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Attitudes to tympanometry

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Abstract

A postal questionnaire revealed the widest possible spectrum of opinion regarding tympanometry. The reasons are discussed.

Introduction

The use of tympanometry, and its application to the clinical testing of children, spread rapidly after its development in the 1940s and 1950s (Metz, 1946; Terkildsen and Nielsen, 1960; Brooks, 1968). It has gained favour in the diagnosis of middle ear effusions, otosclerosis and ossicular discontinuity. Through the use of stapedial reflexes, it has been employed in hearing threshold determination and in the diagnosis of retrocochlear disorders. However, the technique is far from perfect, and doubts are still expressed about its clinical usefulness, especially in the diagnosis of middle ear effusions and otosclerosis (Browning *et al.*, 1986). It is also an expensive technique in terms of hardware and technicians' time, and one must take account of this when the money supply is limited.

In view of these considerations, we decided to circularise all ENT consultants in the United Kingdom to determine how much clinical reliance is placed on impedance testing in the management of middle ear disorders.

Method and results

Four hundred and thirty-one questionnaires were sent out to ENT Consultants (Fig. 1) and 326 replies were received, a better than 75 per cent return rate. Of those replying, 4.8 per cent did not use the technique at all. In two this was because they did not have the equipment; but with the other 14 it was because responders felt that clinical examination was sufficient and tympanometry would not add further information.

Seventeen per cent used the technique routinely on every otological patient. Of the total number using the technique, 6 per cent found it indispensable, 47 per cent very useful, 45 per cent sometimes useful and 2 per cent useless in aiding their clinical diagnosis. 75 per cent found that on its own it did not often alter planned treatment.

There were 113 constructive comments, i.e. from 35 per cent of those replying. Many responders (21) commented that it was most useful in young children, and also as a graphic demonstration to parents (3).

Some (3) asserted that it was useful in the screening of children, but more (8) found serious problems with its use in community screening programmes.

The most common comment (22) was either that tympanometry did not add to the clinical information, or that it merely confirmed the clinical impression. Some (8) used it in conjunction with clinical findings and pure tone audiogram, and some (5) in difficult cases only. It was thought useful for the inexperienced (5), and less so as experience grew; and also useful in otosclerosis and ossicular discontinuity (4). Frequent false positives and negatives are a problem according to some (6).

There were (3) responders who indicated that tympanometry correlated poorly with surgical findings, but also one who said that the findings were rarely contradicted by surgery. Also at odds were the comments that tympanometry was either unhelpful in deciding on surgery (2), or useful in confirming the need for surgery (2).

Many responders (12) said it was mostly used for the stapedius reflex, but some said it was less useful for this.

Discussion

It might be expected that a technique which was introduced over 25 years ago, which is widely available and has been extensively clinically tested, would have generated a consensus as to its uses and usefulness. This does

QUESTIONNAIRE ON IMPEDANCE AUDIOMETRY

Please circle underlined options:

Do you use acoustic impedance audiometry at all to investigate middle ear pathology? *YES/NO*

If NO: Why not?

If YES:

Do you use it routinely on every patient? *YES/NO*

Do you find it

indispensable
very useful
sometimes useful
useless

in aiding your clinical decision?

Does it often alter your treatment? *YES/NO*

Any comments?

Fig. 1

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not seem to be the case, and the questionnaire has highlighted the very wide spread of opinion which is prevalent. The questionnaire concentrated on the use of tympanometry in middle ear disorders, by which was meant primarily otitis media with effusion.

The replies on the usefulness of tympanometry conformed almost exactly to a normal distribution curve. Only 6 per cent found it indispensable in spite of the fact that 17 per cent used it routinely, and there was also a 50-50 split in the comments made for or against tympanometry.

It is common for there to be a wide spread of medical opinion on any topic. In this case it does not mean that tympanometry is either indispensable or useless; simply that some people find it more useful than others. However, there are several points which need to be highlighted.

There are many papers showing the correlation between tympanometry and operative findings, and devising elaborate classification and scoring systems (Beery *et al.*, 1975; Paradise *et al.*, 1976; Shurin *et al.*, 1977). However, a recent panel (Jerger *et al.*, 1985) recommended further research because of methodological flaws and inaccuracies in previous work.

Mass screening of children was not recommended in the past (Harford *et al.*, 1978) because of the high referral rate which resulted. Lous (1982) employed different criteria and showed that the referral rate can be reduced to as low as 9 per cent, but at the expense of very low sensitivity (40-50 per cent). It is still therefore only of any use in high risk groups.

Indications for surgery in otitis media with effusion are not universally agreed, but usually depend on the history. This is either of a clinically important hearing loss for a significant length of time, usually 3-6 months, or frequent attacks of otalgia. If these indications are accepted, then the presence of fluid at any particular moment is not important, and heroic efforts to determine this are unnecessary.

In the Audiology world, great importance is attached to tympanometry, this simplistic attitude failing to take into account factors in patient management such as the natural cure rate, and drawbacks to surgery such as complications and waiting lists.

There is also the cult of the machine in medicine today: a high-technology box of gleaming glass and chrome, only importable from abroad at vast expense, is deemed mandatory for patient care, but soon gathers dust in a cupboard once enthusiasm has waned. One of the advantages of tympanometry has been described as the ' . . . sheer fun afforded by expositive electronic gadgetry' (Paradise, 1982). As tympanometers cost between £1,500 and £6,000 to buy, this fun does not come cheaply.

The exact place of tympanometry in otology will continue to be debated, but it is probably most useful in the field of stapedial reflexes. We would, however, make a plea for a more critical attitude to this and other medical technology.

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