

Take Control of Your Hearing Loss Before It's Too Late

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Reprinted from Nutrition & Healing newsletter, Vol 13, Issue 4, May 2006

Tom came to me wanting to hear an answer. Literally.

About a year earlier, he had suddenly lost nearly all the hearing in his right ear in only three weeks. One specialist told him it was probably a neurosensory problem. Another thought it might be autoimmune related. Neither one did anything for him. There was nothing to do but wait, they said.

But Tom refused to accept this verdict. He'd heard that I often have another point of view, so he consulted with me.

It seemed logical to me that Tom's hearing loss could be due to an autoimmune problem. Sudden hearing loss has been diagnosed as autoimmune for years. But over the next year and a half as I worked with Tom, it became clear to me that autoimmune hearing loss might not be autoimmune-related after all. And the key to correcting this problem might just be the same key to unlocking the mystery of a problem that's much more common, not to mention more difficult-to-solve age-related hearing loss.

For a long time, age-related hearing loss has been a problem with very little hope of solution. There's been little to do except wait for the hearing to diminish and then get a hearing aid. It doesn't actually fix the problem, but, like using a crutch, it helps you get by.

Years ago, the Journal of the American Medical Association published a brief article reporting that vitamin D supplementation slowed hearing loss. Since then, research findings have been conflicting, some reporting significant vitamin D deficiency, and others not.¹⁻³ I've advised individuals with age-related hearing loss to use at least 3,000 to 4,000 IU daily, but the results have been mixed. (See the November 2003 issue of *Nutrition & Healing* for a more complete discussion of vitamin D supplementation and health.)

But very recently there's been what appears to be a research breakthrough that may lead to a safe, natural treatment capable of stopping or even partially reversing age-related hearing loss.

Following the Rabbit Trail

Before we get to this new breakthrough, though, let's go over the other steps Tom took in his attempt to alleviate the hearing problem and to improve his health in general.

Since Tom's hearing loss had been diagnosed as autoimmune, I recommended a blood test for anti-gliadin antibodies to see if he was sensitive to the proteins found in all

grains except corn and rice. I recommended a complete set of other food allergy tests, too, because autoimmune diseases are always lessened (although not cured) by eliminating these foods from your diet.

His anti-gliadin test was positive, as were many of the other food allergy tests, so I pointed him to the clinic nutritionist and told him to go onto a gluten/gliadin-free diet and to control the intake of his other food allergens. I told him that if his hearing loss was truly autoimmune, there was at least a small chance that taking the pressure off his immune system in this way might reduce the supposed "auto-immune" attack on his hearing.

In addition to hearing loss, Tom reported vertigo (dizziness), postural hypotension (dizziness and wooziness on standing up quickly), and exercise intolerance (unusual fatigue for a longer period of time than usual following active exercise). For these reasons, I recommended an adrenal stress test to see if his adrenal glands were functioning properly.

I was surprised to find that Tom's cortisol and cortisone response was completely normal. The test did reveal, however, that his testosterone was at the very low end of the normal range and that his testosterone/estrogen ratio was also low. As a first step, I recommended botanicals and nutrients that frequently raise testosterone levels.

Over the next year, Tom experienced improvements in his overall health. Unfortunately, he didn't regain any hearing in his right ear, and he was having more episodes of vertigo than before.

Then, six months later, Tom had a setback: His low-frequency hearing had suddenly disappeared in his left ear-the "good" one. Since it was still suspected that Tom's hearing loss problem was autoimmune, one of his doctors immediately put him on high-dose prednisone (80 milligrams daily), the most widely prescribed patent medication for the suppression of the immune system. But prednisone is a "space alien" version of cortisol, and even at doses lower than Tom's, it has a laundry list of side effects, including hypertension, ulcers, diabetes, cataracts, substantial weight gain, interference with healing, and many others. I advised Tom to take extra vitamin A, zinc, calcium, and magnesium to offset some of the adverse effects of the prednisone.

