

Headaches and tinnitus: correlation found

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Introduction

Researchers at The Headache Clinic have found an interesting correlation between headaches and tinnitus. Both tinnitus and headaches are exceedingly common, and each affects about 20% of the population. This means that in South Africa alone, there may be as many as 8 million headache sufferers and possibly the same number of people with tinnitus! More people visit their doctor for headaches than for any other ailment, and tinnitus is the most common complaint seen by ENT surgeons.

Tinnitus is when one hears noises that aren't there. The noises most commonly heard are ringing, buzzing, zinging, whistling, humming, whooshing, or the high pitched sound that Christmas beetles make. Most people don't have very loud tinnitus, but some unlucky individuals experience such loud noise that it interferes with their normal everyday routine. It can be so loud that people sometimes say they feel like committing suicide - and some have.

Although there is no external noise source, the noise is very real for someone with tinnitus. Tinnitus can be extremely debilitating, affecting peoples' ability to work or cope with normal life activities. People with tinnitus may suffer from:

- Extreme distress (this is common)
- Depression
- Frequent mood swings, depression or anxiety attacks
- Tension, irritability or frustration
- Poor concentration
- Sleep problems.

The interesting thing is that all the above problems often also occur in headache and migraine sufferers.

Co-morbidity

When the doctors at The Headache Clinic examined their statistics, they found that a significant proportion of headache sufferers also suffered from tinnitus. The numbers were higher than one would expect in a random sample of the general population. Of a sample of 150 patients whose

migraines had been successfully treated, no fewer than 67 (45%) had suffered from tinnitus. This figure is more than double that found in the general population. After successful headache treatment, 39 of the 67 reported that their tinnitus had either disappeared, or had improved substantially. The same correlation was found in those people who suffered from tension headache. Where was the correlation - what was the link?

The Headache Clinic research team did a thorough computer generated search of the medical literature - thousands of papers were sourced and read, and the results confirmed what they had found. Tinnitus is a common symptom of people who have muscle tension of the jaw and/or neck muscles. The research team found a large number of papers published in internationally respected medical journals, where the link between muscle tension and tinnitus had been reported. Not only that, but there was also a link between tinnitus and a bad bite. When the bite was corrected, and the muscle tension treated, the tinnitus improved or disappeared.

All of the 150 headache patients that had been successfully treated had been suffering from headaches related to muscle tension in the jaw and neck muscles. Muscle tension is found in both tension headache sufferers and in migraine sufferers. When the muscle tension is reduced, the headaches and migraines disappear or improve drastically in most people. But how could muscle tension in the jaw and neck muscles cause a ringing in the ears? And how could an uneven bite be part of the problem?

Where the bite comes in, is that when someone has a bite problem, it may cause existing muscle tension problems to become worse. This can happen at any time, but may also occur if there is a new tooth filling that hasn't been trimmed down sufficiently, or if the dentist has fitted a crown or bridge that is a little high, or even with ill-fitting or uncomfortable dentures.

Dental treatment: the solution?

The problem with treating tinnitus is that because muscle tension and bite problems are usually treated by dentists and dental specialists, all the reports

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were in journals read by dentists and dental specialists. To make matters more complicated, in all the reports, tinnitus is mentioned almost in passing, together with other symptoms. None of the reports appeared in those journals read by ENT Surgeons. The result has been that ENTs, to whom tinnitus sufferers are usually referred, are to a large extent unaware that some of the patients they are seeing can be helped or even cured by their dental colleagues. That means that there are large numbers of people out there with a condition that can be treated, but who are not receiving the correct treatment because of the way medicine has been compartmentalised into different disciplines, which very seldom communicate with one another. But even though muscle tension in the jaw and neck muscles can cause a ringing in the ears, what is the mechanism? How do tense muscles cause one to hear sounds that aren't there?

Mechanism

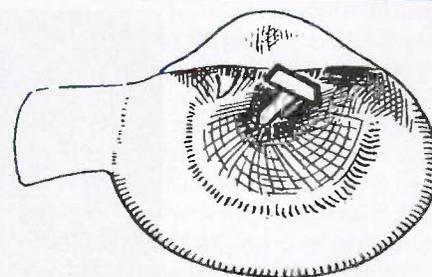
To understand the answer, one has to first learn a little about how the eardrum works. The eardrum (*tympanic membrane*) is actually like any other drum – that is, it is a tight membrane that vibrates when sound waves hit it – like a drum that vibrates when it is beaten with drumsticks. If the eardrum is too tight or too loose, then the sound will be of a different quality. So the eardrum has to remain tuned all the time, to maintain its proper tension, and to allow us to hear properly.

The secret of the link lies in the way that the eardrum is tuned. On the inside of the eardrum is a tiny muscle (the tensor tympani muscle) that attaches to the eardrum, and by tensing and relaxing, keeps the drum at its best tension. This muscle is working all the time, and when it is working properly, keeps the eardrum at just the right tension. But it doesn't work in isolation. It is one of a group of muscles that tends to act together because their nerves end in the same part of the brain – in other words, if some of the muscles in the group tense up, then the others are also likely to become tense. If the tensor tympani pulls a little too hard, then it pulls the eardrum too tight, and one starts hearing noises. That is why headache and migraine sufferers who have been treated successfully for their headaches, also often notice an improvement in their tinnitus.

