EVALUATION OF TWO STAGE HEARING SCREENING MODEL IN CHILDREN

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ABSTRACT

Objective

1.To know the Incidence of hearing impairment in children up to the age of 2 years in apparently healthy urban population in India. 2.To evaluate the Efficacy of two stage hearing screening using a repeat otoacoustic emissions (OAE) and Brain Stem Evoked Response Audiometry (BERA).

Methods

A total of 2579 children up to the age of 2 years were screened in the Pediatrics and ENT departments of a tertiary care university hospital in duration of one year. TEOAE's were used to screen hearing in response to an 80 dB SPL click, whereas DPOAE's were measured in responses to stimulus condition with L1 = 65 dB SPL and L2 = 50 dB SPL. Those children who failed the initial OAE screening test were re-screened using OAE with similar parameters on a subsequent day. Children who failed the repeat testing by OAE were further subjected to BERA testing for confirmation of hearing loss.

Results

The mean age of children undergoing screening was 4.2 months. A total of 6.14% children failed on the initial OAE screening test. 32.4% of children who failed the repeat test with OAE were subjected to BERA test. This two stage testing by OAEs and BERA was collectively able to pick 0.17% of hearing impaired children in apparently normal healthy pediatric population.

Conclusion

The present two stage model using OAE and BERA is successful in mass screening for hearing loss. Repeated hearing screening by OAE used in this study is beneficial in decreasing the number of referrals for BERA and hence decrease the cost of screening program me.

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INTRODUCTION

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METHODS AND MATERIALS

A total of 2579 children up to the age of 2 years were screened in the Pediatrics and ENT departments of a tertiary care university hospital in duration of one year. TEOAE's were used to screen hearing in response to an 80 dB SPL click, whereas DPOAE's were measured in responses to stimulus condition with L1 = 65 dB SPL and L2 = 50 dB SPL. Those children who failed the initial OAE screening test were re-screened using OAE with similar parameters on a subsequent day. Children who failed the repeat testing by OAE were further subjected to BERA testing for confirmation of hearing loss.

RESULTS

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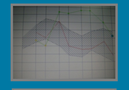
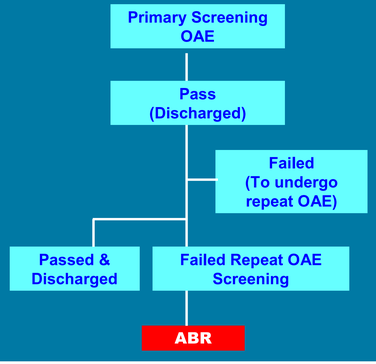
OAE Testing un progress

DPOAE Response



Pass

Fail



DISCUSSION

Otoacoustic emissions and automated ABR has made it possible to easily test the hearing of newborns and children. Soon after the introduction of hearing screening and early intervention programs, it could be demonstrated that the communicative skills and speech-language development of children with hearing impairments indeed changed dramatically. This prompted several international authorities to strongly advocate the implementation of universal neonatal hearing screening.

This study has evaluated a bipodal screening program. The different steps of the screening procedure with the decision criteria to define pass and fail were established and optimized. The team tests as many children as possible using OAE at the maternity ward, pediatrics well baby clinics and ENT clinics. In case of fail at first test, a re-test with OAE is immediately scheduled. The results show that a high sensitivity is obtained by this bipodal system Those who failed on repeat testing by OAEs were tested using BERA for confirmation. This repeat OAE testing decreased the specialist referral for BERA and overall cost of the screening programme. the results of this study shows that there is definite benefit of the children undergoing hearing screening for early detection of deafness. All the children who underwent hearing screening in this study were normal risk and would have been missed if only those who are high risk would have been screened.

CONCLUSIONS

The present two stage model using OAE and BERA is successful in mass screening for hearing loss. Repeated hearing screening by OAE used in this study is beneficial in decreasing the number of referrals for BERA and hence decrease the cost of screening program me.

REFERENCES

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