

Prevalence of Hearing Loss in Healthy Newborns in a Third-Level Hospital Care by Neonatal Hearing Screening

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Abstract

In Mexico around 10 million people have some type or degree of auditory problem, of them, between 200,000 and 400,000 have total deafness. Estimating that a large population presents this problem from birth (61%), with an incidence of 1 to 3 of every 1000 newborns. For this reason, early implementation through the neonatal auditory sieve allows timely detection to respond early to the hearing impairment of the newborn, as the ideal age to carry out rehabilitation with the help of an auditory auxiliary and initiate Language therapy is at six months of age. The Mexican official norm NOM-173 - SSA1-1998, for the integral attention to persons with auditory disability it indicates that all newborns should be screened Auditory before his hospital discharge. The objective of the study is to establish the prevalence of hearing loss through auditory screening in healthy newborns of the General Ignacio Zaragoza Hospital, ISSSTE. Auditory sieve was performed to 318 newborns, considering hearing loss to those who were unable to detect 70 db. Of the total number of studies carried out, 11 had alterations, necessitating repeated study; Of the 11 revalued patients, 10 were healthy and 1 presented hearing loss confirmed by evoked potentials of the brain stem. As a conclusion, the prevalence of auditory disturbances in our environment is 0.3%, a proportion that places us above national and global statistics, so it is very important to screen all newborns including those who do not have Apparent risk factors in order to establish the appropriate diagnosis, the necessary treatment and thus avoid delays in neurodevelopment.

Keywords: *Hearing Defects; Hearing Loss; Neonatal Screening; OTOAC Sticas Emissions*

Introduction

Hearing loss is the most common neurosensory alteration in the human being, due to the loss or alteration of the anatomical and/or physiological function of the auditory system [1]. It is estimated that worldwide 1 out of every 1000 children is born with bilateral hearing loss. To the deep and 5 out of every 1000 with other forms of deafness. In 2012, who estimated that 5.3% of the world's population had hearing loss, with prevalence in South Asia, Sub-Saharan Africa and Asia Pacific region. In Latin America it. The prevalence of 1.6% and specifically in Mexico is estimated that around 10 million people have some type or degree of auditory problem, of which between 200 000 and 400 000 present total deafness. In addition, each year are born between 2000 and 6000 Children with congenital deafness. These figures show that hearing disorders are an important public health problem in our country [2]. This problem was considered in the National Development plan and in the Sectoral program DE Salud 2007-2012, for which the SSA designed the neonatal auditory sieve and early intervention program, backed by the standard: NOM-173-SSA1-1998, for comprehensive care for hearing impaired persons [2]. This

same recommendation has been issued by the National Institutes of Health in the USA, in agreement with the American Academy of Pediatrics [3]. The previous documents establish to make the sieve to all the newborns regardless of their state of health before the discharge hospital, if. However in our country there are only reports of children with risk factors, with few compared to healthy children. With the neonatal auditory sieve is intended the timely detection of the hearing impairment of the newborn, its objective is to attend in advance these deficiencies in the neonate, since the ideal age to carry out the rehabilitation with the help of an auditory auxiliary and to initiate the therapy of the language, is at the six months of age, since at this age begins the development of the tab Aje. Any reduction in hearing can cause communication disturbances that affect the motor, affective and intellectual development of the individual [3]. Neonatal auditory sieve has several advantages over other methods for detecting tempo. Disease NA, since it is a 60% less expensive study compared to the neonatal metabolic sieve, faster (lasts about two minutes), immediate response, is not painful and can be repeated as many times as necessary to confirm the outcome [4]. In auditory screening studies a prevalence of permanent congenital hearing loss of 112 by 100,000 infants has been found, with a higher proportion in those who have risk factors (62 by 100,000) than in those who do not have them (54 per 100,000) [5]. The objective of the study is to establish the prevalence of hearing loss through auditory screening in healthy newborns of the General Ignacio Zaragoza Hospital, Issste.

