

**Special Edition**  
"New Frontiers in Tinnitus, Hearing  
Loss and Hyperacusis"

## Editorial

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# New Frontiers in Tinnitus, Hearing Loss and Hyperacusis

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Tinnitus, hearing loss and hyperacusis are widely spread conditions for which basic and clinical research will play a vital role in the future for prevention, diagnosis and treatment. Current scientific knowledge supports the presence of a strong pathophysiological and clinical link between the three, that may present singularly or in combination in the same subjects.<sup>1</sup>

Besides a proved correlation with hearing disorders, that often represent the trigger for its onset, tinnitus can also be linked to somatic disorders or psychological factors such as depression, anxiety, obsessive compulsive, mood, conversion, somatoform and other psychiatric disorders. Such association is worth further clinical investigation as psychiatric comorbidity has been found to be present in 14 to 80% of tinnitus patients and could surely represent an important element under the clinical management perspective of such patients.<sup>2</sup>

In 40% of patients with tinnitus, concomitant hyperacusis is present while 86% of patients with hyperacusis also report tinnitus. This testifies the strong connection between the two. It would be certainly interesting to further explore this to highlight the basis of such potential hypersensitivity that could be used for future therapeutic approaches.<sup>3</sup>

Hearing loss can follow noise exposure, aging, acquired or genetic disorders, the use of ototoxic drugs and other pathological conditions of the middle and the inner ear and the auditory pathways; among these, age-related and noise-induced hearing loss represent, in the opinion of the Author, very interesting conditions for future research.

Hearing loss following noise exposure is gaining increasing clinical attention among workers and adolescents; the World Health Organization (WHO) estimates that 1.1 billion young people worldwide are at risk of hearing loss due to unsafe listening practices.<sup>4</sup> Age-related hearing loss will probably be within the top leading causes of disease by 2030 and negatively affects mental health, interpersonal relations, and health-related quality of life (QoL).<sup>5</sup> On the contrary, compared to the past decades, hereditary and congenital hearing loss cases are now being diagnosed earlier thanks to the implementation of screening programs that allow early identification of these conditions; preventive medicine is also having a strong impact on prevalence of drug ototoxicity thanks to more clinical attention to the issue.

In the vast field of hearing loss, therapies are an interesting research field to explore: the progressively increasing knowledge of the pathophysiological mechanisms that underlie cell death and reparation, inner ear genetics, advances in stem cell research and the development of new technologies to deliver therapies to their specific target, such as viral vectors and nanoparticles, certainly represents a solid basis for research in this area.

Although considerable progresses have been made in the recent years, there are still wide-open pathways for research in tinnitus, hearing loss and hyperacusis. Among them, I'd like to put particular focus on basic and clinical research on the predisposing elements to acquired hearing loss to favour understanding in prevention and treatment, on the exploration of the pathophysiological basis of tinnitus necessary for future possible treatments, and on the correlation between tinnitus and hyperacusis, an interesting direction that could rise questions and give answers to identify target mechanisms able to help in therapeutic strategies.

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