The Social conversational skills development in early implanted children

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Most studies documented that children who received cochlear implant (CI) in the first years of life acquired good linguistic skills in many aspects of spoken language (Blamey et al. 2006, Geers et al. 2008, Geers et al., Nicholas & Geers 2007).

Few studies focused on early pragmatic skills in children who received CI (Duchensne et al. 2012, Lichting et al. 2011, Most et al. 2010).

Early pragmatic skills positively affect vocabulary acquisition (Tomasello and Ferrar 1986).

They are also important for parent-child conversations which are positively associated with rate of language learning in typically developing children (Snow 1994).
Objectives

• To investigate the effect of age at cochlear implant activation on the conversational skills development in children who received a CI before 2 years of age

• To compare the conversational skills development of these children with that of normal hearing peers

• To analyze the role of variables such as age at diagnosis of hearing loss and maternal education level
Methods

Inclusion criteria:
• CI experience of 1 year;
• no evidence of inner ear malformations at either high-resolution CT scan and MRI evaluation;
• no significant visual or motor problems that might interfere with speech and language development;
• enrollment in an auditory-verbal (AVT) rehabilitation programme;
• device use throughout the day;
• normal hearing parents;
• monolingual Italian-speaking family.
## Participants Characteristics (n: 25)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mean (standard deviation); range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at diagnosis (m)</td>
<td>3.5 (+/-1.33); 2-8</td>
</tr>
<tr>
<td>PTA pre-CI (250-4000 Hz)</td>
<td>104 dB (+/-7.5); 86.25-113.75</td>
</tr>
<tr>
<td>Age at cochlear implant activation (m)</td>
<td>11.7 (+/-2.5); 8-24</td>
</tr>
<tr>
<td>Age at testing (m)</td>
<td>24.1 (+/-2.6); 21-26</td>
</tr>
<tr>
<td><strong>Etiology</strong></td>
<td></td>
</tr>
<tr>
<td>GJB2</td>
<td>21</td>
</tr>
<tr>
<td>UnKnown</td>
<td>4</td>
</tr>
<tr>
<td><strong>Stimulation modality</strong></td>
<td></td>
</tr>
<tr>
<td>Bimodal stimulation</td>
<td>12</td>
</tr>
<tr>
<td>Bilateral cochlear implant</td>
<td>6</td>
</tr>
<tr>
<td>Unilateral cochlear implant</td>
<td>7</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
</tr>
<tr>
<td><strong>Maternal education level (y)</strong></td>
<td>14.8 (+/-3.7); 8-18</td>
</tr>
</tbody>
</table>
CAP

- Pre-CI
- 12 m. post-CI
Methods

Social conversational skills, both in verbal and non verbal communication, were evaluated with the Italian version of the Social-Conversational Skills Rating Scale (referred to as the ASCB by Bonifacio & Girolametto 2007).

It is a parent report questionnaire for evaluating assertive and responsive conversational skills in hearing children from 12 to 36 months of age in everyday dyadic contexts.

The questionnaire was composed of two different scales:

• Responsiveness scale which included 10 items on the child’s ability to respond to questions and requests and to maintain turn-taking in conversation.

• Assertiveness scale which included 15 items on the child’s ability to ask questions, to make requests and suggestions.

For each items the parents could assign a rating from 1 to 5 based on the frequency with which the child exhibits the behaviour (1 =often; 2=almost never; 3=sometimes; 4=often; 5=always)
Methods

The Social-Conversational Skills Rating Scale was administrated 12 Months after CI activation.

Data from CI children were compared with normative data of the Italian version of the Social-Conversational skills rating Scale (ASCB).

To perform this comparison the scores of each child were transformed into Z-scores based on the mean score and the standard deviation of the normative data for the child’s age in months.
Results
Age at CI activation vs Responsiveness scale

Pearson's product-moment correlation: -0.780290281
p-value = 0.001 < r < 0.0001
Pearson's product-moment correlation: -0.586718412
p-value = 0.01 < r < 0.001
The two ASCB subscale were strongly correlated:

Pearson's product-moment correlation: 0.851364004
p-value = 0.0003819
All children had the Z-score within the normal range for both scales (Assertiveness and Responsivness)
Results

No significant correlation was found with age at diagnosis and maternal education level.
Conclusions

Performing implantation in children with profound hearing loss at the youngest age may provide good opportunity to develop pragmatic skills similar to those of their peers with normal hearing after 1 year of CI experience.

Age at diagnosis and maternal educational level do not seem to have influence in the early pragmatic ability.

Caution should be exercised in generalizing the results obtained in this small selected sample to the general population with severe to profound SNHL.

A long-term follow-up of this sample of children over time will help to document further social-conversational skills development.
Thanks for your attention

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