From the EDITOR

Dr. Wulf H. Utian, consultant in women's health and reproductive endocrinology, has served as Editor-in-Chief of *Menopause Management* since its inception in 1988. The Arthur H. Bill Professor Emeritus of Reproductive Biology and Obstetrics and Gynecology, Case Western Reserve University School of Medicine, he is also Consultant in Women's Health to the Cleveland Clinic Foundation, and Executive Director of The North American Menopause Society (NAMS). He is Chairman of the Advisory Board of Rapid Medical Research, Cleveland. He received his medical degree from the University of Witwatersrand, Johannesburg, South Africa, and his PhD from the University of Cape Town, South Africa, and is a Fellow of the Royal and American Colleges of Obstetricians and Gynecologists, as well as the International College of Surgeons.

A pioneer in women's health issues and menopause research, in 1967 he established the Groote Schuur Menopause Research Clinic in Cape Town, the world's first such clinic. He was one of the three original founders of the International Menopause Society in 1976, of which he is Honorary Past President, and founded The North American Menopause Society in 1989.

He is the recipient of numerous national and international awards and research grants, and is still an active investigator with multiple grants. Dr. Utian has written over 200 papers related to the reproductive system in women and has authored five books on menopause and its effects on women. He is editor of *Menopause: The Journal of The North American Menopause Society.*

Menopause, Estrogen and Hearing

The impact of menopause and reduced estrogen levels on nervous system function has been long recognized. For instance, brain effects relating ovarian function to vasomotor symptom causation, mood changes, depression, sleep, cognition and sexual response have all been the subjects of intense scrutiny. Peripheral sensation has also been shown to respond to changes in estrogen levels. Indeed, two-point discrimination, an excellent clinical test of peripheral sensitivity, increases in inverse proportion to circulating estrogen levels.

But what about the senses? In a previous editorial in *Menopause Management*, I drew attention to the considerable amount of information available on the relationship between sex steroids and the eye.[1] On the other hand, when I recently scrutinized the indexes of recent menopause-related textbooks and learning materials for entries on hearing and the ear, I drew a blank.

Intrigued by observations over the years that patients with Turner's syndrome (45,X) who are biologically estrogen-deficient demonstrate hearing deficiencies, I conducted a MEDLINE search using words like "menopause," "estrogen," "hearing," and "ear." There was, to my surprise (and after 40 years in this area of medical specialty there is not much that surprises me!), some very relevant information that I hasten to bring to your attention.

Hearing Loss

The prevalence of hearing impairment increases beyond the age of 50, with presbycusis (ie, progressive hearing impairment associated with aging, characterized by hearing loss and

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degeneration of cochlear structures) being the most important contributor to this increase. About 25% of individuals between the ages of 51 and 65 years have decreased hearing in at least one ear, and objective hearing loss can be identified in more than 33% of persons age 65 years and older.[2,3] The impact on hearing from factors such as the use of listening apparatus like cell phones and iPod-like devices, and from attending rock concerts and using boom-boxes, is yet to be determined.

More specifically, there is some evidence of a relationship between gender, menopause, estrogens and hearing. The obvious question is whether sex steroids, specifically estrogen, preserve hearing during aging. As yet, there is no definitive answer. There certainly are enough preliminary data out there for an aspiring young otolaryngologist to consider developing a great career by addressing this question in future research!

Estrogen and Hearing

For an overview of what is known about estrogen and hearing, I would refer readers to an excellent summary of recent investigations.[4] Hultcrantz et al conclude that physiologic levels of estrogen would appear to have a possible protective effect on hearing function. What is known is that women with Turner's syndrome have earlier presbycusis, and that women who are administered hormone therapy (HT) have slightly better hearing than those who are not. HT has a positive effect on auditory brainstem response in postmenopausal women—an important objective measure of hearing.[5] More recently, HT was shown to improve conduction auditory pathways at the brain stem and thalamocortex. Only estrogen users benefited more, and the addition of progestin to estrogen did not have a negative or potentiating effect.[6] On the other hand, there is a report that progestin as a component of HT resulted in poorer hearing abilities in older women taking HT, affecting both the peripheral (ear) and central (brain) auditory systems, interfering with the perception of speech in background noise.[7]

There is, however, sufficient evidence to begin to consider postmenopausal estrogen administration as being potentially beneficial for hearing, and to justify appropriate research in this area.

Quite obviously, there is no direct answer at this time regarding whether menopause *per se* is directly associated with hearing loss, or whether there is an indication for estrogen in the prevention thereof. There is, however, sufficient evidence to begin to consider postmenopausal estrogen administration as being potentially beneficial for hearing, and to justify appropriate research in this area.

