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Original Research Article

Neonatal morbidity pattern in early term births

Maya Menon, Sreejyothi G.*, Raveendranath K.

Department of Pediatrics, SUT Academy of Medical Sciences, Trivandrum, Kerala, India

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***Correspondence:**
Dr. Sreejyothi G.,
E-mail: drsreejo@gmail.com

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ABSTRACT

Background: Late preterm births are defined as birth between 34 and 36 completed weeks gestation and term births as born after 37 weeks of gestation. Maturation is a continuous process till term and the severity of adverse outcomes with birth increases with decreasing gestational age. Recent studies showed increased risk of morbidities for babies at 37 weeks than its term counterpart babies at 39 weeks. Considering the risk for adverse neonatal outcomes in early term births, various studies recommended that the label "term" be redefined as early term, full term and late term designations to more accurately acknowledge deliveries occurring at or beyond 37 weeks of gestation. This designation will help precise identification and targeting these early term babies for early intervention and for better neonatal outcomes.
Methods: This is a prospective study which included all term births delivered during the 12-month study between January 2017 and December 2017. Babies born between 37 and 38 6/7 weeks were designated as early term and those born after 39 weeks as full-term babies. Neonatal outcomes of these babies were recorded and monitored till discharge.
Results: There were 660 term live births during the study period. The incidence of early term births account for 19.7%, as compared with full term births representing 80.3 %. Compared with term babies, early term births were at risk for transitional problems such as respiratory distress (61.5% vs 38.5%), hypoglycemia (76.2% vs 23.8%), hyperbilirubinemia requiring phototherapy (53.7% vs 46.7%) and feeding problems (59.1% vs 40.9%).
Conclusions: Early term births are associated with increased risk of neonatal morbidities as compared with full term births. This indicates need for more attention towards preventing early term births.

Keywords: Early term babies, Neonatal morbidity, Term babies

INTRODUCTION

A term baby has been defined as one born after 37 weeks gestation and preterm baby, defined as one born on or before the end of 37 week of pregnancy. Although preterm babies are a category known for its high mortality and diverse morbidities, the overall incidence of prematurity related complications decreases significantly with increasing gestational age. However, more recent evidence indicates that, though the adverse neonatal outcome decreases with increasing gestational age, babies delivered at 37 and 38 weeks are at increased risk for morbidity as compared to babies delivered at 39 weeks of gestation.[1-4]

The increased risk of neonatal morbidity for babies born at 37 and 38 weeks compared to 39 weeks gestation led Fleischman et al to suggest adoption of an "Early term" delivery category.[5] Subsequently a work group which included ACOG convened in late 2012, which recommended that the label 'term' be replaced with designation early term (37 0/7 weeks of gestation through 38 6/7 weeks of gestation), full term (39 0/7 week of gestation through 40 6/7 weeks of gestation) late term (41 0/7 weeks of gestation) and post term (42 0/7 week of

gestation and beyond) to more accurately describe deliveries occurring at or beyond 37 weeks of gestations.[6] From the recent studies in the outcome for babies born early term, it is becoming clear that gestational age represents a continuum from the last to the most mature rather than a dichotomy of term and preterm.

As mentioned above, pretem and early term babies are physiologically and metabolically immature and are at increased risk of adverse neonatal outcomes compared with full term babies. Early term babies have a higher incidence of neonatal problems such as respiratory distress, hypoglycemia, temperature instability, neonatal jaundice, infection and feeding difficulties.[7]

The immature lung structure present before full term may be associated functionally with delayed intrapulmonary fluid absorption, surfactant insufficiency and inefficient gas exchange leading to transient tachypnea of newborn and respiratory distress syndrome.[8,9] Early term babies are generally considered to be low risk groups for immediate neurologic problems.

