

Assistive Listening Device Versus Conventional Hearing Aid in an Elderly Patient: Case Report

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Abstract

An elderly patient with a relatively severe problem in speech understanding tried out, and rejected, use of a conventional hearing aid. She has accepted, however, and successfully used an assistive listening device (ALD). Her experience highlights the importance of considering trial use of an ALD in the elderly patient who rejects use of a conventional aid.

Key Words: Assistive listening device, hearing aids, hearing disorders, aged

In many elderly patients the prognosis for successful use of a hearing aid is limited. The combination of a mild sensitivity loss and poor speech understanding often presages unsatisfactory hearing aid use. The patient typically complains that the overriding problem is interference from competing environmental sounds, and that the aid either doesn't help, or may even exacerbate, the background noise problem (Surr et al, 1978). In such cases we have found that it is worthwhile to consider the exclusive use of an assistive listening device (ALD) instead of a conventional hearing aid. Because of the improved signal-to-background noise ratio afforded by the remote microphone technology, ALDs may be helpful, and acceptable, to the elderly client even when the conventional hearing aid does not prove satisfactory. The present case report illustrates such a situation. An elderly lady rejected the use of conventional aids but used an ALD successfully.

CASE REPORT

Patient M.C. was 76 years old at her initial visit. She complained of a gradual loss of hearing over the past several years. She denied tinnitus or dizziness but was having trouble in all listening situations and sought help for her

hearing problem. Figure 1 summarizes the results of the basic audiometric evaluation. The pure-tone audiogram showed a mild, flat, bilateral sensorineural loss. Immittance audiometric results were within normal limits, but speech understanding was poor. Maximum PB scores were 40 percent on the right ear and 36 percent on the left ear. Maximum SSI scores (Jerger et al, 1968) were 20 percent on both ears.

We took earmold impressions and ordered suitable in-the-ear (ITE) aids. On their arrival we fitted the aids to both ears and carried out sound field testing (Jerger and Hayes, 1976). SSI sentences (i.e., messages) were presented, in blocks of 10, at 70 dB SPL from a loudspeaker directly in front of the subject. Continuous single talker discourse (i.e., competition) was presented at various levels, from a loudspeaker directly behind the subject. Figure 2 plots percent correct identification of the SSI sentences as a function of the message-to-competition ratio (MCR). The shaded area represents the range of performance to be expected from individuals with normal hearing.

Performance with the ITEs was relatively poor. Best performance was observed with the ITE in the right ear. At the +10 dB MCR the SSI score was 60 percent. With the ITE in the left ear, performance was even poorer, reaching a maximum score of only 50 percent at +10 dB MCR. It is interesting to note, moreover, that performance was poorest in the binaural condi-

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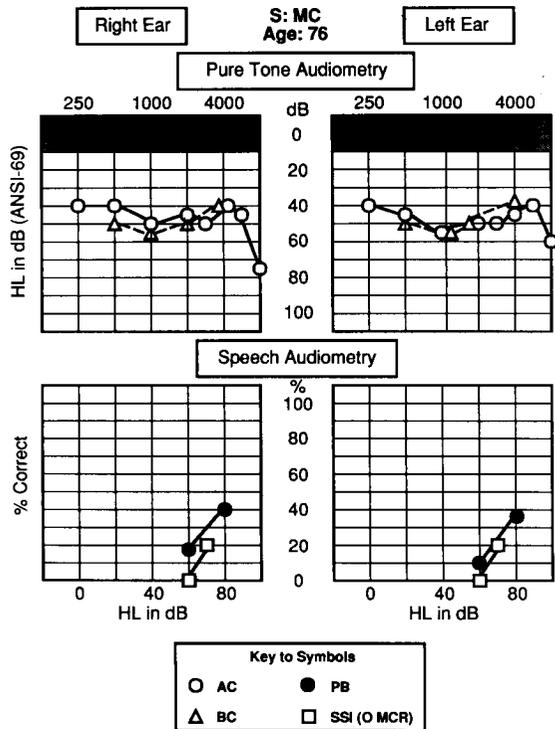


Figure 1 Basic audiometric findings in a 76-year-old woman. Note poor results on all tests of speech understanding, especially SSI at 0 dB MCR.

tion, where the maximum score at +10 dB MCR was only 40 percent.

We also tested the patient with an assistive listening device (Comtek-FM). For this testing we attempted to simulate the location of the microphone/transmitter unit in actual usage by mounting it at the face of the loudspeaker presenting the target sentences. Results are shown as open squares in Figure 2. Performance with the ALD, in this soundfield testing paradigm, was substantially better than under any of the hearing aid conditions. At the 0 dB MCR condition, for example, where the best ITE score was only 50 percent, the ALD score was 100 percent. Similarly at the -10 dB MCR condition, where the best ITE score was 0 percent, the ALD score was 90 percent.

After short trial periods with the ITE and the ALD (both worn in the right ear), the patient returned the ITE. She observed that, although the ITE was certainly attractive from the standpoint of size and cosmetic appeal, she preferred the ALD. In her words, "It just sounds a whole lot better." Her family reported that she was able to use her ALD successfully, especial-

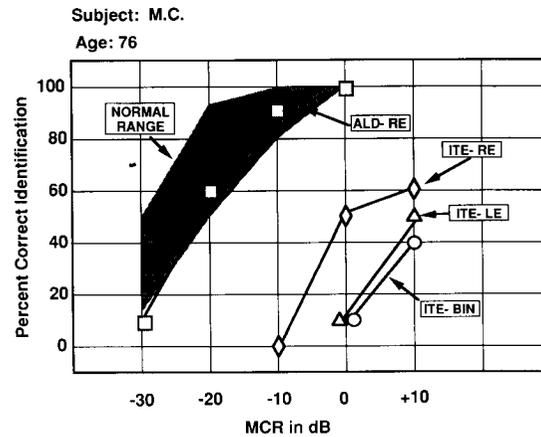


Figure 2 Aided SSI scores at various MCRs for ALD in right ear and conventional ITE in right ear, left ear, and binaural conditions.

ly in situations involving competing background noise, for the next year until illness limited her activity.

DISCUSSION

The combination of mild sensitivity loss and severe deficit in speech understanding suggests a complex auditory disorder with both peripheral and central components (Hayes, 1980). In this situation it is not surprising that conventional hearing aids frequently fall short of expectation. If the background noise problem is due to central, rather than peripheral, disorder the conventional hearing aid can hardly be expected to improve the problem. The ALD, on the other hand, provides a direct and simple solution by physical manipulation of the relative intensities of signal (foreground) and noise (background) at the patient's ear. This effect is often so strong that the patient willingly elects to use the ALD in spite of its obviously limited cosmetic appeal.

The seasoned clinician, well aware of the singular importance of cosmetic appeal to most potential hearing aid users, especially if they are elderly, often hesitates to explore the use of ALDs. The clinician may assume *a priori* that the patient will not seriously consider an ALD as an alternative to a conventional hearing aid because of its size and awkwardness of application. The present case illustrates, however, what has become a common observation in our facility (Stach et al, 1987). An elderly patient, with a presumably complex auditory disorder, will

try out and successfully use an ALD even after rejecting the more cosmetically appealing conventional hearing aid.

We encourage clinicians to consider trial use of an ALD in any elderly client who shows limited benefit from conventional amplification.

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