DIAGNOSIS AND MANAGEMENT OF HEARING LOSS IN EARLY-YEARS DOWN’S SYNDROME CHILDREN

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INTRODUCTION

• Trisomy 21 is the most common chromosomal abnormality in the United Kingdom, occurring 1/700 live births.

• 50-90% of children with Trisomy 21 will have at least a mild-moderate hearing loss compared to 0.25-1% in healthy children.

• The aim of this study is to provide the first combined qualitative and quantitative assessment of conductive hearing loss and response to treatment in children with Trisomy 21.

OBJECTIVES

• To review the prevalence hearing loss in children with Down’s Syndrome (DS), their response to intervention and the presence of concomitant pathologies.

• Using the Glasgow benefit inventory via telephone interviews with parents we will measure the social and physical impact of each intervention.

METHOD

• Patients were recruited from the audiology department of Craigavon Area Hospital.

• Inclusion criteria: a diagnosis of Trisomy 21 and confirmed conductive hearing loss.

• Exclusion criteria: patients with incomplete records, patients with non-conductive hearing loss (sensorineural or mixed), deceased children and patients/parents who declined to take part.

RESULTS

• As per the Newborn Hearing Screening program all participants had had their hearing tested at eight months.

• Seventeen of the twenty-two (77%) patients failed the automated screening program.

• All participants at the time of review were under follow up with paediatricians for on-going medical co-morbidities.

Glasgow Benefit Inventory results

• The average GBI score for Hearing aids was +42.8.

• Watchful waiting scored +28.7.

• Operative intervention scored +20.8.

Pattern of hearing loss

<table>
<thead>
<tr>
<th>Pattern</th>
<th>%</th>
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<tbody>
<tr>
<td>Bilateral</td>
<td>59</td>
</tr>
<tr>
<td>Unilateral</td>
<td>41</td>
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</table>

Management

<table>
<thead>
<tr>
<th>Management</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grommet</td>
<td>17</td>
</tr>
<tr>
<td>Hearing aids</td>
<td>30</td>
</tr>
<tr>
<td>Watchful waiting</td>
<td>53</td>
</tr>
</tbody>
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Questions used to calculate GBI score

All questions scored with 1 being given to the worst outcome and 5 to the best outcome.

Subsections:

Total score:

Sum of all responses (Q1-18) Divide by 18 to get average response score Subtract 1 from average response score Multiply by 50

General subscale score:

Sum of 11 responses (Q2, 5-6, 9, 10, 14, 16-18) Divide by 12 to get average response score Subtract 1 from average response score Multiply by 50

Social support score:

Sum of 3 responses (Q7, 11, 15) Divide by 3 to get average response score Subtract 1 from average response score Multiply by 50

Physical health score:

Sum of 3 responses (Q8, 12, 13) Divide by 3 to get average response score Subtract 1 from average response score Multiply by 50

Discussion

• With advancements in medical sciences, the life expectancy of people with Down’s syndrome has increased to 60 years and now emphasis is on full integration into society.

• The GBI results demonstrate that parents responded positively to all three interventions. Perhaps this demonstrates that if the reasoning behind a care plan is explained fully and justified, parents will be content.

CONCLUSION

• The unique social interactions and varied anatomy in these children mean that interventions must be planned on a case-by-case basis.

• As in all areas of medicine, the least invasive option necessary is the best first line option.

• This study demonstrates that, in the absence of other otological symptoms hearing loss can be managed successfully by hearing aids.

• They rate comparably with grommet insertion in terms of hearing development from the limited studies available and scored highest on the GBI score suggesting greatest patient/parent satisfaction.