Material and Methods

In the period from March 1, 2016 to March 1, 2017, at the Hospital General Ignacio Zaragoza, 1523 births were recorded, of which the healthy children were chosen according to the assessment of the pediatrician neonatologist doctor, including. On patients with weight between 2500 to 3999 Gr of 37 to 41 weeks of gestation by Capurro, who the mother agreed to sign the Informed assent. The live newborns were excluded that at the time of screening showed alterations in the suc, swallowing, icteric dye and in the case where the mother opposes the study. Based on this was calculated the size of the sample with confidence level of 95% and margin of error of 5% obtaining an N of 318 patients. Using the EquiPO Portable Interacoustics® otoread™ For Sieve Addictive Provided of a Probe Of 30 Cm o 100 cm, soft latex olives of different calibers. Otacústicas emissions of distortion products were performed at frequencies 2-5 KHz in four bands with Intens. From 40 to 70 db [6]. This is a test that consists in collecting the response of the external hair cells by a receiver placed in the ear canal (CAE), after the sound stimulation by a click, emitted by a microphone col. Ocado in CAE, this technique simple and fast, reproducible, objective, innocuous and reliable: sensitivity: 80 - 100% and specificity: 90%. It was carried out as recommended by the Commission for the early detection of hearing loss in Spain (COPEDEH).

Phase 1: At birth or before discharge hospital, criterion of the step is the obtaining of the Wave V with PPATC to 40 db or the emission of emissions otoacoustics auditory bilateral.

Phase 2: Newborns who do not exceed this phase are re-explored between the first week and the month of age.

3rd phase: Newborns who do not exceed the second phase are assessed by the audiology service for definitive diagnosis and treatment ant. He's a month old. This phase was only performed in patients did not satisfactorily approve the two-prior sending them to the audiology unit at the National Medical Center 20 November [7].

Results

In the present study, the prevalence of auditory problems in healthy newborns of the General Ignacio Zaragoza Hospital was established through auditory screening during the years 2016 and 2017, where 1528 births were recorded in the Toco unit. Surgery, in joint accommodation, 318 auditory sieves were carried out with the Otoread medical team, prior to the signature of informed consent to the mother. In no case was it reported antecedents of auditory disturbances in these patients. Getting the GISUientes results: In phase I, of the sample considered, 50.9% (n = 162) were girls and 49% (n = 156) Children. Being healthy newborns, the gestational age calculated by

Capurro remained within the range of 37 to 41 SDG, and with ADECU weight. At birth (2500g to 3999g), in all the parameters evaluated the portion was similar For Both Genres (Table 1). Like this as performing before of high hospital in our unit, under 3 days of life.

	Male	Female	
	Percentage	Frequency	Percentage
	49.10%		50.90%
Gestation weeks			
37	5.60%	19	5.90%
38	11.90%	37	11.60%
39	11.30%	39	12.20%
40	17.90%	60	18.80%
41	2.20%	7	2.20%
Weight at birth			
2500 - 2999g	25.40%	86	27%
3000 - 3499g	15%	52	16%
3500 - 4000g	8.40%	24	8.30%

Table 1: Sex, weight and weeks of gestation of patients evaluated.

Of the 318 sieves, 11 of them showed alterations, without detecting a minimum threshold of 40 db. meriting reevaluation and entering the second phase according to international standards which consisted of repeating the study week. Again it He interrogated the mother about here ditofamilial background of importance by denying in all cases. Of the 11 patients revalued in 10 of them was obtained a normal threshold detected by the auditory sieve below the 40 db considered as Normal, however 1 again presenting threshold alteration with detection above 70 db in both auditory ducts, entered the third phase of valuation, and meriting the realization of auditory brainstem potential in the audio service National Medical Center 20 November with diagnosis of bilateral congenital deafness. Therefore the calculated prevalence of auditory problems for the population of healthy newborns in Zaragoza Hospital between the years 2016 to 2017 is 0.3% (Table 2).

	Total sieves	Revaluations	Congenital deafness
Frequency	318	11	1
Percentage	100%	3%	0.30%

Table 2: Results of sieves made, reevalorados and diagnosed with congenital deafness.

Discussion

Peripheral hearing is the starting point for structuring expressive language. It is the basis for the comprehension, decoding and central auditory perception to be achieved after reception. These two great phenomena, peripheral sensation and cortical perception, allow the development of the oral language, characteristic and specific quality of the human [8]. The sensations with which the afferent processes begin in the organ of Corti and the babbling with which the first manifesto begins efferent linguistics, are functions that are closely linked to the evolution of Abstract thinking [9]. When hearing does not exist, decreases or is lost, one, several or all psychoacoustic levels are rendered inoperative [10]. DebEmos be aware that there is a possibility to know if the hearing conditions of newborns are deficit from the first hours after childbirth, which is why it is imperative to act in the stages in which the unstructured as cortical are maturing and can be modelled, as the basis for defining the future of more than 4000 to 6000 babies born deaf or deep hearing problems every year in our country [11].

