



ORIGINAL ARTICLE

Neonatal morbidity in early-term newborns^{☆,☆☆}



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KEYWORDS

Term babies;
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Neonatal morbidity;
Foetal lung maturity;
Neurodevelopment

Abstract

Introduction: In the last decades neonatal morbidity has increased significantly. The birth of children from 37 to 38 weeks of gestation, a period called early term, has significantly increased in the past twenty years or so, parallel to the increase in induced deliveries and the caesarean rate.

Patients and method: Retrospective cohorts' population study, which included those babies born between 37 and 41 weeks of gestation in the period 1992–2011 ($n = 35,539$). This population was divided into two cohorts, early-term newborn (RNTP) of 37–38 weeks ($n = 11,318$), and full-term newborn (RNTC), of 39–41 weeks of gestation ($n = 24,221$). The rates of caesarean section, neonatal unit admission, respiratory morbidity, apnea, need for assisted ventilation, hyperbilirubinemia requiring phototherapy, hypoglycemia, seizures, hypoxic-ischaemia encephalopathy, need for parenteral nutrition and early sepsis were all reviewed.

Results: There was a progressive increase in the number of caesarean sections throughout the period studied (from 30.9% to 40.3%). The caesarean section rate was higher in RNTP than in the RNTC (38.3% vs. 31.3%, $P < .0001$). On comparing the two groups, significant differences were found in: the rate of admission to neonatal unit, 9.1% vs. 3.5% ($P < .0001$); respiratory morbidity (hyaline membrane 0.14% vs. 0.007% [$P < .0001$]; transient tachypnea 1.71% vs. 0.45% [$P < .0001$]; mechanical ventilation 0.2% vs. 0.07% [$P < .009$]; continuous positive airway pressure 0.11% vs. 0.01% [$P < .0001$]); phototherapy 0.29% vs. 0.07% ($P < .0001$); hypoglycemia 0.54% vs. 0.11% ($P < .0001$), and parenteral nutrition 0.16% vs. 0.04% ($P < .0001$). There were no significant differences in the rate of early sepsis, pneumothorax, aspiration syndromes, seizures and hypoxic-ischaemic encephalopathy.

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PALABRAS CLAVE

Recién nacido a término;
 Recién nacido a término precoz;
 Cesárea electiva;
 Morbilidad neonatal;
 Madurez pulmonar fetal;
 Neurodesarrollo

Conclusions: In our environment there is a significant number of RNTP, which have a significantly higher morbidity than newborns RNTC registered. After individualising each case, it is essential not to end a pregnancy before 39 weeks of gestation, except for maternal, placental or foetal conditions indicating that continuing the pregnancy may increase the risk for the foetus and/or the mother.

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Morbilidad neonatal en los recién nacidos a término precoz**Resumen**

Introducción: En las últimas décadas ha aumentado de forma significativa el nacimiento de niños de 37 y 38 semanas de gestación, período denominado a término precoz, paralelamente al aumento de partos inducidos y el incremento en la tasa de cesáreas.

Pacientes y método: Estudio retrospectivo poblacional de cohortes, en el que se incluyó a los nacidos entre las 37 y 41 semanas de gestación en el período 1992-2011 ($n=35.539$). Esta población se dividió en 2 cohortes, los recién nacidos a término precoz (RNTP), de 37-38 semanas ($n=11.318$), y los recién nacidos a término completo (RNTC), de 39-41 semanas ($n=24.221$). Se analizan la tasa de cesárea, el ingreso en unidad neonatal, la morbilidad respiratoria, la apnea y la necesidad de asistencia respiratoria, hiperbilirrubinemia que requiere fototerapia, hipoglucemia, convulsiones, encefalopatía hipóxico-isquémica, necesidad de nutrición parenteral y sepsis precoz.

Resultados: Se observa un aumento progresivo del número de cesáreas a lo largo del período estudiado (del 30,9% al 40,3%). En los RNTP la tasa de cesárea fue superior que en los RNTC (38,3% vs. 31,3%; $p<0,0001$). En la comparación de ambos grupos, se encontraron diferencias significativas en la tasa de ingreso en unidad neonatal, 9,1% vs. 3,5% ($p<0,0001$); la morbilidad respiratoria (membrana hialina 0,14% vs. 0,007%; [$p<0,0001$]); la taquipnea transitoria, 1,71% vs. 0,45% ($p<0,0001$), la ventilación mecánica, 0,2% vs. 0,07% ($p<0,009$); la presión positiva continua en la vía respiratoria, 0,11% vs. 0,01% ($p<0,0001$); la fototerapia, 0,29% vs. 0,07% ($p<0,0001$); la hipoglucemia, 0,54% vs. 0,11% ($p<0,0001$), y la nutrición parenteral, 0,16% vs. 0,04% ($p<0,0001$). No se encontraron diferencias significativas en la tasa de sepsis precoz, neumotórax, síndromes aspirativos, convulsiones y encefalopatía hipóxico-isquémica.

Conclusiones: En nuestro medio, existe un número importante de RNTP, que presentan una morbilidad significativamente superior a los recién nacidos catalogados de RNTC. Tras individualizar cada caso, es aconsejable no finalizar un embarazo antes de las 39 semanas de gestación, salvo por condicionamientos maternos, placentarios o fetales que indiquen que continuar el embarazo comporte un mayor riesgo para el feto y/o la madre.

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Introduction

In the past few decades there has been an increase in the number of caesarean deliveries, especially in developed countries, with a clear predominance of elective caesarean sections, many of which are of questionable indication.¹ Within full-term gestational ages, caesarean delivery rates at 37 and 38 weeks, an interval known as early term, have been increasing significantly.²⁻⁴

Different studies show that newborns delivered at early term (ETNBs) have higher rates of neonatal morbidity than full-term newborns (FTNBs) (39–41 weeks),² even after excluding maternal morbidity and confirming foetal maturity with amniocentesis.^{5,6}

From what we have learned about brain development in recent decades, we know that the brain maturation process speeds up in the last 4–5 weeks of gestation (increases in brain mass, number of furrows and ridges, growth of axons

and dendrites, and number of interconnections between the various brain structures). Therefore, ending gestation relatively early can alter the brain maturation process in some cases, particularly those with complications. From 2006 to date, different studies have reported poorer educational outcomes and increased the need for special education in the ETNB population.⁷⁻¹¹

Although there are numerous studies on this subject, we have not found any for this population in Spain, so we performed a retrospective cohort study to assess the risk of morbidity in ETNBs.

Patients and methods

We did a retrospective cohort study that included newborns delivered between 37 and 41 weeks of gestation in the 1992–2011 period ($n=35,539$). Gestational age was calculated in completed weeks based on the date of the last

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