A month later, Tom sent me an e-mail saying that the prednisone had worked and that the hearing in his left ear had returned to prior levels. He had even been able to taper considerably his use of prednisone. Within two months, in fact, he had decreased his use of prednisone down to 10 milligrams daily. But because of prednisone's well-known side effects, especially with repeated or long-term use, Tom was still looking for alternatives. His search turned up three research papers that have completely changed the way I view hearing loss. Two involved the natural hormone aldosterone, and the third described treatment of Candida, the common fungal pathogen in people with "autoimmune" hearing loss.

Barking up the wrong tree

High doses of prednisone can "spill over" from their intended purpose and activate aldosterone receptors. Aldosterone is a hormone produced in your adrenal glands that regulates sodium and potassium metabolism. Researchers from Oregon Health Sciences University (OHSU) wanted to see if it was this activation of aldosterone receptors (as opposed to a suppression of the immune system) that was actually causing the improvements in hearing when people used prednisone. In order to test their theory, they gave people Spironolactone, a patent medication designed to block aldosterone, while also giving them the more-usual prednisolone (a close relative of prednisone).^{4,5}

When they combined the two, prednisolone no longer had any hearing-preserving effects. This led the researchers to hypothesize that the real solution to "autoimmune" hearing loss might come from boosting levels of aldosterone and not by suppressing the immune system.

A previous study had similar results. When the OHSU researchers compared the effects of aldosterone and prednisolone in animals with "autoimmune" hearing loss, they found aldosterone to be more effective. The researchers suggested that so-called "autoimmune" hearing loss might not really be autoimmune after all because aldosterone has no immunosuppressive effect.⁶ And earlier this year, OHSU researchers confirmed this theory in their work with experimental animals.⁷

The information in these research papers made it logical to give aldosterone a try as a solution for Tom's hearing loss—especially since we knew that, based on the results of his initial adrenal function test, his aldosterone level was low (4.7 micrograms per 24 hours) on the first test and even lower (3.6 micro-grams per 24 hours) on the second. (Normal aldosterone for a normal- salt diet ranges from 6 to 25 micro-grams per 24 hours. Less than 6 is only normal when a high-salt diet is followed, but Tom was certain his diet had never been high in salt.)

At this point, we had just one problem: obtaining the aldosterone. Even though aldosterone is a natural hormone made in everyone's adrenal glands, it's very hard to find commercially—even through compounding pharmacies. The last time I had prescribed aldosterone was in the 1990s through my friend Ed Thorpe, B.Sc. in pharmacy, of Kripps Pharmacy in Vancouver, British Columbia. So I turned to Ed once again. (Ed is also the pharmacist who in the 1980s filled the first triple estrogen prescription ever written.)

With Ed's help, Tom obtained bio-identical aldosterone in 125- microgram capsules and started taking one twice daily. To monitor the safety of the aldosterone treatment, I told Tom he should have his serum potassium, sodium, and chloride (together called electrolytes) levels checked at monthly intervals.

Tom had also found a research paper concerning the use of nystatin in relieving the symptoms of auto-immune hearing loss.⁸ (Nystatin is a relatively safe prescription anti-Candida medication.) I decided to run a test for microbial organic acids to determine if he had Candida overgrowth. He did. So in addition to aldosterone, he began taking nystatin and aldosterone as he continued to taper off prednisone.

In a matter of weeks, Tom had stopped using prednisone entirely. He remained on aldosterone and nystatin for approximately three months. Since the hearing in his left ear remained normal, he decided to stop taking aldosterone and nystatin. But within 10 days, his hearing began to fail again. He restarted the aldosterone, this time one capsule three times daily, and the hearing in his left ear promptly came back to normal.

Shortly after that, we talked at the clinic. He explained that he had concerns about taking aldosterone for a prolonged time. Some of these concerns were prompted by an e-mail he'd received from an OHSU researcher, who told him he was the only person he knew of in 50 years to be taking aldosterone for an ear disorder. The researcher issued some cautions, pointing out that too much aldosterone could cause his serum potassium to drop to lower-than-normal levels and could cause his blood pressure to rise.

But I pointed out that his serum electrolytes had been quite normal each time tested, and I reminded him that aldosterone is a natural steroid hormone that belongs in our bodies. If it's kept within an acceptable physiologic range, it does its normal job of sodium and potassium regulation and isn't harmful.

