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ORIGINAL ARTICLE

Results from 10-year newborn hearing screening in a secondary hospital☆

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Received 8 September 2015; accepted 3 November 2015
Available online 9 September 2016

KEYWORDS
Hearing loss;
Screening;
Newborn;
Otoacoustic emissions

Abstract
Introduction: A critical analysis is performed on the results of a newborn hearing screening programme in a regional hospital.
Patients: Screening results from 14,247 newborns in our maternity ward from 2002 to 2013.
Methods: Two step recordings of bilateral otoacoustic emissions (initial and repeat, if failed, at about one month of life). Assessment by clinical brainstem responses.
Results: The first step was performed on 14,015 newborns (98.3% of the total) reaching the screening objective. The first step pass figures were 93.7%, which implies a good pass rate with a few patients to repeat.

The second step is also good because it has a pass rate of 88.9% of newborns examined (only 0.63% of initial group needed brainstem responses assessment), but 10.6% were lost to follow up, and that is a major problem.

In newborns, scheduled for brainstem responses, the loss to follow-up is worse, with a figure of 29.5%, despite the high accuracy of this test given that 69.4% of those assessed showed hearing loss. This figure represents a 0.31% of the initial group, and is similar to that published for congenital hearing loss. Including patients that were lost to follow up this figure could be greater.
Conclusion: Newborn hearing screening is useful but needs stronger control to avoid the follow up loss. In order to achieve this, it is crucial to have a good database and a screening coordinator.

☆ Please cite this article as: Sequi Canet JM, Sala Langa MJ, Collar del Castillo JI. Análisis crítico de una década de cribado neonatal de hipoacusia en un hospital comarcal. An Pediatr (Barc). 2016;85:189–196.

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PALABRAS CLAVE
Hipoacusia;
Cribado;
Neonato;
Otoemisiones

Análisis crítico de una década de cribado neonatal de hipoacusia en un hospital comarcal

Resumen
Introducción: Se evalúa el protocolo de cribado de hipoacusia neonatal en un hospital comarcal.
Pacientes: Análisis en 14.247 recién nacidos en la maternidad del centro desde el año 2002 al 2013 inclusive.
Métodos: Protocolo con registro de otoemisiones bilaterales (registro inicial y repetición si falla, al mes de vida) y potenciales auditivos (confirmación).
Resultados: Se realizó la prueba antes del alta a 14.015 neonatos (98,3% de la muestra) cumpliendo así los objetivos de cobertura del cribado. En el primer paso resultaron normales el 93,7%, lo que implica una adecuada tasa de paso y no obliga a excesivas repeticiones. La segunda determinación obtiene también buenos resultados, puesto que el 88,9% de los que acuden resultan normales, dejando solo un 0,63% del grupo inicial para valorar con potenciales. Un 10,6% no acude a la cita, lo que constituye el principal problema detectado. En los remitidos a potenciales esta pérdida es mayor, con un 29,5%, a pesar de que la rentabilidad en aquellos pacientes que se exploran con esta técnica es muy alta dado que el 69,4% de ellos presenta unos potenciales alterados. Esta cifra de alterados representa el 0,31% del total de recién nacidos estudiados, cifra similar a la incidencia de sordera congénita. Teniendo en cuenta las pérdidas en seguimiento referidas la incidencia real podría ser mayor.
Conclusiones: El programa es muy útil pero necesita un control estricto del seguimiento para evitar pérdidas de pacientes. Para ello es fundamental tener una base de datos dedicada y un coordinador del programa.

Introduction

The importance of normal hearing in the psychological and social development of children is unquestionable, especially as it concerns the acquisition of that characteristically human skill, speech. Thus, hearing disorders need to be detected as early as possible. Early detection is not easy, especially in newborns, and until recently it was believed that newborns were not fit to have their hearing assessed by objective methods and that their hearing problems could not be corrected once they were identified.

The newborn hearing loss screening programme of the Autonomous Community of Valencia was first introduced in all public hospitals in late 2001.[1] Its purpose is the early diagnosis of congenital hearing loss to allow initiation of treatment at ages 6–12 months, as numerous studies in the literature have evinced that early intervention improves final outcomes,[2–5] and developmental delays in children due to delayed diagnosis are thus unjustifiable and have potential legal ramifications.[6]

At present, there are few data on the results of the initial step and nearly none on the final results of the screening in Spain. Thus, we need to learn how many of the children assessed in the screening programme had abnormal results in the confirmatory test requiring referral for monitoring and/or treatment.

The aim of the study was to assess the process and outcomes of the screening protocol carried out in the maternity unit of our hospital to identify its strengths and weaknesses and determine its yield.

Materials and methods

Materials

Inclusion criteria: newborns aged 24–72 h delivered in the maternity ward of the Hospital Francesc de Borja in Gandía (Valencia) between 2002 and 2013 inclusive.

Exclusion criteria: newborns in whom otoacoustic emissions could not be recorded within the established age range.

Methods

We obtained and analysed the results of the first otoacoustic emission (OAE) screening. We used these data to identify the newborns that had abnormal results in the first test and assessed whether they had been tested for a second time and the results of the second test. Out of these, we selected the newborns with abnormal results in the second OAE test that were referred for auditory brainstem response (ABR) testing and analysed the results of this step.

Screening protocol: the protocol comprises three steps. In the first step, all newborns are assessed by bilateral OAE recordings as late as possible before discharge from the maternity ward (approximately 48 h post birth). This test is always performed by floor nurses working any of the shifts based on current availability and case loads. It is performed without sedation while the newborn is at rest in a room in the unit or even inside the crib in the room. Newborns