

## Tinnitus

### **Do you have Tinnitus (ringing in the ears)?**

Ringling in the ears is a subjective symptom, a sound heard by the patient that cannot be recorded by today's instruments, much like pain. If it is very loud it can distract from sleep and thinking. It can be caused by Meniere's disease - an increase in fluid pressure in the inner ear. It is treated by reducing that pressure. High blood pressure may cause pulsatile tinnitus, and lowering the blood pressure is effective. Loud noise and associated hearing loss is a causal factor too. Large doses of aspirin and certain aspirin products may bring it on. Avoid these if they are the cause. Stress is not a cause, but once tinnitus becomes annoying the person feels stressed.

- Treatment

For tinnitus that fails other treatment, Vitamin B6 (Pyridoxine) 100 milligrams twice a day is worth trying for 3 months. I personally have had little success with Niacin in doses large enough to cause a flush, but it may be worth trying. Muscle biofeedback for tinnitus is successful because when the muscles are relaxed, you stop making it worse by tension and anxiety. You cannot feel anxiety when the muscles are fully relaxed! This is done by the patient at home as follows: sit comfortably in a chair with a large mirror in front of you. Practice relaxation by breathing in at the count of 4 and out at the count of 6. As you exhale, let a signal go through you to relax. Look at your face - you should see your facial muscles relax. You use the mirror as a form of visual feedback to learn how to relax properly. Do this 20 minutes a day. Then, every hour on the hour do the breathing exercise without the mirror for 2 minutes. By doing this relaxation, you break the anxiety reinforcement cycle. You may still have the tinnitus, but you aren't making it worse by anxiety reinforcement. Some doctors prescribe Xanax pills to accomplish this, but most patients do fine with the mirror and breathing exercise. Certain tinnitus patients respond to masking and might benefit by a sound that "covers" the tone or discharges the neural source of the tinnitus. Whether tinnitus is the type that can be masked or not can be tested by an audiologist. If using Xanax (Alprazolam) it should be prescribed at daily dosages of 0.5 -1.0 mg per day before going to sleep. Patients who elect to continue taking the drug are prescribed it for a maximum of 4 months. The dosage is then reduced by 0.25 mg every 3 days before it is completely discontinued. Once the drug therapy program has been terminated, it is not resumed for at least 1 month. Other less addictive anti-depressants may worsen tinnitus before relieving symptoms. SSRI anti-depressants may temporarily worsen tinnitus for the first few weeks, but risk fewer side-effects as compared to the older tricyclic drugs. Melatonin has been shown to be useful in treating patients who suffer from sleep loss and bilateral tinnitus. Melatonin is also sold as a supplement and can be taken up to 3 milligrams every day for four weeks. Gingko biloba leaves have been used

therapeutically by the Chinese for centuries for the treatment of many ailments. Typical dosages for tinnitus therapy range from 120-160mg per day, divided equally at meal times for 6-12 week period. Some people with severe tinnitus may benefit from hearing aids that bring normal speech sounds above the background tinnitus sounds. In addition to amplification, hearing aids may be useful as maskers when they also introduce white noise into the sound stream.

- Tinnitus Matching

The first step is to measure the tinnitus. First the audiogram (hearing test) is performed, then the patient is asked to identify which of the tones of the audiometer match the ringing. Then the volume or loudness is matched by introducing the sound at various loudness levels. To avoid confusion, loudness is measured in our office with a slightly different sound tone.

- Tinnitus Masking

The sound is then heard by the patient for a variety of time periods starting with 5 minutes and the patient may report a true masking phenomenon. This is analogous to having a light shine in your eyes (discharging the rods and cones), and then you can't see for a while. If the patient expresses relief, we make a 30 minute tape of the tinnitus sound which he then uses at home with a portable type of tape player and a single ear piece into the affected ear. The success of masking varies widely. Some patients may get relief with short periods of masking and others require longer exposure to the same sound. This differs from using music or white noise for masking in that the same sound is used as the tinnitus. (Coleus) The advantage of this masker is the price; we are using a single tape and the portable tape players every household with a child already owns. Another is that the volume is easily adjusted. And socially, so many people nowadays work and play with a Walkman c type instrument, that many patients prefer this to the standard masking device in the ear. If the masking is needed for periods longer than 30 minutes the tape can be rewound.

- Nerve Enhancement

In another group of patients this same tape device can be used as a type of biofeedback device to reduce tinnitus. I call this nerve enhancement. Here the user places the tape sound into the unaffected ear, again using a single ear piece, and rests in a comfortable chair. It is best to be fully relaxed. Now he adjusts the tape volume of the tinnitus sound so that it is LOWER than in the affected ear. He then suggests that the body match the volume of tinnitus of the affected ear with that of the tape player. Ideally, the body SEES what to do and proceeds to reduce the volume in the affected ear. Over time, the volume is reduced until the patient is asymptomatic. What the actual physiology of this method is, is unknown. But then, similar processes take place in Biofeedback: the hand is warmed or cooled by showing the subject a reading on a dial of minute temperature changes. People

learn to change temperature, heart rate, brain waves when they see the readings on the dial and are instructed to tell the body to change the temperature or the brain wave. And remember, rats can do the biofeedback changes as well as humans, which demonstrates that the "body" does the work independent of intelligence.

- Reinforcement

Reinforcement is one of the most important factors that bring patients to my office for tinnitus symptoms. In a reinforcement cycle, the more it itches, the more you scratch -the more the anxiety - the more it itches. Whether this involves contact lenses that result in spasm of the eye muscles, or the itch, or the dentures that don't fit well - anxiety can reinforce and make the symptoms much worse. This is particularly true in tinnitus when the annoyance or worry, may cause tight muscles and reduced circulation and increased awareness of the tinnitus and then more tinnitus, more worry and so on. When Dr. Grossman published the first article on using biofeedback for tinnitus in 1975, he described the benefits of breaking the reinforcement cycle. Performing nerve enhancement does this because in the relaxed state -muscle relaxation that is - anxiety is reduced and the reinforcement cycle can be broken. But experience has shown that an additional factor is at work here. By showing the body what to do right -reducing the tinnitus volume - the body proceeds to do it. Patients are instructed to do this process 15 minutes a day. The relaxation instructions are the same as in his 1976 article. Breathe in at the count of 4 and out at the count of 6. As you exhale let that be a signal to relax your entire body. Or progressively relax from the feet, the legs, etc. to finally the jaw. Or visualize a relaxed scene. Science has shown that you cannot have anxiety if your muscles are fully relaxed. And you reduce or eliminate the need for drugs (Relaxation Exercises) The tape of the individual tinnitus sound can be prepared by the audiologist in my office by performing a tinnitus match test and taping that frequency. The same tape can be used for masking or for the enhancement. It is necessary to use a single ear piece, in the affected ear for masking, and in the normal or unaffected ear for nerve enhancement.!

Sometimes the major benefit of this tape is that the patient can take charge of his own treatment, using either the enhancement or the masking. Indeed Dr Murai describes having the patient measure his own tinnitus and masking effect!