# Comment on the Clinical Update "Tinnitus" by Piccirillo, Rodebaugh & Lenze

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We want to elaborate on three points of the important clinical update on tinnitus by Dr. Piccirillo and colleagues[1] which we think are important for a better understanding of tinnitus and its treatment: First, Piccirillo et al. emphasize auditory attention as prevailing theory to explain the experience of tinnitus distress. We recommend considering further impactful hypotheses on the relevance of interaction of brain areas for a conscious perception of tinnitus . According to a new approach that adopts the Bayes' theorem[2], our brain uses sensory inputs from the environment to update memory-based beliefs that help us to predict our world. The theory assumes that, in case of tinnitus, sensory input is lacking due to deafferentation and has to be compensated with different mechanisms that can cause the tinnitus perception. Another innovative theory explains tinnitus by a dysfunctional noise cancelling mechanism[3], similar to the hypothesized dysbalance between the activity of afferent nociceptive and descending anti-nociceptive pathways in chronic pain.

Second, Piccirillo et al. highlight tinnitus retraining therapy (TRT) as important treatment approach but question its efficacy at the same time. Counselling has been demonstrated to be the most relevant ingredient of TRT. Counselling is also a fundamental part of cognitive behavior therapy (CBT). The obvious advantage of CBT over TRT is, however, the additional use of behavioral and cognitive strategies which can be combined and tailored to optimize patients' treatment outcomes. For example, basic CBT techniques such as refocusing attention, exposure to tinnitus, and cognitive reappraisal can be complemented with optional ingredients such as hearing or concentration training. Studies of Internet-based applications have demonstrated that CBT can be efficiently translated into precision medicine[4], an approach that is valued by Piccirillo et al., to best address the heterogeneity in tinnitus patients' clinical presentation.

Third, we strongly recommend that physicians, as proposed by Piccirillo et al., should not only be alert to particular (somatic) symptoms indicating a need for further referral but also to mental health problems. There is extensive research[5] showing the relation between psychological factors (e.g. depressive mood, catastrophic thinking, or stress reactivity) and tinnitus distress. In the sense of a multidisciplinary treatment approach that has already been successfully applied in other groups of patients with persistent physical symptoms (e.g. chronic pain), psychologists should get involved at an early stage of the treatment of tinnitus. This will be an important step towards improved tinnitus care.

References

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