The audiology has its fields of action delimited with great precision, and although many of them correlate with other disciplines, it is the secondary prevention where we can focus the position of our document on the transcendence of sieve AU Neonatal Ditivo [12]. The issue that concerns us, the deep hearing loss or total deafness, in many cases with primary prevention measures, it is possible to avoid the damage to the structures of the auditory system and the concomitant Sensoperceptiva dysfunction [13]. In a percentage these measures cannot be applied, so it is essential to act in the field of secondary prevention to identify a possible problem from the time after birth, so that, continuing with the Diagnosis of certainty and early intervention, the auditory canal is enabled and the cerebral plasticity that will produce the most precious fruit of the audition, which is the language [14], is harnessed. As mentioned, the prevalence was evaluated by auditory sieve Alencia of auditory problems in newborns of the General Ignacio Zaragoza Hospital. The study was carried out to 318 children of the joint accommodation who were determined gestational age by Capurro, gender and birth weight. All of the patients it was located between 37 to 41 weeks of gestation and weight of 2500 and 3999 G, so they were considered Healthy.

The literature indicates that 0.1% of children are born with some type of congenital deafness [15], according to the results, the prevalence of problems Auditory in healthy newborns of our hospital was 0.3%, i.e. 3 times higher than the reported in the literature (3% reported) [16]. According to the results of the XII general population and Housing census, in our country, the highest prevalence of dis-auditory capacity, it was observed in Yucatan with 4.4 cases per thousand inhabitants, followed by grasses and Hidalgo with 4 cases per thousand inhabitants; In contrast to the lower prevalence entities that were Baja California, Chiapas and Quintana Roo [17].

The importance of conducting auditory screening at birth is in the timely detection, establishing early rehabilitation, lowering the cost of care for the institution and the health system in general [18] in a sist review Emática on the prevalence of alterations in neurodevelopment in Mexico, it was identified that reports on the frequency of hearing loss, passed with methodological differences that do not allow the generalization of their results. In addition, The reports in our country are very scarce with high variability of auditory disturbances through auditory screening. However, it should be noted the findings of two studies conducted, one in low-risk population and one with high risk for PR Auditory oblemas. In the first group was observed prevalence of 0.65 for every 1000 live births, the second study estimated 2.6% of 6000 children who merited care in a neonatal intensive care unit [19].

In the United States and countries and Uropeos has prevalence at 5 years of age of 0.5% with estimated people of 800,000, compared to 2.6 million patients in Latin America, the big difference could be given by the prevention and identification of these alterations in Early stages of life. Unattended cases of hearing loss represent an annual global cost of 750 billion. Interventions aimed at preventing, detecting and treating hearing loss are not expensive and may result Very beneficial to the stakeholders. The greatest importance of timely detection is based in the times and degrees in the what the plasticity cerebral and the potential for linguistic development decreases in relation to the age of intervention [21]. The more time it takes for the proper intervention to begin, the more difficult it is for a good development of the oral language to be achieved, which is the basis for the integral development of the individual, which of course includes the mechanisms of written linguistic communication, with the acquisition of reading and writing as starting points of cognitive and cultural development. The critical period for that the intervention is successful is to the 18 months old. Then the potential and plasticity of the brain for the development of the language, until reaching the point where the late intervention becomes almost useless [22], quickly decreases.

Conclusions

The benefits of early detection of various medical conditions have long been found; Such is the case of auditory alterations in newborns, an entity that by its very nature is not evident until it is presented retroin neurodevelopment, mainly speech. Unfortunately the ideal age to perform rehabilitation with the help of an auditory assistant and language therapy is at six months of age. In our study we determined that the prevalence of congenital deafness in children without apparent (healthy) risk factors, was three times greater than that reported in the world literature, coupled with this, it is likely that in preterm infants or with various morbidities the prevalence will increase. Therefore, It is essential to educate health providers at all levels of care for the newborn, and the high relevance of hear-

ing screening with an early detection of hearing loss, as well as send it in a timely manner and To receive multidisciplinary management involving specialist in language, audiology, rehabilitation, otolaryngology, neonatology and psychology in order to promote the increase in the quality of life of these patients, increase the Possi to integrate in a successful and productive way Mexican society, reduce the costs of care and the socioeconomic cost that causes the country to maintain a problem like the Deafness.

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