

Criticism of Australian Society of Otolaryngology-Head and Neck Surgery guidelines incorrect

Dear Sirs,

Drs S V and C M Fernandes¹ have made a serious criticism of the Australian Society of Otolaryngology-Head and Neck Surgery (ASOHNS) 'Guidelines for the Evaluation of Occupational Noise Induced Hearing Loss of Gradual Process' (2nd edition, 2009).² These authors specifically state that the guidelines '...unjustly favour the employer at the cost of the employee...'. They also state that 'In Australia, the current guidelines for the evaluation of noise induced hearing loss suggest that, in cases of asymmetrical loss, "the worse ear be equated to the better ear" for purposes of compensation', and that 'such a method was prejudicial to the worker'.

The ASOHNS guidelines do not 'suggest that "the worse ear be equated to the better ear"'. They state, in part, under the heading 'Interpretation':

In cases of asymmetry of sensorineural loss *sufficient to warrant retrocochlear investigation* but otherwise consistent with [noise-induced hearing loss], the worse ear is equated to the better. (My emphasis)

This paragraph must be read taking into consideration the whole of the guidelines, especially the section on 'Diagnosis' (see below). The ASOHNS guidelines do not define 'asymmetry sufficient to warrant retrocochlear investigation'; this phrase should be understood in the context of the whole guidelines, and depends on the facts in each individual case. The phrase 'consistent with' is not a diagnosis, and is too speculative to be used as a positive indicator of actual noise-induced hearing loss.

Diagnosis. The diagnosis is made on a clinical basis after carefully considering the medical history including occupational noise history, physical examination and audiogram. It is not a diagnosis of exclusion although it requires differential diagnosis. It cannot be made on the basis of an audiogram alone.

The diagnosis of [occupational noise-induced hearing loss] of gradual process requires a history of potentially injurious noise exposure, a hearing loss consistent with this diagnosis, a degree of impairment consistent with the amount of noise exposure and no compelling competing cause.

Each assessment depends on the facts in each individual case including the nature and duration of occupational noise exposure and the nature and extent of all the hearing losses including those below 2 kHz.

Sensorineural losses may be rejected on the grounds of insufficient noise exposure, acute onset, unilaterality, maximum loss being other than in the high tones and total loss of hearing.

Adelman³ has reported that the Workers' Compensation Board of British Columbia found that 10 claimants had undiagnosed acoustic tumours, over a five-year period.

Fernandes and Fernandes¹ give no reasons to explain their statement that the ASOHNS guidelines 'unjustly favour the employer'. If they are referring to the section of the ASOHNS guidelines which suggests that 'the worse ear be equated to the better ear', then they have misquoted the ASOHNS guidelines and omitted relevant sections of it, thus invalidating their criticism.

The expert must also use the New South Wales WorkCover Guides for the Evaluation of Permanent Impairment', 3rd edition (February 2009).⁴ This document states, in Chapter 9, paragraph 9.4:

The level of hearing impairment caused by non-work conditions is assessed by the medical specialist and considered when determining the level of work-related hearing impairment. While this requires medical judgement on the part of the examining medical specialist, any non-work-related deductions should be recorded in the report.

In clinical practice, ENT experts in the field give an expert opinion as to the quantum of work related and non work related hearing loss after consideration of the medical history, physical examination, accurate audiology including the nature and duration of occupational noise exposure and the nature and extent of all the hearing losses. A simple example is a 50-year-old worker with a 10-year history of occupational noise exposure, who has left-sided hearing loss consistent with 10 years of occupational noise but gross right-sided asymmetric hearing loss consistent with 49 years of occupational noise. In this case, the clinician would form an opinion that the gross right-sided asymmetric hearing loss, in excess of that on the left, was not due to occupational noise and was sufficient to warrant retrocochlear investigation.

In addition, experts supplying an opinion as evidence in court, on the basis of their specialised knowledge, swear or affirm to 'tell the truth, the whole truth and nothing but the truth'. Furthermore, only expert opinions formed on the basis of specialised knowledge gained through training, study or experience are admissible in court. The expert must agree to abide by the court's expert witness code of conduct, including making full disclosure of all matters relevant to his or her report and evidence. The assumed facts and the reasons for the opinion should be stated.

In addition, in Australia the medical expert must abide by the Medical Board of Australia's regulations published in 'Good Medical Practice: a Code of Conduct for Doctors in Australia'.⁵ Specifically, clinicians must:

[Provide] an impartial report. (Code 8.7.4)

[Recognise] that, if [they] discover an unrecognised, serious medical problem during [their] assessment, [they] have a duty of care to inform the patient or their treating doctor. (Code 8.7.5)

[Be] honest and not misleading when writing reports and certificates... (Code 8.8.1)

Fernandes and Fernandes state 'ENT experts are often hesitant to declare that asymmetrical hearing loss is noise-induced, hence the Australian guidelines statement'. Such

behaviour is not supported by the ASOHNS guidelines or the New South Wales WorkCover Guides. Furthermore, in my experience ENT experts with specialised knowledge in this field are not hesitant to declare that an asymmetry is noise-induced, if that is their opinion.

