

Mrs. M has a mild to profound sensor neural hearing loss. Mrs. M was fitted with BTE hearing aids some weeks ago. She has returned today to tell you about her experiences over the last few weeks with the hearing aids.

Note: Most of your decisions will have guidelines in the literature, however some of the decisions you make, and may not have clear guidelines in the literature – in this case, ensure you explain why you are making your adjustments/changes/etc in detail. You will need to try and find some references as required.

Part B

Concern 3:

In general, Mrs. M reports the sound as muffled and the left one as particularly loud but mangled up. You decide to perform some aided speech discrimination, with both aids in, scores are:

@60dB SPL: 43%,

@70dB SPL: 40%.

You decide to perform aided testing unilaterally as well (i.e. one aid in/one aid out).

Left aid in: @60dB SPL: 47%,

@70dB SPL: 33%.

Right aid in: @60dB SPL: 70%

@70dB SPL: 75%

Are there any other tests you might perform to gain additional information (if so, what are they likely to reveal)? Given the results presented here, what might be your next steps/what modifications might you make with regards to the aid fitting?

The initial results on assessment of speech discrimination revealed a significant asymmetrical but unexpected difference between the ears, given that Mrs M's PTA results showed a mild to profound sensorineural hearing loss of symmetrical configuration. Her speech discrimination scores were worse in her left ear when the speech presentation level was delivered at supra threshold levels (40% at 100dB HL compared to 65% at 85dB HL). The absence of reflexes at 1kHz when sound was presented ipsilateral to the left side is compared to the PTA suggests of some retro cochlear involvement on the left side. This should be investigated by an ENT specialist. If present, an (auditory brainstem response) ABR test would be a good diagnostic tool for assessing site of lesion.

From follow-up appointment, she performed poorer on speech test (47% at 60dB SPL) in the left ear. The hearing aid ought to be providing benefit rather than reducing or distorting speech intelligibility. A programming error is ruled out as she still finds it too loud. Dichotic speech tests using Bamford-Kowal-Bench (BKB) sentences, Hearing in Noise Test (HINT), and Speech in Noise (SPIN) test can be used to further evaluate the benefit of hearing aids binaurally or monaurally (Dillon, 2001). Additionally, this condition could be due to her old age.

The follow-up results clearly show that she performed better when aided with the right hearing aid than with the left and when aided monaurally than binaurally. One possible reason for performing better monaurally is a binaural interference phenomenon (Allen, Schwab, Cranford, & Carpenter, 2000).

The 23% difference at 60dB SPL and the 37% difference at 70dB SPL in speech discrimination between the ears would make her a poor candidate for a binaural fitting. A bilateral CROS/BiCROS hearing aid should be considered an option. This will help her to overcome the “adverse effects of the head shadow effect by providing awareness of sound from all directions” (Pumford, 2005) Additionally, she will be able to participate more fully in listening situations due to increased awareness of sound around them (Pumford, Stephenson, & Hayes, 2005).

Concern 4:

Mrs. M reports also that she is still having trouble hearing the instructor at her yoga class, the announcements at the bingo and her playing partner at bowls (who stands down the other end of the Bowling Green to tell her if her shots are landing in the right place). What sort of help can we give her with these situations and explain why this strategy will work/be effective.

These conditions call for adoption of communication strategies. At her yoga class, she should station herself closer to the instructor. If the yoga class is conducted in a hall or school with high reverberation adding soft furnishings can decrease reverberation and increase intelligibility (Dillon, 2001). Alternatively, an FM system can improve the sound quality

received despite background noise, reverberation and the distance from student and teacher (Tye-Murray, 2009).

A few challenges that Mrs M may encounter at bowls include, finding it challenging to position herself well to hear her playing partner with the right ear particularly from a distance. Secondly, bowls is played in outdoors and the noise around may affect her hearing. However, the FM system seems appropriate for this instance.

At bingo, availability of a loop amplification system would benefit her from a telecoil program or a T-switch on her hearing aid. The induction loop system minimises background noise and improve the clarity of incoming voice.

References

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