

ORIGINAL RESEARCH

Assessment of early neonatal morbidity in late preterm

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ABSTRACT

Background: Compared with term infants, infants born late preterm are at increased risk for neonatal intensive care unit (NICU) admission. The present study was conducted to assess early neonatal morbidity in late preterm.

Materials & Methods: 54 all live inborn late preterm infants (34 0/7 to 36 6/7 weeks) and term infants (37 0/7 to 41 6/7 weeks) of both genders were included. Group I comprised of late pre- term and group II had term infants. In all infants, mode of delivery, APGAR score, hypoglycemia, morbidity, jaundice, weight loss >10% and sepsis etc. was recorded

Results: Group I had 17 boys and 10 girls and group II had 14 boys and 13 girls. Weight loss >10% was seen in 2 in group I and 1 in group II, sepsis was seen 1 in group I, respiratory morbidity 2 in group I and 1 in group II, hypoglycemia was seen in 2 in group I and 3 in group II and jaundice in 1 in group I and 0 in group II. The difference was significant ($P < 0.05$). The mean gestation weeks in group I was 35.0 weeks and in group II was 38.2 weeks, mode of delivery was vaginal in 22 in group I and 15 in group II, cesarean in 5 in group I and 12 in group II, APGAR score at 1 minute was 7.32 in group I and 7.95 in group II, at 5 minute was 8.41 in group I and 8.68 in group II. The difference was significant ($P < 0.05$).

Conclusion: Incidence of hypoglycemia, sepsis, respiratory morbidity and jaundice and weight loss >10% was more among late preterm infants.

Key words: sepsis, Preterm birth, morbidity

INTRODUCTION

Preterm birth is defined as delivery prior to 37 weeks of gestation.¹ Although infants born toward the end of this preterm period were traditionally assumed to be 'low risk,' recent research has shown increased risk for neonatal morbidity and mortality associated with late preterm birth (34–36 weeks) and early term birth (37–38 weeks).² However, it is unclear to what extent these risks are associated directly with being born early or with the reasons for preterm birth.³

Compared with term infants, infants born late preterm are at increased risk for neonatal intensive care unit (NICU) admission, hospital readmission and longer hospital stay.⁴ They are also at greater risk for respiratory morbidities, temperature instability, hypoglycaemia,

sepsis, hyperbilirubinaemia, necrotizing enterocolitis, neurological morbidities, and even neonatal and infant mortality.⁵

Understanding morbidity risk among late preterm infants is not only important for helping newborn care providers to anticipate and to manage potential morbidity during the birth hospitalization and earlier follow-up after hospital discharge, but also may possibly assist in guiding non-emergency obstetric intervention decisions.^{6,7} The present study was conducted to assess early neonatal morbidity in late preterm.

MATERIALS & METHODS

The present study comprised of 54 all live inborn late preterm infants (34 0/7 to 36 6/7 weeks) and term infants (37 0/7 to 41 6/7 weeks) of both genders. Parental consent was obtained for participation in the study.

Data such as age, gender etc. was recorded. Group I comprised of late pre- term and group II had term infants. In all infants, mode of delivery, APGAR score, hypoglycemia, morbidity, jaundice, weight loss >10% and sepsis etc. was recorded. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Group I (Late Preterm)	Group II (Term)
M:F	17:10	14:13

Table I shows that group I had 17 boys and 10 girls and group II had 14 boys and 13 girls.