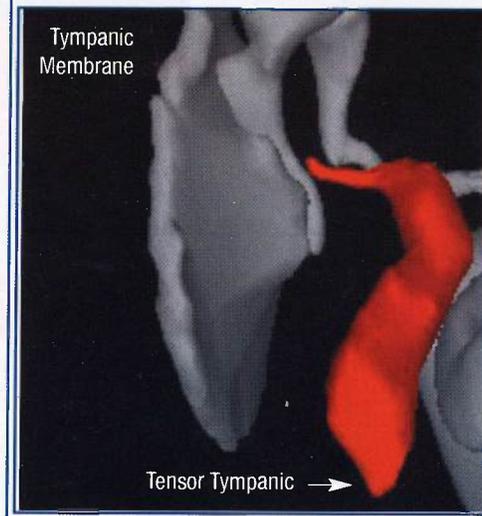
The tie-up between headaches caused by muscle tension and tinnitus was wonderfully explained in 1964 by Hylmar Myrhaug, a Danish Ear Nose and Throat Surgeon writing in the *British Journal of Oral Surgery*. He explained that the constant tension on the ear drum from the tensor tympani over the years, slowly made the drum stretch. In his article, he described the changes that take place in the eardrum, which make it possible to diagnose the presence of jaw and neck muscle tension by **just looking at the changed way that the drum reflects light!**

Approximately 50-60% of people with tinnitus have muscle tension that can be treated, so there is hope for at least half of the world's tinnitus

The following diagram shows what the doctor will see when he looks at the ear drum of a patient with muscle tension in the jaw and neck muscles. Myrhaug described it as the "Hammer and Sickle" sign.



Hammer and sickle sign of tympanic membrane



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sufferers. Often the tinnitus starts with exposure to loud sounds, or with extreme stress, or trauma such as a whiplash injury. This type of tinnitus is particularly likely to be related to muscle tension, as all these stimuli can result in muscle tension. In many tinnitus sufferers, however, the noise starts without any identifiable cause. It just starts spontaneously, and may get worse and worse as time passes. This type is also often related to muscle tension.

The relationship between muscle tension and tinnitus can sometimes be dramatically demonstrated. One of the patients at The Headache Clinic complained that when his neck was painful, the tinnitus was loudest. As it happens, while he was being examined, his tinnitus became very loud, and he was able to pinpoint the place in his neck muscles that always became painful. The nursing sister who was examining him injected a little local anaesthetic into the painful spot, which relaxed the muscle and took away the pain. This reaction had been expected, but what also happened is that **within 20 seconds the tinnitus had died down so much that it was barely audible.**

Prevention

But it is not emergency treatment like this that is really important. It is far better to prevent the problem than to treat it once it is there. With the vast experience that The Headache Clinic team has accumulated in the prevention of headaches and migraines, it was a simple matter to turn that knowledge to the preventive treatment of tinnitus. Particularly because the two conditions may be caused by the same problem – muscle tension. This doesn't mean that all headache and migraine sufferers will have tinnitus, and or that all tinnitus sufferers will get headaches. Muscle tension in one patient may result only in tinnitus, in another in migraine, and in a third, both may occur at the same time. People react differently.

Treatment

When it comes to treatment, there are a number of options. The philosophy adopted by The Headache Clinic is that if it is at all possible to treat a condition without drugs, then that should be the first

choice. Fortunately this can be achieved in most patients with problems related to muscle tension.

About 80% of headache and migraine sufferers, and 60% of tinnitus sufferers can be helped with a patented intra-oral appliance called the Posture Modifying Appliance or PMA, that is exclusive to The Headache Clinic. It is exceedingly comfortable, doesn't interfere with speech, is invisible to other people, and it is highly effective in reducing tension in the jaw and neck muscles, and consequently, because it is a part of the group, in the tensor tympani.

Patients often ask how an intra-oral appliance like the PMA can help to reduce tension in the muscles of the neck. This is a fair question, but there is a very simple answer. The jaw and neck muscles work together in a finely co-ordinated manner. When the jaw muscles are tense up, so do the neck muscles. When the jaw muscles relax, the neck muscles also relax. If this were not so, then every time one opened and closed one's jaws to speak, chew, or swallow, then the head would bob up and down – unless of course the neck muscles compensated for the changes in jaw muscle tension. The muscles are able to co-ordinate so well because they are all controlled by the same part of the brain.

The Posture Modifying Appliance is sometimes used in conjunction with physiotherapy, or with trigger point injections to the tense muscles, which means that the muscle tension is being tackled by combining two or more therapies. These injections could be a combination of cortisone and a local anaesthetic, or in some cases, Botox. It is also important to check the bite, and to eliminate any bite problems that may be contributing to the problem. In certain patients, it may also be necessary to provide an added kick-start with specific medications, although in most cases, medication is not necessary.

So the important message for headache and migraine and tinnitus sufferers out there is that help is at hand. All these problems can be successfully treated in the majority of people, and it is no longer necessary to resign yourself to a life of constant pain or intolerable buzzing in the ears or both.