



ORIGINAL ARTICLE

Incidence of hypoxic-ischaemic encephalopathy and use of therapeutic hypothermia in Spain^{☆,☆☆}

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KEYWORDS

Hypoxia-ischaemia;
Asphyxia;
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Incidence;
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Spain;
Death

Abstract

Introduction: There are no data on the incidence of hypoxic-ischaemic encephalopathy (HIE) and the implementation of therapeutic hypothermia (TH) in Spain.

Methods: This is a cross-sectional, national study, performed using an on-line questionnaire targeting level III neonatal care units in Spain. Participants were requested to provide data of all newborns ≥ 35 weeks of gestational age diagnosed with moderate-severe HIE over a two year-period (2012–2013), and of the implementation of TH up to June 2015.

Results: All (90) contacted hospitals participated. HIE incidence rate was 0.77/1000 live newborns (95% CI 0.72–0.83). During 2012–2013, 86% of the newborns diagnosed with moderate-severe HIE received TH (active or passive). Active TH was increasingly used, from 78% in 2012 to 85% in 2013 ($P = .01$). Of the 14% that did not receive TH, it was mainly due to a delay in the diagnosis or inter-hospital transfer, and to the fact that the treatment was not offered. More than half (57%) were born in hospitals where TH was not provided, and passive hypothermia was used for inter-hospital patient transfer, and in 39% of the cases by inappropriately trained

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[◇] The members of the Working Group on HIE-Spain (EHI-ESP) are listed in [Appendix A](#).

PALABRAS CLAVE

Hipoxia-isquemia;
Asfixia;
Recién nacido;
Incidencia;
Hipotermia
terapéutica;
España;
Fallecimiento

personnel. By June 2015, 57 out of 90 centres had implemented TH, of which 54 performed whole-body TH (using servo-controlled devices). The geographical distribution of centres with active TH, and the number of newborn that received TH, was heterogeneous.

Conclusions: The incidence of moderate-severe HIE is homogeneous across Spanish territory. Significant progress is being made in the implementation of TH, however it is necessary to increase the availability of active TH between Autonomous Communities, to improve early diagnosis, and to guarantee high quality patient transfer to referral centres.

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Incidencia de la encefalopatía hipóxico-isquémica e implementación de la hipotermia terapéutica por regiones en España

Resumen

Introducción: La incidencia de la encefalopatía hipóxico-isquémica perinatal (EHI) y la implementación de la hipotermia terapéutica (HT) es desconocida en España.

Método: Estudio transversal nacional en recién nacidos vivos (RNV) ≥ 35 semanas de gestación mediante cuestionario on-line en las 90 unidades neonatales de nivel III. Se solicitaron datos de los RNV con EHI moderada-grave en los años 2012 y 2013, y de la implementación de la HT en junio del 2015.

Resultados: Se recibieron datos de los 90 hospitales. La incidencia de EHI moderada-grave fue 0.77/1.000 RNV (IC del 95%, 0.72; 0.83). El 86% de los RNV con EHI recibieron HT (activa o pasiva), aumentando los que recibieron HT activa del 78% en 2012 al 85% en 2013 ($p=0.01$). El 14% no recibió HT principalmente por retraso en el diagnóstico o en el traslado, o por no indicarse el tratamiento. El 57% de los RN nació en hospitales sin HT, siendo el traslado en hipotermia pasiva; en el 39% por equipos sin formación adecuada. En junio del 2015, 57/90 centros realizaban HT: 54 HT corporal total activa (todos con dispositivos servocontrolados). Existió heterogeneidad en la distribución por comunidades autónomas (CC. AA.) de centros con HT activa y en el número de RN que recibieron HT.

Conclusiones: La incidencia de EHI moderada-grave es homogénea entre CC. AA. Aunque se constata un importante progreso en la implementación de la HT, es preciso mejorar la disponibilidad de HT activa entre CC. AA., así como el diagnóstico precoz y el traslado con garantías desde los centros emisores.

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Introduction

Hypoxic-ischaemic encephalopathy (HIE) is a major cause of neonatal morbidity and mortality in full-term newborns (NBs) as well as permanent disability.¹ Therapeutic hypothermia (TH) is a safe and effective treatment for HIE, and is currently considered part of the standard care for this disease.^{2,3} Several paediatric societies have recommended this treatment in their respective fields.⁴⁻⁸ However, the use of TH varies between Europe,⁹⁻¹³ the United States,¹⁴ Canada,¹⁵ Australia¹⁶ and Japan,⁶ and even differs between regions or geographical areas within single countries.^{9,14} In 2009, the Sociedad Española de Neonatología (Spanish Society of Neonatology [SENeo]) published guidelines to facilitate its use in clinical practice.¹⁷ The incidence of HIE and the implementation of TH in Spain overall and by autonomous community or city is currently unknown. This information is crucial in order to: (1) assess the current situation in the health care system and identify the needs in different geographical areas to correct inequalities in access to TH and (2) optimise programmes developed with the aim of delivering high-quality care to these patients.

In our study, we analysed the incidence of moderate-to-severe HIE in 2012 and 2013 and the use of TH through June 2015 in Spain overall and in its 17 autonomous communities (ACs) and 2 autonomous cities.

Patients and methods

We conducted a cross-sectional nationwide study on moderate-to-severe HIE in NBs delivered at 35 or more weeks' gestation by means of an online questionnaire. The study included every public and private tertiary care hospital with a level III neonatal care unit.¹⁸ We sent individual emails to each hospital requesting to have the coordinator with the most experience in the management of HIE complete the questionnaire. We contacted the coordinators when we detected errors or inconsistencies in the submitted data.

We requested the following data: (1) number of NBs delivered at ≥ 35 weeks' gestation (years 2012 and 2013); (2) Live NBs that received a diagnosis of moderate-to-severe HIE in 2012 and 2013: number, origin (inborn or outborn), neonatal mortality, and (3) implementation of TH in each

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