Use of an Integrated System to Measure Electrical Stapedial Reflexes in Children with Cochlear Implant

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eSRT measurements are typically performed using a lower probe frequency (~ 226 Hz) in the contralateral unimplanted ear.

Introduction

It is difficult to measure eSRT in the implanted ear

• Cochlear implant surgery
• Electrode lead in the middle ear
Do changes in middle ear mechanics due to cochlear implant surgery interfere with the ability to detect stapedial reflexes in the implanted ear?

Resonant frequency = Mass and stiffness are equal
Hypotesis

Use of a high frequency probe closer to the middle ear resonant frequency is more efficient in measuring eSRT in the implanted ear.
Goals

1. To measure eSRT as a function of probe frequency (226, 678, and 1000 Hz) in the ipsilateral and contralateral (unimplanted ear) ears of children with cochlear implants.
2. To check Integrated Middle Ear Analizer (iMEA) utility and convenience, in the Electrically evoked stapedial reflexe acquisition by controlling all the parameters through the middle ear analizer device exclusively.
Subjects

eSRTs were measured as a function of probe frequency (226, 678, and 1000 Hz) in the ipsilateral and the contralateral (un-implanted) ears of 19 children with Advanced Bionics HR90K cochlear implant (mean age = 8.6 years, SD = 2.29)
Equipment

- Cochlear implant programming software
- Clinical programming interface
- Speech processor
- Headphone output
- Audio cable
- Probe
- Headpiece
- Titan
Equipment
“All electrode” mode was used to elicit eSRT
Results

One-way ANOVA
\[ F(2, 6) = 0.157, \ p = 0.85 \]

One-way ANOVA
\[ F(2, 34) = 0.361, \ p = 0.7 \]
Conclusión

Use of a high frequency probe tone can improve the ability to measure eSRT in cochlear implant ears.

No significant differences between eSRTs as a function of probe frequency. However, eSRTs measured with different probe frequencies can vary slightly for individual patients.

Future studies should examine the changes in middle ear mechanics due to cochlear implant surgery and its effect on electrical stapedial reflex measurements.
THANK YOU