The frequency of GMH – IVH is very low in late preterm and early term babies as there is involution of germinal matrix by 34 weeks of gestation.[10,11] The most commonly seen clinical problem in early term babies is feeding and was the most common short-term morbidity.[11] Feeding issues of these babies are extension of maturational development of feeding ability of the moderately preterm baby.[12]

Early term babies are also prone for metabolic complications like hypoglycemia, hypothermia, and increased susceptibility to infection.[13] Late preterm and early term babies have decreased capacity to handle unconjugated bilirubin. They have decreased hepatic uptake, decreased uridinediphosphoglucoronate glucuronyl transferase activity (UGT) and increased enterohepatic circulation, delayed postnatal maturation of hepatic bilirubin uptake and conjugation. This hepatic immaturity is added by delayed lactogenesis seen in the mother of these babies.[14-16] All these factors leads to high chance of neonatal jaundice and is the most common cause of readmission in these babies.[17-19]

Many deliveries before 39 weeks gestation follow spontaneous onset of labour but others result from induction of labour or elective caesarean section that may or may not be medically indicated. As early term babies are more prone for neonatal morbidities it is better to discourage non-indicated delivery before 39 weeks of gestation.[20-22]

METHODS

This is a prospective study conducted in the department of Pediatrics and Neonatology of SUT Academy of Medical Sciences Trivandrum. This study was conducted for a period of one year from January 2017 to December 2017.

The details of all consecutive live term births during this period were collected and the babies were included in the study as per inclusion criteria.

Inclusion criteria

- Term babies with gestational age 37 weeks to 41 weeks with no major congenital anomalies were included in the study.

Exclusion criteria

- Preterm babies born prior to 37 weeks gestational age and babies with associated congenital anomalies were excluded from the study.

Newborns who satisfied the inclusion criteria were enrolled for the study. Maternal obstetric factors and demographic features of the newborn were recorded. Gestational age was collected from hospital records (gestational age was calculated from mothers last menstrual period and from ultrasound details).

Babies with gestational age 37 weeks + 0 day to 38 weeks + 6 days were designated as Early term births and babies with gestational age 39 week + 0 day to 41 week + 6 days were enrolled as full-term births. Neonatal outcomes of the babies like respiratory distress, hypoglycemia within 48 hours of life, hyperbilirubinemia requiring phototherapy, feeding difficulties, neonatal sepsis, prolonged hospital stay (requiring hospital stay for more than 7 days, excluding maternal causes) were recorded and followed till discharge.

Statistical analysis

Categorical variables are expressed as percent. Chi – square test was used to find association of outcome with selected variables. For all statistical interpretations, a $P<0.05$ was considered the threshold for statistical significance. Statistical analysis was performed with statistical software package SPSS, version 17.0.

RESULTS

During the study period, there were 660 term live births, of which 130 (19.7%) were early term and 530 (80.3%) were full term births (Figure 1). Among the term babies, we evaluated the various neonatal morbidities and compared the morbidity pattern between the early term and full-term births. Of the total term births, 15.8% had respiratory distress 6.4% had hypoglycemia, 6.7% babies had feeding problems, 28.3% babies needed phototherapy, 8% babies required prolonged hospital stay and 3.2% babies had sepsis (Figure 2).

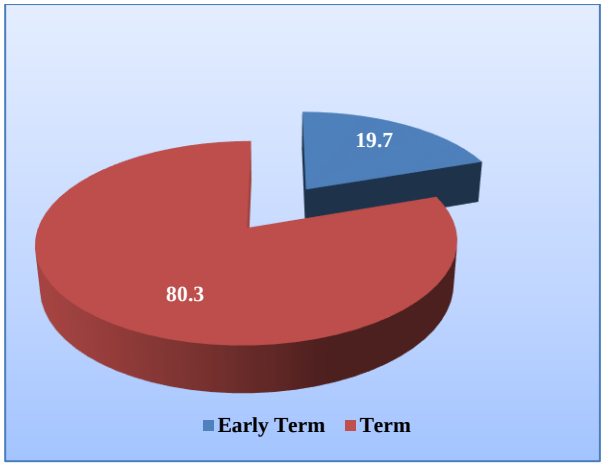

Figure 1: Prevalence of early term and full-term births.

