Committee Report

Occupational Noise-Induced Hearing Loss

The American College of Occupational Medicine Noise and Hearing Conservation Committee has developed the following position statement in response to requests on "What are the distinguishing features of occupational noise-induced hearing loss."

Definition

Occupational noise-induced hearing loss, as opposed to occupational acoustic trauma, is a slowly developing hearing loss over a long period (several years) as the result of exposure to continuous or intermittent loud noise. Occupational acoustic trauma is a sudden change in hearing as a result of a single exposure to a sudden burst of sound, such as an explosive blast.

The diagnosis of noise-induced hearing loss is made clinically by a physician and should include a study of the noise exposure history.[1]

Characteristics

The principal characteristics of occupational noise-induced hearing loss are as follows:

1. It is always sensorineural affecting the hair cells in the inner ear.
2. It is almost always bilateral. Audiometric patterns are usually similar bilaterally.
3. It almost never produces a profound hearing loss. Usually, low-frequency limits are about 40 dB and high-frequency limits about 75 dB.
4. Once the exposure to noise is discontinued, there is no significant further progression of hearing loss as a result of the noise exposure.
5. Previous noise-induced hearing loss does not make the ear more sensitive to future noise exposure. As the hearing threshold increases, the rate of loss decreases.
6. The earliest damage to the inner ears reflects a loss at 3000, 4000, and 6000 Hz. There is always far more loss at 3000, 4000, and 6000 Hz than at 500, 1000, and 2000 Hz. The greatest loss usually occurs at 4000 Hz. The higher and lower frequencies take longer to be affected than the 3000 to 6000 Hz range.
7. Given stable exposure conditions, losses at 3000, 4000, and 6000 Hz will usually reach a maximal level in about 10 to 15 years.
8. Continuous noise exposure over the years is more damaging than interrupted exposure to noise, which permits the ear to have a rest period.

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References

1. American Occupational Medicine Association Noise and Hearing Conservation Committee. Guidelines for the Conduct of an Occupational Hearing Conservation Program. *J Occup Med.* 1987;29:981–982.

0096-1736/89/3112-0996$02.00/0