10] Results were comparable to other studies.^{[17][18]}

Hypoglycemia in late preterms had no significant correlation with that of term neonates. As we had explained above that, since rate of sepsis is higher in term infants in our study, therefore hypoglycemia was also seen more in term babies compared to preterm babies.

However feeding issues were reported in 15% LPT versus 8.2% in term babies. No association found.

Limitation

Results are from same institute and study period is short. Therefore should be confirmed by large cohort.

We did not follow up babies who were born in this hospital but later admitted to other hospital.

CONCLUSION

Result of our study indicate that LPT are prone to various short-term complications. LPT are more prone to develop respiratory complications and neonatal hyperbilirubinemia compared to term newborns. Therefore it is important for neonatologists to carefully monitor the LPT newborn and should be followed for longer duration in hospital.

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