Critical Review:
How effective are newborn infant hearing screening protocols for detecting Auditory Neuropathy Spectrum Disorder?

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This critical review investigates the effectiveness of current hearing screening protocols in detecting Auditory Neuropathy Spectrum Disorder (ANSD). This review examines populations from both the well baby population as well as populations from neonatal intensive care units (NICU). Study designs include: Single group, case reports an.356603166(u)5.07.859 0 5.06907(e)-8100166(p)-7.0n81( )-63.8579 0 5.060129(o)-7.04432(n)5.06981(.)0.35mieenlion055(i)-11.710

whether one method is better at detecting ANSD than others because there is no proof provided in this study.

Study #3:
Berg, Spitzer, Towers, Bartosiewicz, & Diamond, (2005) conducted a prospective, single group design. The purpose of this study was to evaluate a two tier screening protocol on infants admitted to the NICU. The study implemented a protocol of an automated ABR followed by an automated OAE if the infant had a refer result on the ABR. 477 infants met the inclusion criteria to participate in this study. 115/477 infants presented with absent ABR's in at least 1 ear and a present OAE response; which is consistent with ANSD.

This study did not follow up with the children who fit the ANSD profile; however, this study concludes that a automatic ABR followed by an automatic OAE for the infants that fail the ABR is an effective tool for detecting ANSD in an at risk population. However, this is a different population than the well baby population and the same procedures are not used in the well baby population; therefore, we can not generalize the results. In addition, since the study did not follow up or perform any diagnostic evaluations, we can not be sure of the prevalence of ANSD in this particular population. The level of evidence of this study is a 3, according to the Experimental Design Tree.

Study 4:
Suppiej et al, 2007, conducted a prospective, single group design. The purpose of the study was to evaluate hearing screening protocols on a cohort of infants admitted to the NICU. High risk infants (n=533) admitted to the Department of Pediatrics of Padua University between September 2003 and February 2005 were eligible for this study. The study compared the diagnostic reliability of automated OAE's, automated ABR's, and conventional ABR's (CABR). Neonates that were excluded from the study included; infants who were discharged before 48 hours, and the parents of 204 infants did not accept to participate in the study. Consequently, 206 infants participated in this study. The protocol included examination with conventional ABR, automated otoacoustic emissions (OAE) and automated ABR. Infants tested with all three methods totaled 151. All infants returned for a follow-up regardless of the screening results. Automated OAE screening was performed on all infants at follow-up. Automated ABR was repeated on those infants failing the automated ABR at birth while a conventional ABR was done on those infants failing the conventional ABR at birth. The screening identified 6/206 infants with a hearing loss. In this study, none of the infants showed the pattern of ANSD; absent conventional ABR/present automated OAE's. However, 13.8 % of ears showed the pattern of absent automated ABR/present automated OAE's during the neonatal period. This was a false suspicion of ANSD because these infants had subsequent recovery when a conventional ABR was performed at the follow-up. This could have been an example of delayed maturation in these newborn infants.

Sensitivity, specificity, positive and negative predictive values were performed for the three tests. The results show that the conventional ABR is the most reliable test because of its higher sensitivity and specificity. The automated ABR performed the worst out of the three tests. All three tests show a low positive predictive value. False positive results were observed in all three tests; 21.2% in automated OAEs, 28.5 % in automated ABR and 8.9 % in conventional ABR.

The level of evidence in this study was a 3 according to the Experimental Design Tree. This study suggests that conventional ABR provides the most accurate results; however most screening programs do not use this as a screening tool because it is time consuming and is costly. This study suggests that a conventional ABR can confirm or deny the suspicion of ANSD in the high risk infant population.

Study 5:
Gravel et al, 1999, conducted a prospective, non randomized clinical trial study design. The purpose of this study was to examine the differences among screening protocols for a well baby nursery and a neonatal intensive care unit (NICU) throu p39(r.00239(r)-5.00129(o)-743 C

baby nursery, auditory neuropathy would most likely be

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