VALU OF HEARING QUESTIONNAIRE IN PREDICTING HEARING IMPAIRMENT

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OBJECTIVES

The degree of hearing loss can be divided into different categories between normal to profound. (Figure 1) We set out to evaluate the usefulness of the Screening Version of the Hearing Handicap Inventory for the Elderly (HHIE-S) questionnaire in screening for hearing impairment amongst the general population.

METHODS AND MATERIALS

We recruited subjects at a health awareness event organized by the ENT Department of a tertiary hospital. Members of the public were invited to fill in the HHIE-S questionnaire and to undergo a four-frequency pure tone audiogram (PTA), of which 37 subjects aged 25 to 82 years completed both.

RESULTS

Conventionally, moderate or high scores on the HHIE-S questionnaire are considered strongly suspicious of a hearing impairment and a referral for a formal Pure Tone Audiogram would be recommended to confirm the actual hearing level for that individual.

If hearing impairment is defined as four-frequency (0.5kHz, 1kHz, 2kHz and 4 kHz) PTA average of 26dB or more in the better hearing ear (at least mild hearing impairment), the sensitivity of the HHIE-S questionnaire in screening for hearing impairment is 80%, but its specificity is low at 18%. The positive predictive value is 40% and the negative predictive value 57%. (Table 1)

However, if hearing impairment is defined as four-frequency PTA average of 41dB or more in the better hearing ear (at least moderate hearing impairment), its sensitivity in screening for hearing impairment increases to 100% though its specificity remains low at 20%. The positive predictive value of the screening questionnaire falls to 6% but the negative predictive value rises to 100%. (Table 2)

DISCUSSION

In any screening test, a good balance needs to be achieved between the positive predictive value and negative predictive value. For screening of hearing impairment, the gold standard test would be a Pure Tone Audiogram (PTA) performed by an audiologist within a sound proof room. This test is non invasive and carry zero risk to the patient.

Many patients with hearing impairment deny or ignore their problem and often present very late or do not present at all to have this treated. Hence, in any screening test, it would be important to have a high sensitivity or negative predictive value to ensure very few hearing impaired patients are missed.

Since the gold standard test carries no morbidity to the patient, we can accept a low specificity. However many patients will be inconvenienced by having to have a formal PTA. Not screening for mild hearing impairment is also justifiable by the fact that the vast majority of patients with mild hearing loss will not accept hearing aids anyway.

The main weakness of this study is the small sample size.

CONCLUSIONS

The HHIE-S is too inaccurate to screen for slight and mild hearing loss. However, it can be used in general population screening for hearing loss that is moderate and worse. However, since its specificity is low, all patients with moderate and high scores need formal audiograms to confirm their hearing levels.

REFERENCES