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Clinical Records

Severe sensorineural hearing loss presenting as profound deafness

by

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Introduction

Patients with a severe sensorineural hearing loss may develop profound deafness because of a superimposed conductive loss. In such patients the conductive component may be easily overlooked because of the severity of the sensorineural loss. Three case reports illustrate the importance to the patient of diagnosing and treating such a conductive loss. The possibility of a reversible conductive component must always be considered in patients presenting with an apparently profound sensorineural deafness.

It is accepted that pure uncomplicated conductive deafness is never so severe as to prevent straightforward verbal communication. On the other hand, when there are severe communication problems, it is commonly because there is profound sensorineural deafness. This paper reports the importance of bearing in mind the possibility of a mixed deafness, when the initial clinical impression is that of profound sensorineural deafness. Treatment of the conductive component may reverse an apparently hopeless situation.

Case 1

S.W. was a four-year-old child who was referred to a Paediatric Audiology clinic with delayed speech development and suspected hearing loss. His parents thought that his hearing had been reasonably good until 6 months prior to referral. He had no relevant past medical history apart from meningitis at 3 months. There were no ante-natal or peri-natal problems. Apart from delayed speech his developmental milestones were normal, though there were some behavioural problems. Examination revealed pink tympanic membranes. Audiometric assessment was difficult because of his age, but showed thresholds of greater than 70 dB. This hearing loss was thought to be solely sensorineural and was ascribed to the earlier meningitis.

The nature of the hearing loss was explained to the parents, and hearing aids and placement in a partially hearing unit were recommended. The parents were adamant that his hearing had been quite good until 6 months earlier, and were reluctant to accept meningitis as the sole explanation for his deafness.

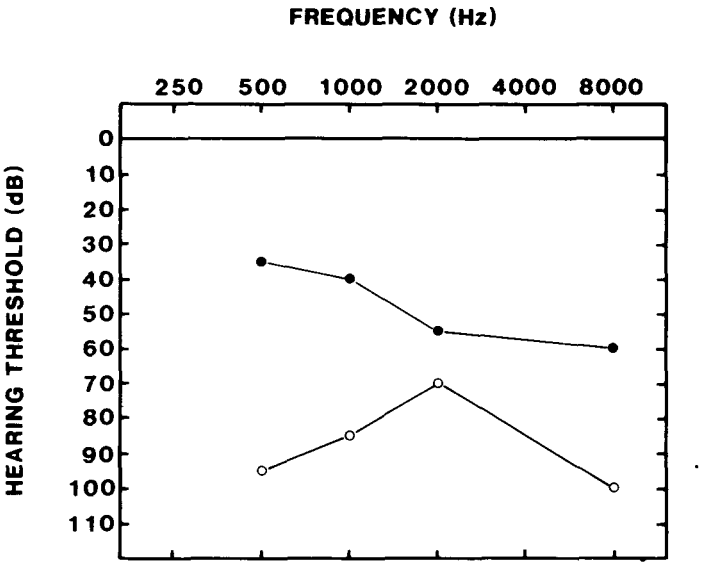
The parents sought a second opinion. On this occasion a middle ear effusion was noted, and a hearing assessment suggested a moderate sensorineural deafness with an additional conductive loss. Bilateral myringotomy was performed, glue aspirated, and ventilators inserted. Post-operatively there was a significant improvement in his hearing (Fig. 1). His parents also reported an improvement in his behaviour. His educational progress was satisfactory; he attended a normal school throughout, and eventually obtained a university place.

Case 2

J.W. was a 52-year-old female, who had been attending a neurology clinic with a long history of headaches. A review appointment was arranged because of the onset of a severe bilateral deafness. Communication was extremely difficult and the patient was emphatic that her hearing had been normal beforehand. On examination no other neurological signs were noted, and an ENT opinion was sought.

There were no other associated otological symptoms. Otoscopy suggested bilateral middle ear effusions. Tuning fork tests and audiometry indicated a severe sensorineural deafness with an additional conductive loss. Bilateral myringotomy revealed

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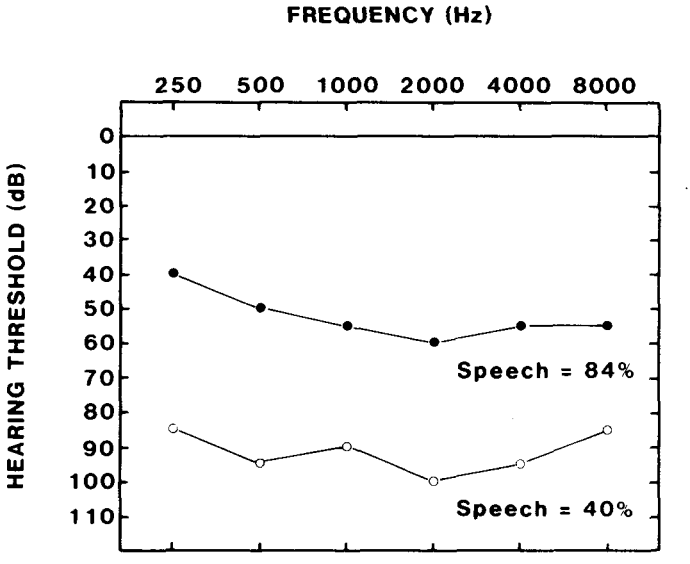


