The Natural History and Rehabilitative Outcomes of Hearing Loss in Congenital Cytomegalovirus: A Systematic Review

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Introduction

• Estimated 40,000 new cases of cCMV in US annually
• Symptomatic cCMV infections can cause growth retardation, prematurity, microcephaly, chorioretinitis, seizures, hearing loss and many other neurological abnormalities
• A significant percentage of hearing loss associated with cCMV can be **delayed in onset** and NOT picked up on NBHS
• To distinguish Congenital from Post Natal CMV, **testing must be performed in the first 3 weeks of life**, however Universal screening exists only in research centers
• **Treatment of cCMV with systemic antivirals is now recommended to preserve hearing in symptomatic cCMV**
Methods

- **Research Question:**
  - What is the natural history, necessary monitoring and rehabilitative outcomes in children with sensorineural hearing loss secondary to congenital cytomegalovirus infection?

36 articles included in systematic review
Results

Natural History of cCMV: **25 Articles**

<table>
<thead>
<tr>
<th># studies identified</th>
<th>Population</th>
<th>% with Hearing Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>cCMV</td>
<td>10.7-32.4%</td>
</tr>
<tr>
<td>10</td>
<td>Asymptomatic cCMV</td>
<td>7-27%</td>
</tr>
<tr>
<td>10</td>
<td>Symptomatic cCMV</td>
<td>40.7-100%</td>
</tr>
</tbody>
</table>

Cochlear Implantation Outcomes in cCMV HL: **11 articles**

- Significant improvement observed in all 11 studies following cochlear implantation in patients with cCMV.
- Patients with additional cognitive impairments had poorer outcomes.
- **Patients with asymptomatic cCMV had better outcomes than patients with symptomatic cCMV**
- Discrepancies present regarding outcomes between cCMV and non-CMV associated congenital hearing loss post implantation.
Conclusions

- The age at which delayed onset and progression of hearing loss in cCMV occurs later than previously appreciated.
- Audiologic monitoring for an extended period is necessary, through school years.
- Universal screening should be further implemented.
- Rehabilitation of deafness using cochlear implantation is an effective method to improve hearing and speech in this population.
- Further study should evaluate outcomes after rehabilitation between CMV and non-CMV related hearing loss.