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Age-related hearing loss – epidemiological and etiological aspects

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Age-related hearing loss (ARHL), belongs to one of the three most frequently reported chronic health problems in old age, and is also the most prevalent cause of hearing loss. There are many epidemiological studies from countries, from North America, Australia and Japan. Recently, interesting results from recently industrialized countries have been available. The results of the investigations from western countries coincide reasonably well. The unscreened studies are fairly similar, but a difference of up to 10 dB or more at some frequencies exists. The screened studies also coincide rather well, with some variability. The unscreened populations have 5-15 dB poorer threshold values than the screened, especially pronounced in the high frequencies.

Gender differences have been observed in most studies. Elderly women have generally better hearing than men of the same age. Women have better threshold values at 2-8 kHz than men, with a difference of up to 20 dB at 4 kHz. In the low frequency area there is a tendency for women to present with somewhat poorer thresholds than men. Extrinsic ototraumatic factors, above all exposure to noise, differ between genders and are likely to be responsible for at least part of the difference. However, results regarding gender differences have been somewhat contradictory. In one study it has been reported that the male excess of hearing loss remained statistically significant after adjusting for age, education, noise exposure, and occupation. No significant gender difference has been found in animal studies.

Exposure to noise is the most important extraneous noxious factor that affects the hearing in old age, above all for men. Occupational exposure to extensive noise is of considerable importance, but also every-day noise exposure. The effect of noise is equivocal. The interactions between noise-induced hearing loss (NIHL) and ARHL are complex, difficult to determine, and poorly understood. One important issue that has been discussed is if there is increased or decreased sensitivity to noise with age. The traditional model to assess NIHL in older persons assumes that ARHL adds to the permanent noise-induced threshold shift. A basically additive model is embraced by ISO 1999. However, this model has been challenged. It has been proposed that the additive model overestimates, as well as underestimates, the interaction between noise and ageing.

Hearing loss in elderly people can also be related to ototraumatic events other than noise. Such factors include influence from ototoxic agents and environmental ototoxic insults, smoking, head trauma, alcohol abuse. Health factors e.g. otological diseases and cardiovascular disorders have been related to the presence of ARHL. Other factors that interfere with the hearing capacity in old age are socio-economic state, level of education, and the state of health.

Quality of life depends to a large extent on communication with other people, and the auditory system is the most important link in communication. ARHL has often a devastating effect on the social life of many elderly people. One of the most important tasks for the audiological services is to alleviate these negative effects.

