



ORIGINAL ARTICLE

Morbidity and mortality in newborns at the limit of viability in Spain: A population-based study[☆]

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KEYWORDS

Limits of viability;
Extreme prematurity;
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Abstract

Introduction: Perinatal care in extremely immature newborns is a clinical and ethical problem of great importance for professionals and families, and requires that the available information on the chances of child survival is of the highest quality. The aim of this study was to determine the specific rates of survival at hospital discharge, and survival without major morbidity in newborns with a gestation age (GA) \leq 26 weeks in Spain.

Patients and methods: We included live newborns \leq 26 weeks admitted to the collaborating centres of the SEN1500 network (2004-2010). Outborn patients, infants who died in delivery room, and those with congenital anomalies incompatible with life were excluded.

Results: A total of 3,236 patients were included. GA specific survival was 12.5, 13.1, 36.9, 55.7, and 71.9% at 22, 23, 24, 25, and 26 weeks of GA, respectively. Survival without severe intracranial haemorrhage, periventricular leukomalacia, bronchopulmonary dysplasia, and/or retinopathy of prematurity was 1.5, 9.5, 19.0, and 29.9% at 23, 24, 25 and 26 weeks GA, respectively.

Conclusions: Survival without major morbidity in infants less than 23 weeks GA is exceptional, and scarce in newborns with 23 and 24 weeks GA. Infants \geq 25 weeks GA have reasonable chances of survival and, in the absence of major malformations or other relevant complications, they should be offered active resuscitation and intensive care. The continuous updating of the results of individual centres is of utmost importance, as well as their comparison with the reference population-based results.

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PALABRAS CLAVE

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Toma de decisiones
clínicas

**Morbimortalidad en recién nacidos al límite de la viabilidad en España:
estudio de base poblacional**
Resumen

Introducción: La asistencia perinatal a recién nacidos (RN) extremadamente inmaduros constituye un problema clínico y ético de gran trascendencia para profesionales y familias, y hace necesaria una información actualizada de la máxima calidad acerca de las posibilidades de supervivencia del niño. El objetivo de este estudio fue conocer las tasas específicas de supervivencia al alta hospitalaria y de supervivencia sin morbilidad mayor conocida en RN con una edad gestacional (EG) \leq 26 semanas en España.

Pacientes y métodos: Se incluyeron los RN vivos de \leq 26 semanas que ingresaron en los centros colaboradores de la red SEN1500 (2004-2010). Se excluyeron los nacidos extramuros, los fallecidos en el paritorio y los que tenían malformaciones incompatibles con la vida.

Resultados: En total 3.236 pacientes fueron incluidos. La supervivencia específica por EG fue de 12,5, 13,1, 36,9, 55,7 y 71,9% a las 22, 23, 24, 25 y 26 semanas de EG, respectivamente. La supervivencia sin hemorragia intracraneal grave, leucomalacia periventricular, displasia broncopulmonar y/o retinopatía de la prematuridad fue del 1,5, 9,5, 19,0 y 29,9% a las 23, 24, 25 y 26 semanas, respectivamente.

Conclusiones: La supervivencia sin morbilidad mayor en menores de 23 semanas de EG es excepcional, y en RN de 23 y 24 semanas, muy baja. Los RN \geq 25 semanas de EG tienen posibilidades razonables de supervivencia y, en ausencia de malformaciones mayores u otras complicaciones relevantes, se les debería ofrecer reanimación activa y cuidados intensivos. Es fundamental la actualización continua de los datos propios de cada centro y su comparación con los resultados poblacionales de referencia.

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Introduction

Due to advances in obstetric and neonatal care, the number of infants born preterm and their survival rates have increased significantly in the past few decades. Lowering mortality without increasing morbidity and sequelae is one of the most important challenges faced by perinatal medicine, especially in the group with the GA: 22-26 weeks.

In this group of newborns, at the limit of viability, decisions regarding obstetric and neonatal care continue to be a clinical and ethical issue of great importance for professionals and families alike. Including the parents in the decision-making process when they so desire requires information of top quality, based on reliable up-to-date data on the probabilities of survival, and above all, of survival without major morbidity that could lead to adverse effects on development. These decisions are usually based on data from the centre in which the obstetric and neonatal care is provided. However, technical, and also cultural and social aspects, may contribute to the wide variability in outcomes that has been reported in different centres and countries.¹⁻⁶

No previous studies in Spain have analysed GA-specific morbidity and mortality rates, as they usually report the overall outcomes for the entire group of newborns at the limit of viability. Furthermore, variations in operational definitions, along with the fact that all the data usually come from a single centre, make it hard to extrapolate results. Knowing the outcomes in a large area with a similar cultural and organisational environment could provide an ideal basis for decision making, as well as a useful reference

for programmes devoted to the ongoing improvement of the quality of care.

The aim of this study was to know the GA-specific rates of survival at discharge, and of survival without known major morbidity in a large population-based cohort of neonates with GA \leq 26 weeks in Spain.

Patients and methods

The Spanish database SEN1500 systematically collects and analyses the data of live very low birth weight (VLBW) infants born in or admitted to the network's participating centres in the first 28 days of life.⁷ The present study analysed the data of live NB \leq 26 weeks GA admitted to the centres in the 2004-2010 period. We excluded newborns with congenital malformations incompatible with life. Infants born out of hospital were also excluded due to the potential selection bias in transferred patients, and to the possible effects of the transfer itself on morbidity and mortality.

GA was estimated in weeks and days based on the date of the last menstrual period, obstetric parameters, and the prenatal ultrasound registered in the mother's record. Whenever necessary, the neonatologist estimated GA based on the physical examination of the newborn.

We defined advanced cardiopulmonary resuscitation (CPR) as the need for endotracheal intubation, chest compressions, or the administration of fluid or medications.

We defined major morbidity as the presence of one or more of the following: severe intraventricular haemorrhage (IVH) (Papile grades 3 and 4)⁸; white matter damage: cystic

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