

AUDIOLOGICAL FINDINGS IN PRESBYCUSIS

BABU T. PUNNAN

Increasing deafness in the aged is one of the interesting chapters and psychologically perhaps the most important in our Bible of Audiology. Aging is the process of growing mature or old - occurs in all cells and structures of the body.

The term 'presbycusis' was coined to denote the poor hearing of elderly people. The threshold sensitivity of hearing for pure-tones shows a gradual impairment with increasing age. Presbycusis has now become generally recognised as a considerably more complicated clinical phenomenon than it was a few years ago.

A definition of the age at which presbycusis begins is lacking in literature. Several studies have been conducted in other countries to assess the nature and degree of hearing loss increased during old age. But the literature on the pattern of hearing loss with respect to age on Indian population is scanty - indicating the need for conducting a study on this line

Hundred subjects were selected randomly from the attendants who brought cases to the Institute during the study from different parts of South India, in the age range of 35—74 years. All had otologically normal ears with no history of ear aches or ear discharge. All were tested in sound treated rooms of All India Institute of Speech and Hearing using Madsen OB-70 audiometer calibrated to I. S. O, 1964.

The aim of this study was to establish the pattern of hearing loss in Indians as a function of age and to study other audiological manifestations.

The study was carried out in the following ways :

- 1 Pure tone air conduction and bone conduction thresholds.
- 2 Speech discrimination score.
- 3 Administration of Young and Harbert's modified S.I.S.I. test.
- 4 Administration of complete Tone Decay test.

From the present study it was seen that sensitivity for high frequency pure tone decreases as age advances. As per the available literature, presbycusis in white population, appears after the age of 45 years where as the present study reveals that for Indians it appears after the age of 40 years.

Pestalzza and Shore (1955) concluded that the phonemic regression is associated with presbycusis. Goetzinger et al have supported the evidence of abnormal liability in discriminating speech among older persons. The present study also goes parallel with the above studies showing that the discrimination tends to reduce as age advances. The possible explanation given by

Gain for such a deterioration is the possible lesion to the retro-neural elements i.e., degenerative changes in the brain.

Results of S. I. S. I. test of presbycusis subjects shows unpredictability of S.I. S. I. scores. This may be because of the inadequate levels of presentation. So, in this study the tone was presented at 70 dB H. L. (Young and Harbert, 1967). The results show that no pathology is detectable in the cochlea and the presbycusis ears behave like normal ears.

Regarding tone decay, the results of the present investigation show that the findings are in quite agreement with those of other studies (Goetzinger, 1961) which failed to obtain any significant decay. The conclusion was that degenerative changes in the cochlea and in the neurons are not dominant factors in the development of presbycusis, and that degenerative changes take place at various levels of the auditory system.

Conclusion :

1. There is a progressive reduction in sensitivity of the subjects as a function of age.
2. It is found that presbycusis starts a little earlier for Indians than it is reported for the white population.
3. Presbycusis is a factor to be seriously considered while assessing the hearing loss of any employee to be considered for compensation.
4. The function of the cochlea in the aged is comparable to that of a normal subject on S. I. S. I. test.
5. The pathological changes at the retrocochlear structures, if present, are not detectable according to the result obtained by the investigator on tone decay test.
6. There is a slow reduction in the discrimination ability of the subjects as age advances.

Recommendations for further study :

1. Study of a much larger sample would be desirable to prepare a much appropriate correction factor for presbycusis.
2. The data on reflex of muscles, compliance of ear drums and change in the impedance in the aged subjects may also be collected.
3. Histo-pathological studies are also desirable.

REFERENCES

- Goetzinger, C. G., Proud, D., Dirks, and J. Embury, 'A study of hearing in advanced age' *Archives of otolaryngology* 73 (1961) 662-74.
- Pestalozza, G., and Shore, I., 'Clinical evaluation of presbycusis on the basis of different tests of auditory function' *Laryngoscope*, 65 (1955) 1136-63.
- Young and Harbert, 'Significance of SISI test', *J.A.R.*, 7, 303-311, 1967.