

## Letters to the Editor

### Chronic Tinnitus

#### Diagnosis and Treatment

by Prof. Dr. med. Birgit Mazurek; Prof. Dr. med. Gerhard Hesse; Prof. Dr. Christian Dobel, Dipl.-Psych.; Dr. med. Volker Kratzsch; Prof. Dr. med. Claas Lahmann; and Dipl.-Psych. Heribert Sattel in issue 13/2022

#### Additions Required

As regards the introductory sentences “Chronic tinnitus is a commonly occurring symptom of the auditory system” and “Tinnitus is a very frequent symptom of impaired auditory processing” (1), I wish to note that tinnitus can be an independent pathology, fundamentally different from short episodes. In addition to the phenomenological diversity, we see difference of manifold causes, pathophysiology, chronification, effects, and disease related disability. In addition to acute and chronic course, a so-called subjective tinnitus can be differentiated on the basis of pathophysiology in the inner ear and/or the central nervous system from objective tinnitus, if sound is heard in proximity to the ear (2).

The term comorbidity is often used without reflection. Feinstein defined comorbidity as „any distinct additional clinical entity“ that existed beforehand or occurs during the course of an illness (3). It should be differentiated from signs and symptoms of a disease—for example, if retrocochlear disturbances present with the symptom tinnitus—and also from sequelae, if anxiety, depression, insomnia, adaptation disorder develop, among others. In this scenario treating the underlying disease is priority, whereas in comorbidities, several treatment approaches are rational and appropriate. One should also consider structural or

functional couplings, where no time differences are seen as opposed to causal effects.

Regarding treatment: If tinnitus cannot be relieved, the alleviation of intolerable suffering into tolerable suffering is the aim. For individuals it is gratifying if substantial relief up to freedom from symptoms can be achieved by means of physiotherapeutic, osteopathic measures in craniomandibular dysfunctions, neck-back anomalies, dysbalances, tendinitis and tenosynovitis, or trigger points with possible interactions. Accordingly, in addition to controlled studies, reviews, and meta-analyses, individual cases that are not captured in epidemiological cross sectional studies are important.

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The authors declare that no conflict of interest exists.

#### In Reply:

We thank our correspondent for his comments and discussion points, which actually address important questions of tinnitus classification and especially treatment.

S3 guidelines are tasked with collecting after strict scientific assessment the best possible evidence and document this. For this reason, therapeutic approaches that are not confirmed by randomized studies or meta-analyses are not included in the recommendations, even though these may provide relief in individual cases, albeit often in the sense of a placebo effect (1). This is also true for physiotherapeutic interventions, which undoubtedly improve the patient’s overall and improve craniomandibular dysfunction, for example, but cannot influence the tinnitus pathophysiologically.

The mentioned, very rare (<1%) objective tinnitus corresponds to the perception of a pathological chance in close proximity to the ear, which often does not require therapy.

We are, however, convinced that chronic tinnitus is not an independent disease entity but a neurological entity, which may, however, be the expression of a somatization disorder with tinnitus as the somatic correlate (2). However, this entails the opportunity by gaining via the somatic approach and the successful treatment options (improved hearing, etc) a pathway into the comorbidities that increase the suffering, such as anxiety, depression, and insomnia, whether psychotherapeutically or medically.

Whether the comorbidities are increased by means of the tinnitus problem or develop only as a consequence is relevant for successful treatment in so far as it means that psychosomatic approaches have to be seen in a differentiated way. The treatment itself—we agree with Dr. Wörz—should follow the guideline with rational and appropriate approaches.

The measures recommended in the guidelines (counseling, hearing improvement, and psychotherapeutic interventions) can achieve in most tinnitus

patients an alleviation of their suffering to the point where they don't notice/pay attention to/perceive their tinnitus.