It is relevant to note that the New South Wales Workers' Compensation Act of 1926⁶ (section 16) includes compensation for occupational hearing loss.

Fernandes and Fernandes conclude that:

...the probability of non-noise-induced hearing loss remains at about 1 per cent... Based on the high level of improbability of a non-noise-related cause in cases of asymmetrical hearing loss, it is possible in the legal arena, even in the absence of... [magnetic resonance imaging], to state that an asymmetrical hearing loss is noise induced....

This information is largely based on the 2009 publication of Lutman and Coles,⁷ which Fernandes and Fernandes describe as '[a] recent paper from the UK Medical Research Council involving 48 313 randomly selected volunteers'. In fact, this number completed questionnaires, and 2708 were selected for examination. After excluding conduction hearing loss and excessive noise exposure, 368 men and 863 women remained in the study. Asymmetry was defined as 15 dB or greater using a four-frequency average at 0.5, 1, 2 and 4 kHz. Approximately 1 per cent of the whole group had asymmetry; however, between 2 and 5 per cent of the men had asymmetry. This is relevant because the majority of subjects in studies of noise-induced hearing loss asymmetry are men. Fernandes and Fernandes noted this in their findings. Although Fernandes and Fernandes did not comment on it, Lutman and Coles noted the noise-induced hearing loss asymmetry study by Robinson,⁸ and compared this study's results with their own findings for non-noise-induced sensorineural hearing loss asymmetry. Lutman and Coles concluded that 'the considerable inter-aural noise-induced hearing loss differences shown in Robinson's Table 2 are likely to be due in many cases to nothing more than noise damage superimposed on the sort of asymmetries to be found in the non-noise exposed population'. Lutman and Coles found that 7.4 per cent of non-noise-exposed men had hearing loss asymmetry of more than 15 dB at two adjacent octave frequencies, thus exceeding Obholzer's threshold for retrocochlear pathology investigation (i.e. 15 dB at two adjacent octave frequencies);⁹ furthermore, this percentage would be even higher if asymmetry was defined as more than 10 or 15 dB at any one frequency (the definition used by both Segal *et al.* and Barrs *et al.*).^{10,11} Fernandes and Fernandes's conclusion regarding the 'high level of improbability of a non-noise-related cause in cases of asymmetrical hearing loss' is not supported by the Lutman and Coles study they quote. Notably, Segal's study included no cases of retrocochlear pathology as these were specifically excluded from the study.

Alberti *et al.*¹² used the same asymmetry criteria as Lutman and Coles (i.e. 15 dB or greater using a four-frequency average at 0.5, 1, 2 and 4 kHz). Of 1873 consecutive occupational noise-induced hearing loss claimants, Alberti *et al.* found a total incidence of asymmetry of 15 per cent. This figure comprised 9.7 per cent due to non-noise-related causes and only 5.2 per cent due to noise-induced hearing loss. Although Fernandes and Fernandes quote Alberti and colleagues' study, again, this study does not support Fernandes and Fernandes' conclusion regarding the 'high level of improbability of a non-noise-

related cause in cases of asymmetrical hearing loss'. Alberti *et al.* found one case of acoustic neuroma in a worker with fluctuant hearing and no asymmetry on examination.

Expert opinion is only admissible if formed on the basis of specialised knowledge based on training, study or experience. If one's honest opinion, based on one's specialised knowledge, is that a patient's hearing asymmetry is entirely due to noise-induced hearing loss, it seems problematic to have another honestly held but contradictory opinion that further medical assessment is needed to exclude retrocochlear pathology. An expert can have a contingent opinion; however, Fernandes and Fernandes state that this is not necessary. I would suggest that if, during standard medicolegal assessment, an expert is of the opinion that there is a need to exclude retrocochlear pathology, which has not been addressed by the patient's treating doctors, then that expert should comply with the directive specified in the Medical Board of Australia's 'Good Medical Practice: a Code of Conduct for Doctors in Australia', code 8.7.5 (see above) (or local equivalent).

For the medical expert giving opinion evidence, there is a huge difference, there is a huge difference between not positively identifying a non-noise cause of asymmetry 'sufficient to warrant retrocochlear investigation' and positively implicating noise as the cause, based (wholly or substantially) on that expert's scientific knowledge, training and experience. As Gleeson, Chief Justice of the High Court of Australia, stated in 1999 in *HG v R* (paragraph 41),¹⁰ expert opinion not based on specialised expert knowledge is '... a combination of speculation, inference, [and] personal and second-hand views...'