Table II Comparison of morbidity

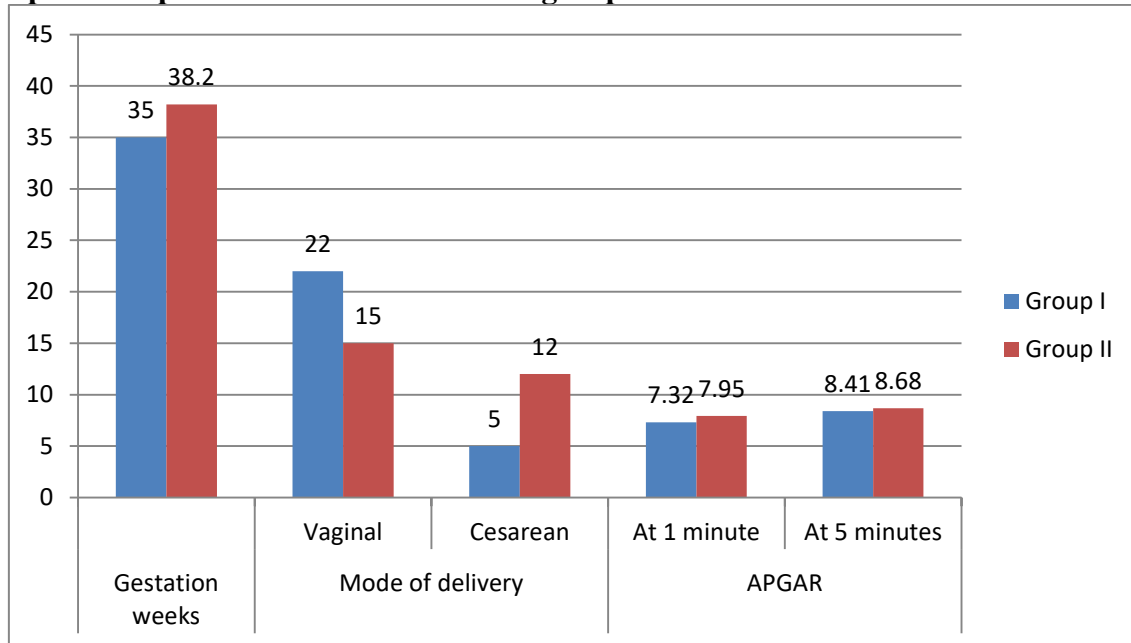
Morbidity	Group I	Group II	P value
Weight loss >10%	2	1	0.05
Sepsis	1	0	
Respiratory morbidity	2	1	
Hypoglycemia	2	3	
Jaundice	1	0	

Table II shows that weight loss >10% was seen in 2 in group I and 1 in group II, sepsis was seen 1 in group I, respiratory morbidity 2 in group I and 1 in group II, hypoglycemia was seen in 2 in group I and 3 in group II and jaundice in 1 in group I and 0 in group II. The difference was significant (P< 0.05).

Table III Comparison of variables in both groups

Parameters	Variables (mean)	Group I	Group II	P value
Gestation weeks		35.0	38.2	0.91
Mode of delivery	Vaginal	22	15	0.05
	Cesarean	5	12	
APGAR	At 1 minute	7.32	7.95	0.71
	At 5 minutes	8.41	8.68	0.94

Table III, graph I shows that mean gestation weeks in group I was 35.0 weeks and in group II was 38.2 weeks, mode of delivery was vaginal in 22 in group I and 15 in group II, cesarean in 5 in group I and 12 in group II, APGAR score at 1 minute was 7.32 in group I and 7.95 in group II, at 5 minute was 8.41 in group I and 8.68 in group II. The difference was significant (P< 0.05).

Graph I Comparison of variables in both groups

DISCUSSION

The morbidity and mortality pattern in late preterm infants is higher than term infants (gestational age ≥ 37 weeks).⁸ The main reason behind that is the relative physiologic and metabolic immaturity, though there is no significant difference in the weight or the size of the two groups.⁹ The late preterm infants are at twice to thrice increased risk of morbidities like hypoglycaemia, poor feeding, jaundice, infection and re-admission rates after initial hospital discharge. The infant mortality rate during first year of life for late-preterm infants is on an average four-fold higher than that for term infants.¹⁰ The present study was conducted to assess early neonatal morbidity in late preterm.

We found that group I had 17 boys and 10 girls and group II had 14 boys and 13 girls. Jaiswal et al¹¹ 363 late preterm infants and 2707 term infants were included in study. Two hundred fifty seven (70.8 %) of late preterm and 788 (29.1%) of term infants had at least one of the predefined neonatal conditions. Late preterm infants were at significantly higher risk for overall morbidity

due to any cause (P<0.001; adjusted Odds Ratio (OR): 5.5; 95% CI: 4.2-7.1), respiratory morbidity (P<0.001; adjusted OR: 7.5; 95% CI: 4.2-12.3), any ventilation (non invasive or invasive) (P=0.001; adjusted OR: 4.2; 95% CI: 2-8.9), jaundice (P<0.001; adjusted OR: 3.4; 95% CI: 2.7- 4.4), hypoglycemia (P<0.001; adjusted OR: 4.5; 95% CI: 2.6-7.7), and probable sepsis (P<0.001; adjusted OR: 3.2; 95% CI: 1.6-6.5). The incidence of morbidities increased from 23% at 40 weeks to 30%, 39.7%, 67.5%, 89% and 87.9% at 38, 37, 36, 35 and 34 weeks, respectively.

