The whispered voice as a screening test for hearing impairment

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Introduction

THERE are many occasions when a clinician may wish to test the hearing of a patient to confirm that an impairment is present. There are several ways that this might be done but perhaps the easiest and most relevant is to use free-field voice testing. Voice testing of hearing was the standard method of assessing a person's ability to hear until pure-tone audiometers became widely available in the 1940s. Subsequently, voice testing was condemned as inconsistent and outdated[1,2] and, although this may be the case in comparison with audiometric testing, there remains a need for a reproducible screening test.

With the advent of reconstructive middle-ear surgery and the availability of behind-the-ear National Health Service hearing aids, the majority of individuals with a bilateral hearing impairment worse than 30 dB (hearing level) can now be successfully helped. However this is seldom the case for those who have a monaural threshold better than 30 dB (hearing level). The object of this study was to assess whether a simple free-field voice test of hearing could reliably detect those individuals who might benefit from referral to an otolaryngology department.

Method

During the test it is imperative that the examiner stand behind the patient in order to remove the ability to speechread. In addition as sound can easily cross from one side of the head to the other, it is always necessary to mask the hearing in the non-test ear. The easiest way to do this is to gently occlude the external auditory canal with a finger and to continuously rub in a circular manner. It is imperative to rub the ear as occlusion alone does not provide sufficient masking.

It is explained to the patients that they should repeat back any words that are spoken to them. To confirm that they have understood this, a trial run using a loud voice and a simple number such as 99 is often worthwhile. It is usual to start by testing the better hearing ear, if there is one. Standing behind the patient and masking the non-test ear, a combination of three numerals and letters (for example, 5 B 6) is whispered at arm's length (two feet) from the test ear. Whispering is done after full expiration to ensure as quiet a voice as possible. If the patient repeats all three numerals or letters correctly they are considered to have passed the screening test. If they respond incorrectly or not at all, the test is repeated once more using a different three numeral/letter combination. It is important to use a different combination each time to exclude the effect of learning. Overall a patient is considered to have passed the screening test if they repeat at least three out of a possible total of six letters or numerals correctly. The other ear is then assessed in a similar manner, again using a different combination of numerals and letters.

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Over a period of two months, all patients with aural symptoms who were seen at an audiology clinic by the authors and who had no previous audiometric assessment available had their hearing screened, using the free-field whispered voice technique described here.

After clinical assessment of hearing, the pure-tone thresholds were assessed using a standard method.[3]

Results

The hearing of 101 patients (202 ears) was evaluated. The mean age of the patients was 57 years (range 17–89 years). In 115 ears, the mean pure-tone threshold at 0.5, 1 and 2 kHz was 30 dB (hearing level) or better, and in the remaining 87 ears it was worse than 30 dB (hearing level). In the former group, 100 (87 per cent) passed the screening test, and in the latter group 87 (100 per cent) failed.

Discussion

The object of this study was to assess whether it was possible to identify by a simple free-field voice test those individuals who might benefit from management of their hearing impairment. Obviously, if there is otoscopic evidence of disease or if the patient has other otological symptoms such as otorrhoea, tinnitus or vertigo they may require referral for a specialist opinion, irrespective of their hearing. On the other hand there are considerable numbers of adults whose only complaint is of dullness of hearing. The initial reaction is to attribute this to wax but for the majority there is more likely to be a sensorineural impairment. The screening test described here should identify those people that might benefit from referral to a specialist. This is for two reasons. First, those people with a bilateral impairment are likely to have sufficient disability to benefit from the provision of a hearing aid or, if there is a conduction defect, from surgery. Secondly, there is the possibility that those people with a unilateral impairment may have an acoustic neuroma and, although the incidence in the population is only five per million per year, it is held that unilateral sensorineural hearing impairments should be investigated.

Although this study was performed on adults, there is no reason why the results should not be applicable to children. Indeed, it is routine otolaryngological practice to perform the test on children with minor modifications as to the words used; simple bisyllable words such as 'cowboy' and 'football' are suitable.

Conclusion

The whispered voice test, as described, will identify all those who, in the absence of other evidence of otological disease, might benefit from referral because of a hearing disability, though a small number (approximately 15 per cent) may be referred unnecessarily.

References

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