For the same reasons it is against the meaning of expert opinion to suggest that an ENT expert medical opinion cannot include a diagnosis of occupational noise-induced hearing loss, as well as the facts upon which that diagnosis is based (including medical history, physical examination, and the results of audiometry and other relevant tests). The medical expert should state in clear and unambiguous terms the assumed facts accepted from the medical history and physical examination, the reliability of audiometry and other relevant tests upon which the expert's opinion is based, and the weight and significance the expert attaches to these facts (and their medical and scientific reasons for doing so). Based on the above, an ENT expert's opinion could be that all, part or none of a patient's hearing loss is induced by occupational noise; or that the obtained audiogram is not valid and further testing is required. It follows that an ENT expert can make a diagnosis of occupational noise-induced hearing loss, as part of their expert opinion.

It is relevant to note that the New South Wales 'WorkCover Guides for Independent Medical Examinations and Reports'¹¹ specifies that an appropriately qualified medical expert may be requested to provide a diagnosis of a patient's relevant injury and its causation, and also to give their opinion as regards whole person impairment, pre-existing impairment and treatment recommendations.

Fernandes and Fernandes' criticism of the ASOHNS guidelines is not valid, and their conclusion regarding the improbability of encountering a non-noise asymmetry in noise-induced hearing loss cases is not supported by the studies they quote (i.e. Lutman and Coles, and Alberti *et al.*). The ASOHNS guidelines are not unjust or prejudicial; furthermore, they recommend that each assessment should depend upon the facts of each individual case.

DR BRIAN WILLIAMS MBBS FRACS LLB MHL FFIN
ENT Clinic Sydney, www.entclinicsydney.com,
71–73 Archer St, Chatswood, NSW, Australia
ASOHSN Audiological Committee

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Author's reply

Dear Sirs,

I thank Dr Williams for his comments. However, his response seems to have entirely missed the point I had attempted to make.

The objective of my article¹ was to review the current recommended practice of equating the worse ear to the better ear in cases in which an asymmetry sufficient to warrant retrocochlear investigation is demonstrated, in the context of legal proceedings. Most ENT surgeons would be aware of the pathology yield in cases of 'asymmetric hearing loss sufficient to warrant retrocochlear investigation' in routine clinical practice. The medical literature is also rife with such experiences. In other words, in the real world such asymmetric hearing loss is common, whereas identifiable pathology is not.

New South Wales workers' compensation legislation allows the medical expert to provide an opinion based on the 'preponderance of evidence' standard (in civil court cases). This standard permits the establishment of a link in the absence of hard proof; other factors can be considered to enable a conclusion to be reached. In cases in which the probability (greater than 0.5) exists that noise is a substantial factor (more likely than not) in the causation of hearing asymmetry, the legal process allows the expert to infer that this is the case. It should be noted that a medicolegal opinion is not the same as a medical diagnosis.²

The relevant question is this: despite the availability of a history of substantial noise exposure and other requisites, is there a greater than 50 per cent likelihood that hearing asymmetry is due to some asymmetric, non-noise-related, hitherto unidentified pathology? The medical literature does not indicate so. Studies of noise-exposed individuals report that asymmetric hearing loss occurs in 4.7 to 35 per cent of cases, and that a significantly large number of such patients have no other probable cause of hearing loss despite further investigation. In my own study,¹ of those patients with hearing asymmetry 'sufficient to warrant retrocochlear investigation', 22.6 per cent showed no cause for this asymmetry despite further investigation. Alberti *et al.*³ also report a low diagnostic yield for such investigation (see below). This improbability dictates that the pathology may be noise-induced in a legal sense.

Dr Williams has analysed the incidence of hearing asymmetry in the various studies he cites, but this is not at issue here. The issue is the incidence of identifiable pathology in asymmetric hearing cases.

Lutman and Coles⁴ conducted their study in several phases between 1979 and 1986 and found that, in a non-noise-exposed population, the incidence of hearing asymmetry was low. This information is valuable in a medicolegal context, where hearing asymmetry needs to be evaluated in terms of 'extrinsic or constitutional/pathological causation'.

Of particular relevance is Alberti and colleagues' study,³ which succinctly states (on page 259) that '[e]ven though the series of patients is small (1873), the lack of acoustic neuroma or angle tumor as a finding in any patient with asymmetric hearing loss serves to highlight the rarity of the condition and the high cost of finding a single tumor' (my emphases). The other causes of hearing asymmetry mentioned by Alberti *et al.* (i.e. trauma, Ménière's disease, etc) are diagnosable from the clinical history and medical and audiological examination. In Alberti and colleagues' unexplained cases (1.7 per cent), the diagnosis may well be noise-induced hearing loss as a result of incidental noise exposure (type B impulse noise).⁵ Dr Williams mentions Obholzer and colleagues' study,⁶ which provides guidance on 'asymmetry sufficient to warrant retrocochlear investigation', but again, this is not at issue.

Dr Williams' arguments may be valid when a clinical diagnosis is required. The current guidelines pertaining to hearing asymmetry are based on clinical diagnosis, and this is the basis of my plea.

S V FERNANDES
Newcastle University
New South Wales
Australia

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