AUDIOGRAM 1. AIR CONDUCTION AUDIOGRAM FOR BETTER EAR

Pre-Operative ○—○

Post-Operative ●—●

FIG. 1



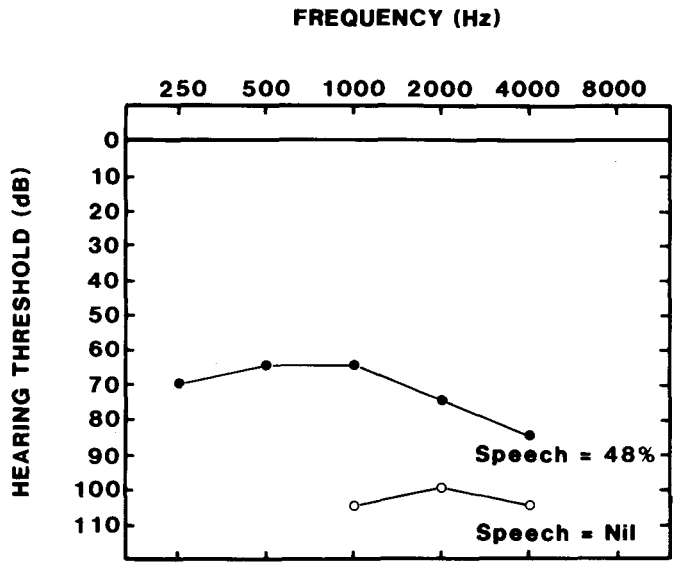
AUDIOGRAM 2. AIR CONDUCTION AUDIOGRAM
(Hearing similar in both ears)

Pre-Operative ○—○

Post-Operative ●—●

FIG. 2

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AUDIOGRAM 3. AIR CONDUCTION AUDIOGRAM RIGHT EAR (No useful hearing in left ear)

Pre-Operative o—o

Post-Operative •—•

serous fluid in both middle ears. Post-operatively there was a marked subjective improvement, which was confirmed audiometrically (Fig. 2). The SPTA improved from 95 dB. to 55 dB., and the speech discrimination score (PBmax) from 40 to 84 per cent. She now insisted that her hearing had returned to normal, and could not understand the suggestion that a hearing aid might be of value.

Case 3

C.McM. was a 77-year-old male, with a long history of deafness, tinnitus, and vertigo secondary to syphilitic labyrinthitis. He had a profound deafness in his left ear, but on the right side his hearing had been serviceable with a post-aural hearing aid prior to the onset of a sudden increase in hearing loss. This resulted in a bilateral profound deafness which made verbal communication impossible. Communication was possible only by writing.

Examination revealed a large amount of wax impacted in the right external auditory meatus. An audiogram showed an air conduction threshold of greater than 100 dB., with a speech discrimination score of nil. There was no bone conduction response. Following removal of the wax, communication became relatively easy with the help of his hearing aid. A repeat audiogram showed a SPTA of 70 dB., with a speech discrimination score (PBmax) of 48 per cent (Fig. 3).

Discussion

These case reports illustrate the effect that an additional conductive hearing loss can have on a patient with a marked sensorineural deafness, changing the hearing from serviceable with a hearing aid to profound deafness despite the use of an aid.

In case 1, the middle ear effusion was not detected by the first examiner who was both competent and highly respected. Only the insistence of the parents on further investigation excluded meningitis as the sole cause of the child's hearing difficulties.

In case 2, although a middle ear effusion was obvious at the initial examination, the severity of the hearing loss, including the impairment of speech discrimination, created the impression that the problem was more sinister. Only when the fluid was removed, with an unusually good improvement in the hearing, was it apparent that she had had a long-standing sensorineural deafness of which she had not been aware.

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In case 3, a plug of wax depressed the hearing to a level where even a high output hearing aid was insufficient for verbal communication. Removal of the wax was difficult, and somewhat painful for the patient. Since amplification was of no help it would have been easy to have succumbed to the temptation of concluding that the deterioration was sensorineural in nature and that little could be done.

Conclusions

In patients with a profound mixed deafness it may be possible to achieve dramatic restoration of useful hearing simply by treating the conductive component, which initially may appear to be of little importance in the overall hearing loss. Zikk *et al.* (1985) have reported this problem in elderly patients but these cases emphasize that failure to deal with apparently minor degrees of conductive deafness may have serious implications for patients of all ages.

References

Zikk, D., Himelfarb, M. Z. and Shannon, E. (1985) Sudden hearing loss in the elderly. *Clinical Otolaryngology,* **10:** 191–194.

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