Analysis of Audiometric Differences in Normal Hearing Subjects: A Comparative Study Based on Gender at Cipto Mangunkusumo National General Hospital

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Results

There was statistically significant difference (p<0.05) between male and female at speech recognition threshold (SRT) 50% assessed with speech in noise audiometry. The median of SRT 50% assessed with speech in noise audiometry in male subjects was 66 dB, while the median in female subjects was 67 dB.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Male</th>
<th>Female</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median</td>
<td>Range</td>
<td>Median</td>
</tr>
<tr>
<td>PTA4</td>
<td>9.4</td>
<td>2.5 – 23.8</td>
<td>10.6</td>
</tr>
<tr>
<td>PTA3</td>
<td>8.3</td>
<td>3.3 – 25.0</td>
<td>11.7</td>
</tr>
<tr>
<td>SRT 50%</td>
<td>13.0</td>
<td>4.0 – 30.0</td>
<td>13.0</td>
</tr>
<tr>
<td>SDS 100%</td>
<td>25.0</td>
<td>15.0 – 45.0</td>
<td>30.0</td>
</tr>
<tr>
<td>SRT 50% (in noise)</td>
<td>66.0</td>
<td>61.0 – 73.0</td>
<td>67.0</td>
</tr>
<tr>
<td>SDS 100% (in noise)</td>
<td>80.0</td>
<td>70.0 – 90.0</td>
<td>80.0</td>
</tr>
</tbody>
</table>

*Mann Whitney U test

Table 1. Comparison of Audiological Findings in Males and Females

- PTA4: average of hearing threshold assessed with pure-tone audiometry in 4 frequencies (500 Hz, 1000 Hz, 2000 Hz, 4000 Hz)
- PTA3: average of hearing threshold assessed with pure-tone audiometry in 3 frequencies (500 Hz, 1000 Hz, 2000 Hz)
- SRT 50%: speech recognition threshold 50% assessed with speech audiometry
- SDS 100%: speech discrimination threshold 100% assessed with speech audiometry
- SRT 50% (in noise): speech recognition threshold 50% assessed with speech-in-noise audiometry
- SDS 100% (in noise): speech discrimination threshold 100% assessed with speech-in-noise audiometry

Conclusion

There was gender difference for word-recognition performance in the presence of background noise in individuals with normal hearing thresholds, where females have poorer results compared to males. However, well-controlled prospective studies with higher number of samples are essential to confirm the results obtained and to identify the possible mechanisms underlying the gender differences.

References

Materials and Method

This cross-sectional study was conducted on samples taken sequentially at ENT out-patient clinic, Cipto Mangunkusumo National General Hospital, Jakarta.

A total of 71 individuals with hearing within normal limits were selected for the study, including 28 males (39.4%) and 43 females (60.6%).

Pure tone audiometry, speech audiometry, and speech in noise audiometry were used to assess audiological findings.

Background

In evaluating hearing abilities, there are many studies reported that summarized audiological findings and their relation with subjects’ age. However, there are limited studies that have attempted to delineate gender differences. Some studies have reported that there was no difference in hearing thresholds between males and females, while other studies stated that that the rate for perceived difficulty hearing in noise is higher in men than women.1-3 This study aims to explore the differences between males and females in terms of audiological evaluation.

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