We also reviewed his initial adrenal function test again. As noted above, it had shown low aldosterone over two consecutive 24-hour periods. Aside from low aldosterone production, the only other reason for low aldosterone output is a high-salt diet. But, as before, Tom was absolutely certain his diet had never been and still wasn't high in salt.

This just gave further proof that for reasons presently unknown, his adrenal glands must be under producing aldosterone, and that seemed to be affecting his hearing. I recommended that he continue to take aldosterone (125 micrograms twice daily), monitor his serum electrolytes, and repeat his 24-hour urine test for steroid hormones. Two months later, his urinary steroid test reported aldosterone at 15.8 micro-grams per 24 hours, which was considerably better than the 3.6 from the previous year.

Tom returned to the clinic a year later. He told me that during that year he had discontinued using aldosterone on three different occasions. Each time, however, the remaining hearing in his left ear had declined rather abruptly and significantly, and each time it returned to normal when he resumed taking the aldosterone.

I was worried that one of these times his remaining hearing might go away and not come back again, so I suggested that he stay on aldosterone indefinitely to avoid risking further permanent hearing loss. He said his wife had told him the same thing, and he agreed to stop the self-experiments.

Six months later, his aldosterone was up to 35 micrograms per 24 hours (normal is between 6 and 25 micrograms). I recommended that he continue taking aldosterone but cut back his dosage a bit to 125 micro-grams daily, using more only if his hearing declined again. It's been 10 months since then, and Tom's hearing in his left ear remains normal.

A new tune for age-related hearing loss

But aldosterone's benefits might not end with "autoimmune" hearing loss-it also gives hope to those with age-related hearing loss. Until recently, the available evidence (research and clinical use) had shown that prednisone (and the very closely related prednisolone) could usually reverse autoimmune hearing loss, but it had never been used in humans for age-related hearing loss (technically known as presbycusis).

But last November, researchers reported an association between low blood levels of aldosterone and hearing loss in older individuals. Simply put, the more aldosterone in the bloodstream, the better the hearing.⁹ In the study, 47 healthy men and women between 58 and 84 years old were given several types of hearing tests in addition to having their blood levels of aldosterone measured. Individuals with severe hearing loss had approximately half as much aldosterone in their bloodstreams as those with normal hearing, which is a highly significant difference. The researchers concluded that "aldosterone hormone may have a protective effect on hearing in old age."

One of the researchers said, "The inner ear is especially sensitive to any disruption in potassium levels...We know that potassium levels in the inner ear seem to decrease as we age and that these falling potassium levels play a role in age-related hearing loss, and we also know that blood levels of aldosterone generally decrease with age.

"We found a direct link between blood levels of aldosterone and the ability of people to hear normally as they age. Depressed hormone levels may hurt hearing both in the inner ear and the part of the brain used for hearing."¹⁰ That's a very strong statement and one that for the first time offers real hope for people suffering from age-related hearing loss.

But the researcher concluded by saying, "More research is needed... to understand...whether [aldosterone] is a cause of the failed hearing, or whether it's symptomatic. Before we understand the issue more fully, people should not worry about their aldosterone levels or look to boost the amount in their bloodstream."

I can't disagree more with this point of view. While it's absolutely true that more research is always needed until a scientific point is proven beyond doubt, it's also true that hundreds of thousands-if not millions-of us will lose part or all of our hearing while we wait for those definite conclusions.

Of course, it's possible that the situation could be more complicated than "just" aldosterone regulation of potassium and sodium levels. The problem can sometimes

occur when potassium channels in the inner ear malfunction. In other recent research, mice were genetically altered to have malfunctioning potassium channels in their inner ears, and this led to hearing loss. It's possible that some mice or humans are predisposed to age-related hearing loss because their potassium channels don't work properly. In that case, they'd need extra aldosterone and potassium to compensate for the problem.

So, yes, additional research is needed. But whether research finds the problem is fairly simple-low aldosterone causes low hearing-or is more complicated-malfunctioning potassium channels require more help from aldosterone and potassium-the net effect is the same: It's a potential solution for age-related hearing loss.

It is, of course, also possible that even though all the research I've noted points in these directions, it may not work when applied in practice. It's happened more than once with other promising research findings. But since aldosterone is a safe, natural substance, I think it's worth a try. JVW

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