We found that weight loss >10% was seen in 2 in group I and 1 in group II, sepsis was seen 1 in group I, respiratory morbidity 2 in group I and 1 in group II, hypoglycemia was seen in 2 in group I and 3 in group II and jaundice in 1 in group I and 0 in group II. Shapiro et al¹² demonstrated that the risks of morbidities in LPIs are due to physiological immaturity. Their study determined that LPIs exposed to similar risk factors as term infants had worse outcomes, with the independent effect of late prematurity being a 7 times greater risk factor than any of the selected maternal medical conditions.

We found that mean gestation weeks in group I was 35.0 weeks and in group II was 38.2 weeks, mode of delivery was vaginal in 22 in group I and 15 in group II, cesarean in 5 in group I and 12 in group II, APGAR score at 1 minute was 7.32 in group I and 7.95 in group

II, at 5 minute was 8.41 in group I and 8.68 in group II. Yoder et al¹³ in their study included 363 late preterm infants and 2707 term infants. Two hundred fifty seven (70.8 %) of late preterm and 788 (29.1%) of term infants had at least one of the predefined neonatal conditions. Late preterm infants were at significantly higher risk for overall morbidity due to any cause.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the incidence of hypoglycemia, sepsis, respiratory morbidity and jaundice and weight loss >10% was more among late preterm infants.

REFERENCES

1. Brown HK, Speechley KN, Macnab J, Natale R, Campbell MK. Neonatal morbidity associated with late preterm and early term birth: the roles of gestational age and biological determinants of preterm birth. *Int J Epidemiol.* 2014 Jun;43(3):802–14
2. Luca RD, Boulvain M, Irion O, Berner M, Pfister RE. Incidence of early neonatal mortality and morbidity after late-preterm and term cesarean delivery. *Pediatrics.*2009;123:1064-71.
3. Mc Intire DD, Leveno KJ. Neonatal mortality and morbidity rates in late preterm births compared with births at term. *Obstet Gynecol.* 2008;111:35-41.
4. Young PC, Glasgow TS, Xi Li, Guest-Warnick G, Stoddard GJ. Mortality of late-preterm (near-term) newborns in Utah. *Pediatrics.* 2007;119:659-65.
5. Raju TN, Higgins RD, Stark AR, Leveno KJ. Optimizing care and outcome for late-preterm (near-term) gestations and for late-preterm infants: A summary of the workshop sponsored by the National Institutes of Health and Human Development. *Pediatrics.* 2006;118:1207-14.
6. Melamed N, Klinger G, Tenenbaum-Gavish K, Herscovici T, Linder N, Hod M, et al. Short term neonatal outcome in low risk, spontaneous, singleton, late preterm deliveries. *Obstet Gynecol.* 2009;114:253-60.
7. Nath Roy R, et al. The mortality pattern of the hospitalised children in a tertiary care hospital of Kolkata. *Indian Journal of Community Medicine,* 2008 Jul; 33(3):187-89.
8. Wang ML, Dorer DJ, Fleming MP, Catlin EA. Clinical outcomes of near-term infants. *Pediatrics.* 2004;114:372-6.
9. Khashu M, Narayanan M, Bhargava S, Osioovich H. Perinatal outcomes associated with preterm birth at 33 to 36 weeks' gestation: a population-based cohort study. *Pediatrics.* 2009;123: 109-13.
10. Mc Intire DD, Leveno KJ. Neonatal mortality and morbidity rates in late preterm births compared with births at term. *Obstet Gynecol.* 2008;111:35-41.
11. Jaiswal A, Murki S, Gaddam P, Reddy A. Early neonatal morbidities in late preterm infants. *Indian pediatrics.* 2011 Aug;48(8):607-11.
12. Shapiro-Mendoza CK, Tomashek KM, Kotelchuck M, Barfield W, Weiss J, Nannini A, et al. Effect of late-preterm birth and maternal medical conditions on newborn morbidity risk. *Pediatrics.*2008; 121:223-32.
13. Yoder BA, Gordon MC, Barth WH. Late-preterm birth: Does the changing obstetric paradigm alter the epidemiology of respiratory complications? *Obstet Gynecol.* 2008;111:814-22.