

No longer music to their ears

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What do Eric Clapton, William Shatner, David Letterman, Ludwig van Beethoven and Jack Straw, the former British foreign secretary, have in common? They have all suffered through tinnitus, a condition in which noises are heard inside the head despite there being no external sound.

While the brain mechanisms that cause tinnitus are not entirely understood, the condition is fairly common, afflicting about one person in 10. The British Tinnitus Association says about one per cent of people have it so badly that they cannot function normally. In extreme circumstances, careers and personal lives can be damaged.

Generally, the irritating sound created by tinnitus is a "phantom" signal created by the brain in response to damage to the cells of the inner ear that are used to hear.

"It is the equivalent of phantom limb pain," said Dr Richard Salvi, a professor in the Centre for Hearing and Deafness at the State University of New York in Buffalo who has spent the past three decades years researching the condition.

"Imagine having a sound that you don't want to listen to, and it follows you around 24 hours a day. You cannot escape it and you have no control over it. It can be very disturbing."

Tinnitus can manifest itself as ringing, whistling, buzzing or humming. The causes are as diverse as the noises, all of which result in some form of hearing loss. Some sufferers even hear a rat-a-tat-tat similar to a typewriter, while others are tormented by the rush of waves.

In older people, tinnitus is commonly related to the degenerative hearing loss that comes with advanced age, while others develop the condition after having ear infections or other illnesses. Medicines, such as aspirin, can also lead to the condition, as can loud working environments like factories.

For young people the most common cause of hearing loss is loud music. Days spent listening to iPods at full blast, or repeated exposure to high-decibel music at nightclubs or concerts can cause permanent damage. Even standing too close to the speakers at a single concert can lead to a lifetime of ringing in the ears.

Military personnel returning from combat zones in Iraq or Afghanistan also often complain of problems. "Anywhere from 30 to 50 per cent of them have noise-induced hearing loss and tinnitus," Dr Salvi said.

According to Dr Tarek Eissa, an ear, nose and throat consulting surgeon at Belhoul European Hospital in Dubai, some people are at much higher risk than others.

"Some patients get tinnitus after just one dose of aspirin, while others are not as sensitive and can use it for a long time without any problems. Also with loud noise, some are more sensitive than others — it depends on their resistance," he said.

Typically, the irritating sound of tinnitus occurs at the pitches that the sufferer has the most problems hearing, so that someone with low-frequency hearing loss will hear a low-pitched sound. High-frequency hearing loss, a common result of ageing, usually leads to high-pitched tinnitus.

There are various ways to help patients mask the condition. Doctors can fit their ears with noise generators that produce a sound the brain can focus on instead of the tinnitus, for example.

However, a cure that actually eliminates the noise has proved elusive. "There's a whole bunch of reasons why it's been so intractable. If you look at the amount of funding for research, it's infinitesimally small," said Dr Salvi, who estimates that in the US just US\$4 million (Dh14.7m) is spent each year on research into the condition.

"The lack of funding probably derives from the fact that people with tinnitus might seem really nice and healthy. We just had a patient here in his mid 30s. He looked completely normal. Nobody dies from it, so not much has been done."

But there are signs that hope could be on the horizon for those tormented by phantom sounds. Dr Salvi believes the condition is slowly getting the attention it deserves thanks in part to some high profile sufferers and a number of promising research projects.

In a technique called transcranial magnetic stimulation, a form of shock therapy, German scientists use magnetic fields to disrupt tinnitus.

"The magnetic field can penetrate the brain. When it collapses, it stimulates the brain and they've been able to show that it can disrupt the tinnitus for minutes, hours or days," Dr Salvi said.

Researchers in Belgium and the US have implanted electrodes into the brain with the same aim. However, given that the procedure is expensive, invasive and still experimental, only those with severe tinnitus are likely to consider it.

Another line of research involves a different kind of implant that bypasses the damaged cochlea, or hearing cells of the inner ear, and connects directly to nerves in the brain. If the brain's auditory nerves can be stimulated correctly, then the tinnitus can be alleviated.

This procedure, however, is costly.



Eric Clapton, whose years of performing may have caused his tinnitus, plays at Madison Square Garden. Richard Drew / AP

“They have good success in implanting people who have good hearing in one ear and poor hearing in the other ear, but it’s expensive — \$20,000 to \$30,000 just for the device,” Dr Salvi said.

Non-surgical treatments are also in trials. Various small pharmaceutical companies have begun testing medications that can target particular types of tinnitus, such as a drug that would specifically alleviate “typewriter tinnitus”. If such trials prove successful, Dr Salvi believes the major drug companies that so far have shied away from tinnitus research could start to pay attention.

“I think over the next five to 10 years, if money is put into research, we will see some movement,” he said.

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