Compared with term births, early term babies had significantly higher risk for the following: respiratory distress (61.5% vs 38.5%, OR 11.88), hypoglycemia (76.2% vs 23.8% OR 16.98) phototherapy (53.7% vs 46.3% OR 17.73) feeding problems (59.1% vs 40.9% OR 7.11). We could not find any increased risk for neonatal sepsis and prolonged hospital stay in early term babies as compared to full term babies (Table 1).

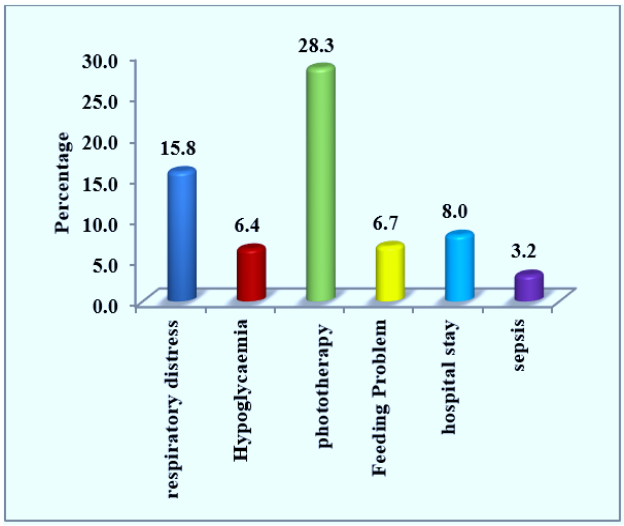

Figure 2: Percentage distribution of neonatal morbidities among term births.

Table 1: Comparison of neonatal morbidities among early term and full-term births.

Neonatal morbidities	Early term	Full term	χ^2	Odds (95 % CI) (OR)
Respiratory distress	64 (61.5)	40 (38.5)	136.64**	11.88 (7.42-19.03)
Hypoglycemia	32 (76.2)	10 (23.8)	90.5**	16.98 (8.08-35.67)
Phototherapy	101 (53.7)	87 (46.3)	192.42**	17.73 (11.05-28.43)
Feeding problem	26 (59.1)	18 (40.9)	46.25**	7.11 (3.76-13.44)
Hospital stay	25 (47.2)	28 (52.8)	27.5**	0.234 (0.131-0.418)
Sepsis	9 (42.9)	12 (57.1)	7.36**	0.311 (0.128-0.756)

**: Significant at 0.01 level

DISCUSSION

Most research on neonatal outcomes has centered on babies born as preterm (<32 weeks) and they are considered as high-risk group for mortality and serious morbidity. But increasing awareness of the clinical risk and morbidities of late preterm and early term babies, prompted further investigation and research studies among this particular group of babies.

Early epidemiological studies demonstrated increased risk for adverse neonatal outcomes in babies born at 37-38 weeks now defined as early term birth than babies born after 39 weeks of gestation. In present study, out of total 660 live birth 80.3% babies are full term and 19.7% are early term births. Our results showed that early term birth had higher incidence of respiratory distress. This is in concordance with the study done by Ghartey et al.[23] Ghartey et al in his study demonstrated 2-fold increased risk of respiratory morbidity in babies delivered at early term (37-38 weeks).

Recently, Bates et al also reported that early term babies had lung immaturity relative to an increase in the incidence of respiratory distress syndrome, irrespective of documented fetal lung maturity.[24] Present study also demonstrated an increased incidence of other neonatal morbidities like hypoglycemia, feeding problems, jaundice requiring phototherapy in early term birth. This is in concordance with the study done by Dilek Ulubas-Isik et al which showed similar increased adverse neonatal outcomes in early term births.[25]

CONCLUSION

Early term babies delivered prior to 39 weeks of gestation had increased neonatal morbidities when compared with full term babies. The result of this study emphasizes the

importance of discouraging non-indicated delivery before 39 weeks of gestation.

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