

# Clinical Experience with Lenire<sup>®</sup>- Case Report of a Patient with Catastrophic Symptom Severity

Neuromod Medical (Dublin)

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The below case occurred at Neuromod Medical, in the Hermitage Medical Clinic in Dublin. At the clinic, patients with tinnitus are seen by a team of qualified and experienced Clinical Audiologists. Although the clinic only sees patients with tinnitus, these patients frequently present with other complaints, e.g. hearing loss, or hyperacusis. Patients undergo initial audiological and tinnitus assessments, device fitting appointments, and all follow up appointments through the clinic either in-person, or remotely via video call. An initial assessment consists of a comprehensive case history as well as otoscopy, tympanometry, and audiometry conducted according to the procedures outlined by the British Society of Audiology (BSA). Audiometry typically consists of pure tone audiometry (air conduction and bone conduction, if necessary) and Minimum Masking Level testing. Any tests conducted at the follow up appointments are at the discretion of the Audiologist and must always comply with the BSA standards. The clinic currently only provides Lenire as a treatment solution; however, referral on to other professionals for alternative treatments (e.g. hearing aids or CBT) may occur if the clinician feels it is necessary.

## Initial Evaluation

The patient is a 28 year old male, builder, whose tinnitus started more than 5 years prior to his initial assessment. The cause of his tinnitus is suspected to be noise exposure. His medical history includes a childhood history of epilepsy, but he had no seizures for more than 10 years prior to the assessment and had not used medication for epilepsy for many years. He has a history of middle ear pathology and Eustachian tube dysfunction for which he had grommets inserted in 2017 that were removed as they were unsuccessful. He had also been on antidepressants for several years due to the anxiety and depression caused by his tinnitus and had difficulty sleeping. He made use of white noise masking, herbal remedies, and some mindfulness techniques for his tinnitus.

Clinically, the patient presented with fluctuating, bilateral tinnitus that he described as a combination of sounds: high-pitched static, low-pitched rumbling, and a sound like a car alarm. He had Type A tympanograms on the day of assessment indicating normal middle ear function, and his hearing thresholds were within the normal range bilaterally. His THI score was 94 (Catastrophic) and his MML score was 28dBHL. He rated the loudness of his tinnitus a 5/10 and the annoyance of his tinnitus as a 6/10 at that moment in time.

## Treatment

The patient was recommended for Lenire and was fit with his device 1 month later. His device was configured to PS1 at the default volume for his hearing (i.e. no volume or background noise reduction activated). It was recommended that he continue making use of his mindfulness techniques and herbal remedies alongside Lenire. It was also recommended that he avoid using white noise masking for at least 1 hour before and after a treatment session, in order to reduce the risk of overstimulation.

He used his treatment continuously as directed for 6 weeks (according to the patient) before his first follow up, where he was changed to PS4 with reduced volume as he found the treatment too loud. He only attended his second follow up several months after that due to Covid-19. At this appointment he reported almost-perfect compliance – he once took a few days off due to a very busy weekend but except for that he used his treatment for the 2 x 30 minute sessions each day.

## Follow-up Assessments

At his first follow up (6 weeks after the fit), he had not noticed any change in his tinnitus. He had noticed that for a brief period of time after a treatment session his tinnitus was louder, but this settled within about 20 minutes of the session. His THI score was 70 and his MML score was 20dBHL. He rated the loudness of his tinnitus as 7/10 and the annoyance as 6/10 at that moment in time. He was then changed to PS4 with volume reduction activated.

His second follow up only occurred 3 months later due to the start of the Covid-19 pandemic, and occurred remotely via video call. At this follow up, he reported a significant improvement in his tinnitus, as well as his sleep, concentration, and overall mood. His THI score was 24 and he rated the loudness of his tinnitus as a 0/10 and the annoyance as a 0/10 at that moment in time. He reported that he did have some days where the tinnitus was more noticeable, but that day was particularly quiet. On the whole, he felt as if his tinnitus was under control and very much improved. MML testing was not done as the consultation occurred remotely. The patient was encouraged to contact us should he have any questions or require any further assistance, but he is yet to make contact again.

## Conclusion

At the initial assessment, the patient presented with a high THI score and a history of depression and anxiety surrounding his tinnitus. He also had a childhood history of epilepsy and a more recent history of middle ear pathology and Eustachian tube dysfunction.

This patient's THI score reduced from 94 to 24 points between the initial assessment and the second follow up appointment. His loudness and annoyance ratings also significantly

improved. However, this was not seen at the first follow up appointment. In fact, the patient's loudness rating score *increased* at the first follow up appointment, even though the MML score had decreased. This can be typical of the complicated and subjective nature of tinnitus – objective scores do not always reflect subjective perception.

It is unclear whether it was the change in Parameter Stimulation, or the extended time on the treatment, that allowed for the improvement between the first and second follow up appointments. It is for this reason that the clinicians at Neuromod Medical make it clear to patients that the treatment is a long-term treatment, and that for some people it takes longer than others. The clinicians always approach each patient with an abundance of patience, empathy, and encouragement even if no improvement is seen initially.

Learnings to be taken:

- Sometimes, improvement and progress take more time than the patient hopes they will. Patience and commitment are important.
- A high THI score is not **always** an indicator that the patient needs to be referred for CBT/ other psychological management – it really does depend on the patient.
- Subjective reports may not always reflect objective measurements. A patient's report on their tinnitus may not always correlate perfectly with a test score – this is part of the complicated nature of tinnitus. As tinnitus is a very subjective condition, ultimately the patient's perception of their tinnitus is the biggest indication of any progress.