

The late preterm infant

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Abstract

Late preterm birth refers to birth at 34–36 weeks of gestation, which can occur for many different maternal and fetal reasons. Infants born late preterm represent almost three quarters of all preterm births, yet they have been studied much less than their more immature counterparts born at the limits of viability. Whilst problems of late preterm infants are generally fewer and milder than those of the most immature infants, nevertheless they are at increased risk of adverse neonatal outcomes. Mortality rates are higher than term infants and common morbidities in the neonatal period for late preterm infants include hypothermia, hypoglycaemia, difficulties in establishing oral feeding, jaundice and respiratory compromise. Long term health and neurodevelopmental problems, as well as educational difficulties are also known to occur, and effects of prematurity in this group may extend into adolescence and adulthood. Currently neonatal care for late preterm infants is delivered in a variety of settings and management varies between centres. This review aims to identify some of the key themes in the available evidence for late preterm babies and consider how this may impact upon health outcomes for these babies now and in future life.

Keywords late preterm; moderately preterm; neonate; outcomes; preterm

Introduction

The health outcome of the late preterm infant is an area of growing interest and research amongst neonatologists and paediatricians. In the last few years, it has become clear that gestational age at birth cannot be simply divided into categories of extreme preterm, preterm and term; there is variability in the pathologies affecting babies at each week of gestation, up to and including between 37 and 42 weeks' gestation. Gestational age is now viewed as a continuum and categorised into extremely preterm (<27 weeks' gestation), very preterm (<32 weeks' gestation), moderately preterm (32–33 weeks' gestation), late preterm (34–36 weeks' gestation), early term (37–38 weeks' gestation), full term (39–41 weeks' gestation) and post term (>42 weeks' gestation). Late preterm infants, defined as those born between 34+0 and 36+6 weeks of gestation are the focus of discussion for this review. Babies born late preterm make up 5–6% of all live births annually in the United Kingdom and more than 70% of all preterm births, and therefore their health care needs impact significantly upon paediatric healthcare service provision (Table 1).

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There has been a longstanding interest in those babies born at the lower extremes of gestational age (<27 weeks' gestation) but by comparison the late preterm group is relatively understudied as many of these babies will survive without significant disability and have outcomes within normal limits. Current neonatal research is building a body of evidence about this cohort of babies, with some risks identified for impaired educational, neurodevelopmental and respiratory outcomes which are consistent within the literature base. Indeed, the overall number of children with health problems is much larger for children born at moderate/late preterm or early term gestation as compared to term counterparts.

Previous studies have identified that late preterm delivery is associated with significantly increased mortality and morbidity rates compared with those observed among infants born 37–42 weeks' gestation. However, interpretation of study results may be confounded by differences in birth weight criteria used and the varied reasons triggering preterm delivery.

Background

Definition of 'late preterm' arose from a 'US National Institute of Child Health and Human Development workshop' in 2005, which changed the definition of this group of babies from 'near term' to late preterm in order to acknowledge the fact that more mature preterm infants experience increased morbidity and mortality that had been underestimated due to their more developed appearance and larger size.

The most common health problem in the late preterm group is respiratory morbidity, both in the neonatal period and in the longer term. Increased hospital admissions have been identified in the first 9 months of life with readmission rates in the first month following early neonatal discharge significantly more common in infants born at 35–37 weeks of gestation compared those born at 37 weeks or more. This has a considerable impact not only on health outcomes, but on quality of life for the child and family. Parents' assessments of child health correlate with these findings and this has been demonstrated in parental ratings of their children's health. The potential ongoing adverse effects of late preterm delivery are wide and varied, encompassing not only the child's physical health, but mental health as well as educational and social abilities. The long term impact of late preterm delivery, particularly regarding health and social outcomes in adolescence and adulthood, continues to be an area with limited evidence available, and should be an area for further exploration.

Reasons for late preterm delivery

Preterm labour is defined as contractions leading to cervical change prior to 37 weeks' gestation. Spontaneous preterm delivery is multi-factorial in its aetiology and is usually a result of infection, uterine over-distention (hence increased risk of preterm delivery in multiple pregnancy) or changes in the hypothalamic-pituitary-adrenal (HPA) axis.

Management of complications of pregnancy

There is considerable variability in practice of obstetricians internationally for women >34 weeks' gestation in preterm labour or without active labour but with prolonged preterm rupture of membranes (PPROM). Evidence from systematic reviews shows that,

Live births by gestational age, England 2014 (Source: Office for National statistics)

Weeks of gestation	Number of live births	Gestational age group (% of preterm births)	Total births by gestational age group	% of all live births	% of all preterm births
23	323	Very preterm	7499	1.1	15.2
24	404				
25	453				
26	592				
27	666				
28	910				
29	892				
30	1413	Moderately preterm	6190	1.0	12.6
31	1846				
32	2581				
33	3609	Late preterm	35533	5.4	72.2
34	6495				
35	9539				
36	19499				
37	44468	Early term	133183	20.3	
38	88715				
39	159499	Full term	455570	69.3	
40	175614				
41	120457				
≥42	19219	Post term	19219	2.9	
Total	657194				

Excludes births at <23 weeks of gestation and births where gestational age was not stated.

Table 1

with the administration of broad spectrum antibiotics to mothers with PPRM, rates of neonatal infection and chorioamnionitis are significantly decreased up to 37 weeks' gestation and this is now usual accepted practice. Early delivery in PPRM is not thought to confer benefit over expectant management in reducing rates of neonatal sepsis, perinatal mortality, intrauterine deaths or neonatal deaths. Pregnancy induced hypertension can result in preterm delivery, particularly if severe. However, if delivery is augmented at 34–36 weeks gestation for management of mild gestational hypertension, there is increased neonatal morbidity without maternal benefit. Oligohydramnios can be a cause for concern for obstetricians, but it is thought that isolated oligohydramnios (particularly identified later in pregnancy) is not related to adverse perinatal outcome. Pregnancy complications such as placenta praevia and accreta require regular monitoring in order to determine the optimal time for delivery. It is not known exactly what the optimal time of delivery for women with placenta praevia is, but it is thought to be appropriate to deliver women in the early term period. However, there is consensus to deliver women with placenta accreta at 34 weeks' gestation to optimise both maternal and neonatal outcomes.

Other maternal and fetal reasons

There are many other pregnancy related complications that might underpin late preterm delivery including maternal obesity, multiple pregnancy and intra-uterine growth restriction. Multiple births are more common in preterm populations as compared with term groups.

Impact of maternal choice

Patient participation in treatment options and shared decision making between patient and clinician is the gold standard of care where possible. When considering facilitating late preterm delivery of a pregnant woman, it is essential that the potential risks to the baby of early delivery are communicated and understood, where delivery is not inevitable.

It is clear that when considering late preterm infants as a subgroup of preterm infants, obstetric practices and maternal health issues will be significant contributing factors to neonatal outcomes. The risks attributable to prematurity associated with late preterm delivery must be balanced with maternal health concerns and risk of stillbirth and intra-uterine fetal death. Ongoing evaluation of obstetric practices may help decrease rates of prematurity and its associated health care burden. However, it is likely now that the majority of elective late preterm deliveries are unavoidable.

Mortality in late preterm infants

Studies have identified significantly increased risks in both morbidity and mortality for the neonatal and infant periods in babies born late preterm, as compared to term. Early and late neonatal mortality have been shown to be, respectively, six and three times higher and infant mortality three times higher than that of term born infants. These differences persist even when infants with congenital anomalies are excluded.

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