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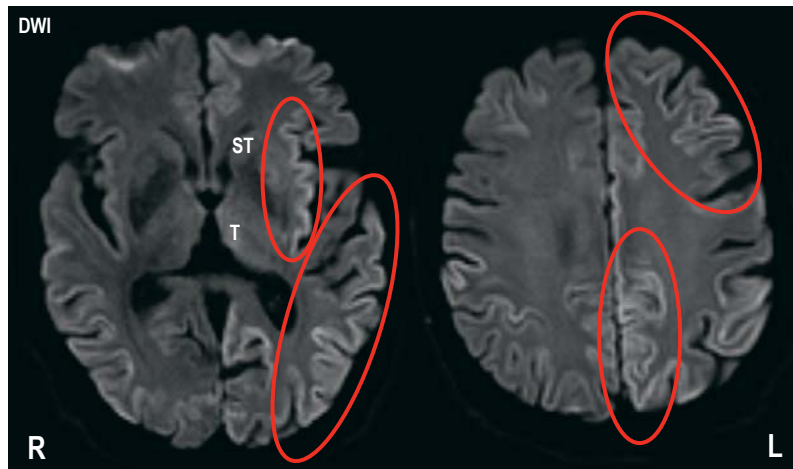
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Prof. Hesse is medical director and a co-partner of the Tinnitus Clinic at Bad Arolsen Hospital. He has received payment for legal opinions on the topic of tinnitus. He is the spokesman of the scientific advisory board of the German Tinnitus League (Deutsche Tinnitus-Liga), a board member of the Association of Central German Otorhinolaryngologists (Vereinigung mitteldeutscher HNO-Ärzte), a consultant to HNO Update, and a scientific advisor to the Tinnitus and Hearing Foundation Charité. Prof. Mazurek has received support for research projects from terzo-Institut, Dr. Willmar Schwane GmbH & Co. KG, the Heinz and Heide Dürr Foundation, the Tinnitus and Hearing Foundation, Resaphene, and in connection with the EU projects UNITI, TIN-ACT, and TIGER. Travel costs and congress fees were taken over by Infecto Pharm, Dr. Willmar Schwane GmbH & Co. KG, MED-EL, the German Otorhinolaryngological Training Society (Deutsche Fortbildungsgesellschaft für HNO-Ärzte), and Geers. She is a board member of the German Tinnitus and Hearing Foundation (Deutsche Stiftung Tinnitus und Hören) and a member of the scientific advisory board of the German Tinnitus League (Deutsche Tinnitus-Liga). She has received third-party funding for projects in connection with the EU program HORIZON 2020.

**CLINICAL SNAPSHOT**



**Figure:** Diffusion-weighted MRI with cortical signal intensities that are more accentuated on the left side and without definite lesions in the thalamus (T) and striatum (ST). Particularly striking cortical areas are circled in red on the images.

**Cortical Signal Changes in Creutzfeldt-Jakob Disease**

A 64-year-old former math teacher presented with an approximately 8-month history of slowly progressive difficulty finding his words, impaired memory, gait instability, as well as impaired fine motor function and use of the right hand. Clinical neurological findings included high-grade cognitive impairment with incomplete orientation, memory deficits, dyscalculia, dysgraphia, and apraxia. The patient exhibited right-sided bradydiadochikinesia, individual instances of non-startle-induced myoclonus, and impaired fine motor function. Electroencephalography showed temporary slowing and was otherwise unremarkable. Magnetic resonance imaging revealed ubiquitous cortical signal enhancement on the diffusion-weighted images with lowered apparent diffusion coefficient (ADC). Extensive ribbon-like cortical signal changes have a broad differential diagnosis: hypoxic-ischemic

lesions (for example, following resuscitation), postictal changes, hypoglycemic attacks, infections, mitochondriopathies, and Creutzfeldt-Jakob disease (CJD). The patient history was in itself suggestive of the prion disease CJD. Cerebrospinal fluid findings (elevated neuron-specific enolase, tau protein and protein 14–3–3, positive PrPSc aggregates) confirmed this. History, course, and imaging were suggestive neither for a surgery or meat consumption-induced nor a genetic disease variant. It is likely that this case represented a sporadic form. The patient died after an approximately 1-year disease course.

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