

NEW STUDY LINKS HORMONE REPLACEMENT THERAPY AND HEARING LOSS

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ROCHESTER, N.Y., May 5—A pilot study conducted by a research team housed at Rochester Institute of Technology's National Technical Institute for the Deaf (NTID) and the University of Rochester (UR) has revealed that women taking hormone replacement therapy (HRT) may run the risk of diminished hearing.

Depending on the measure, HRT recipients did anywhere from 10 to 30 percent worse on hearing tests than women who had not received HRT, said D. Robert Frisina, Sr., Ph.D., director of the NTID-based International Center for Hearing and Speech Research (ICHSR).

For the past couple decades, physicians have been widely prescribing HRT to alleviate symptoms of menopause, such as night sweats, hot flashes and mood swings. But over the past few years, HRT has been linked to breast cancer and strokes, and blood clots.

The scientists used three tests to compare the hearing of 32 women between the ages of 60 and 86 who had hormone therapy to 32 other women in the same age range who had not. While the HRT group performed worse across the board, it was in complex settings – such as the ability to decipher a sentence while listening to someone amid a loud backdrop – that the HRT group fared worst.

“It’s important to alert women that there could be another significant side effect of hormone-replacement therapy,” said Robert D. Frisina, Jr., Ph.D., associate director of ICHSR and professor of Otolaryngology at UR Medical Center. “We know these findings clearly apply to the 64 women we studied. What we can’t say, from such a small number of people, is the extent to which they apply to everyone. A much larger study needs to be done.”

This finding, though, is the opposite of what they were expecting, said Frisina Sr., because women (and men) have estrogen receptors in the ear. More estrogen in the system due to HRT, one might hypothesize, could improve a woman's ability to hear.

“In animal studies, estrogen is helpful to nerve cells both in the ear and brain,” explained Frisina Jr. “We were surprised to learn that in our group of subjects, the estrogen appears to be hurting the cells in the ear.”

Frisina Jr. says additional research needs to determine if the hearing loss can be attributed to the fact that HRT is not a natural dose, and/or if the timing of the dose is an issue.

“Yet another factor is that the ear depends on a certain balance of sodium and potassium to work properly,” Frisina Jr. said. “Estrogen reduces potassium and also causes sodium retention....That area needs further exploration, as well.”

The team has already begun researching all the questions this finding has raised, as well as others, such as how much and what kind of HRT made a difference in the hearing loss; and if HRT is discontinued, will hearing improve?

“We’re not experts on HRT,” Frisina Jr. asserted. “But if HRT continues to be prescribed on such a wide basis, more sensory testing should be done for HRT and other test drugs.”

Five years ago, ICHSR scientists at NTID and UR discovered that age-related hearing loss is caused not only by malfunctioning of the inner ear, but also by miscommunication in the brain linked to chemical reactions that change with age. The discovery will likely lead to medications to correct the condition, and will affect millions of people over the age of 55.

Established in 1989 as a joint program of NTID and UR School of Medicine and Dentistry's Division of Otolaryngology, ICHSR has a five-year, \$6.3-million grant from the National Institutes of Health. The group has been continually funded through five-year grants from NIH since 1993 and draws upon extensive research on human hearing, at RIT/NTID, with expertise in neuroscience from UR.

NTID is the first and largest technological college in the world for deaf and hard-of-hearing students. One of eight colleges of RIT,

NTID offers educational programs and access and support services to its 1,100 students from around the world who study, live and socialize with 14,000 hearing students on RIT's Rochester, N.Y., campus.

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