The Role of the Practitioner

In the interim, what is the role of the menopause practitioner in regard to the ear and hearing? For the best answer to this question, we should refer to the considerations of the United States Preventive Services Task Force (USPSTF). The Task Force confirms that the incidence of hearing impairment, largely presbycusis, rises quickly beyond age 50. It also reports that self-assessment questionnaires to identify hearing impairment probably represent the most rapid and least expensive way to screen for hearing loss in the adult, being up to 70%-80% accurate depending upon the audiometric criteria.[8] Although no controlled study has proven the effectiveness of screening for hearing impairment in the adult population, there is evidence for measured improvement in social, cognitive, emotional and communication function from hearing aid use.[3,9]

The following is a direct quotation from the USPSTF:

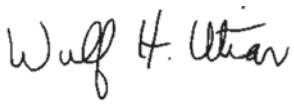
"Screening older adults for hearing impairment by periodically questioning them about their hearing, counseling them about the availability of hearing aid devices, and

making referrals for abnormalities when appropriate, [is] recommended. The optimal frequency of such screening has not been determined and is left to clinical discretion. An otoscopic examination and audiometric testing should be performed on all persons with evidence of hearing impairment by patient inquiry. Although hand-held devices for audiometry testing (audioscopes) are also sensitive screening tools for hearing deficits, patient inquiry is likely to be a more rapid and less expensive way to screen for hearing loss in older adults. There is therefore insufficient evidence to recommend for or against routinely screening older adults for hearing deficits using audiometry testing."[8]

An otoscopic examination and audiometric testing should be performed on all persons with evidence of hearing impairment by patient inquiry.

The Institute of Medicine has recommended audiometric testing once each 15-year period in the following age groups: 40-59, 60-74, and 75 and over.[10] The Canadian Task Force on Periodic Health Examination recommends screening the elderly for hearing impairment, using a single question about hearing difficulty (whispered-voice and out of field of vision) or with an audioscope.[11] The American Academy of Family Physicians does recommend evaluation of hearing in persons 65 years and older, and hearing aids for patients found to have hearing deficits, although these recommendations are under review.[12]

So, there you have it in a nutshell. There is very likely a relationship between menopause, estrogen levels and hearing. This does not represent an indication at this time for estrogen usage. However, a single question about hearing difficulty, whispered out of the sight of the patient, should be a part of every annual physical examination of the postmenopausal woman. Referral to an otolaryngologist for more specific testing, and use of hearing aids, may need to be considered.



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References

1. Utian WH. Menopause, hormones, and the eye. *Menopause Management* 2004;13:6-7.

2. Davis A, Stephens D, Rayment A, et al. Hearing impairments in middle age; the acceptability, benefit, and cost of detection (ABCD). *Br J Audiol* 1992;26:1-14.

3. Mulrow CD, Lichtenstein MJ. Screening for hearing impairment in the elderly: rationale and strategy. *J Gen Intern Med* 1991;6:249-58.

4. Hultcrantz M, Simonska R, Sternberg AE. Estrogen and hearing: a summary of recent investigations. *Acta Otolaryngol* 2006;126:10-14.

5. Strachan D. Sudden sensineural deafness and hormone replacement therapy. *J Laryngol Otol* 1996;110:1148-50.

6. Khaliq F, Tandon OP, Goel N. Differential effects of estrogen-progesterone on auditory evoked potentials in menopausal women. *Indian J Physiol Pharmacol* 2005;49:345-52.

7. Guimaraes P, Frisina ST, Mapes F, et al. Progestin negatively affects hearing in aged women. *Proc Natl Acad Sci* 2006;103:14246-49.

8. U.S. Preventive Services Task Force. *Guide to clinical preventive services,* 2nd ed. Baltimore, MD: Williams & Wilkins, 1996:393-405.

9. Mulrow CD, Aguilar C, Endicott JE, et al. Quality of life changes and hearing impairment: results of a randomized trial. *Ann Int Med* 1990;113:188-94.

10. National Academy of Sciences, Institute of Medicine. Ad Hoc Advisory Group on Preventive Services. *Preventive services for the well population.* Washington DC: National Academy of Sciences, 1978.

11. Canadian Task Force on the Periodic Health Examination. *Canadian guide to clinical preventive health care.* Ottawa: Canada Communication Group. 1994;258-66, 298-304, 954-63.

12. American Academy of Family Physicians. *Age charts for periodic health examination.* Kansas City, KS: American Academy of Family Physicians, 1994 (Reprint no. 510).