Treatment of Tinnitus needs a combined neurootological and psychosomatic approach

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SUMMARY

In this study the results of the examination of 100 successive patients with Tinnitus, M. Menière or vertigo, who were referred to a specialised neurootological and psychosomatic centre, are presented. The study focuses on the results of the audiological tests and the question of the related hearing impairment as well as on psychological diagnosis and the possible connection between biographical details and symptom development.

Key words: Tinnitus, hearing loss, psychosomatic aspects

Introduction

There are two basic types of tinnitus, objective and subjective. An objective tinnitus is extremely rare and is found in those cases, where the sound emanating from the patients ears can be heard by others a. Only the patient himself however can hear a subjective tinnitus. The perception of subjective tinnitus is a result of neuro-acoustical processes [13] such as hearing impairment or changed perception of an already existing physical hearing impression. 90% of the tinnitus sounds are generated in the internal ear. The main cause of these are damaged outer hair cells [10, 11]. Subjective Tinnitus loudness can be identified most frequently at 5-15 dB above hearing loss [9].

Chronic tinnitus has a very high prevalence in Europe and other industrialized countries [3, 17]. Recent studies found that about 4% of the German population (2.9 Million) have chronic tinnitus. Slightly more than half of these suffer from it severely in their daily life (1.5 million, [18]). Several mechanisms have been proposed in neuropsychological and psychological models to explain continued subjective tinnitus suffering:

- deficient habituation to the internally generated noise [7, 13],
- dysfunctional attentional processes [4, 5, 16],
- disability, inadequate coping behavior [7].

Successful habituation occurs in almost 50% of patients as a normal process, which means that the patients can completely compensate their subjective tinnitus and thus no longer suffer from it. It is based on the ability of the auditory perception to habituate random noise and focus on important acoustic information. However habituation means more than just getting used to the symptom. It implies a process in which the individual learns to understand the phenomena and gains the ability to diminish his own increased hearing arousal. Certain conditions can impede this learning process:

- a hearing impairment with the result that the internal noise is not masked as much by external sounds [10, 21],
- changes or fluctuations in perceived tinnitus loudness
- constant emotional processes, which perceive the tinnitus as threatening, dangerous and annoying [7, 16].

Cognitive Behavioural Therapy Approaches

Although the reduced ability to habituate is an important condition of continued subjective tinnitus suffering, it is not the only one. Other conditions situated on a higher level of cognitive-emotional processing are also necessary. These however can also have an influence on habituation [6, 16]. Some of these conditions are:
the revisited Check-List of Symptoms according to
supplemented by psychological tests. These included
on the biographical history of the patients, which was
on the tinnitus according to the OPD. This was based
– 10 code,
Distortion Product Otoacoustic emissions (DPOAE)
tone threshold, speech audiometry, tympanometry,
we report their specific findings.
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Subjects and Methods
The study
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From the 15.03.2008 until the 30.06.2008 100 pa-
tients, who complained about tinnitus, hyperacusis or
dizziness, were examined successively in a specialist
out-patients´ department. The exams focussed on both
neurootological and psychosomatic aspects. Out of
those 100 patients 52 suffered from subjective tinnitus,
we report their specific findings.
We evaluated:
• the audiological status, such as the hearing im-
pairment and the indication for hearing aids (pure
tone threshold, speech audiometry, tympanometry,
Distortion Product Otoacoustic emissions (DPOAE)
and BERA),
• the psychological diagnosis according to the ICD
– 10 code,
• the (possible) basic conflicts having an impact
on the tinnitus according to the OPD. This was based
on the biographical history of the patients, which was
supplemented by psychological tests. These included
the revisited Check-List of Symptoms according to
Derogatis (SCL-R 90), Beck's Depression Inventory(BDI)
and the Tinnitus Questionnaire according to Goebel-

Psychosomatic Therapy Approaches to the Tin-
nitus Complaint
From a psychodynamic point of view conflicts and
relationship problems may cause tinnitus suffering,
but not the tinnitus itself. Tinnitus perception will
increase when the ability to maintain an emotional
balance diminishes. This ability diminishes for example
in cases, where the amount of problems that have to
be dealt with increases, or if no satisfactory solution
to a conflict situation can be found. It is assumed that
this can lead to a transference of focus from emotional
to physical stimuli and so to a heightened awareness
of physically perceived stimuli, such as tinnitus, in-
stead of emotional awareness, such as that of being
overburdened in the conflict situation. Although this
“suboptimal” solution may contribute to emotional
stabilisation, it not only restricts social behaviour but
can also impede the implementation of other potentially
more successful solutions.

Diagnoses according to the 10th Revision of
international Classification of Illnesses (ICD 10)
Kröner-Herwig [15] suggests using the ICD-diag-
nosis category F.54 (Psychological and behavioural
factors associated with disorders or diseases classified
elsewhere) to classify the tinnitus complaint in those
cases where not all criteria of a somatizing disorder
are present. This category should be used to record the
presence of psychological or behavioural influences,
which are thought to have played a major part in the
aetiology of physical disorders classified to others cat-
ergories of the ICD. Any resulting mental disturbances
are usually mild and thus though often prolonged (such
as with worry, emotional conflict and/or apprehension),
do not justify the use of any of the categories. Accord-
ing to Kröner-Herwig [15] these diagnoses should be
supplemented by further psychological or psychiatric
diagnoses if a relevant co-morbidity can be determined.
From a psychodynamic point of view it makes sense
to consider tinnitus as an expression of a psychogenic
disorder and to code it accordingly. The ENT-diagnosis
H 93.1 is then combined with an F-diagnosis from the
area of somatoform disorders (F.45.0), anxiety disorders
(F.41) or depressive disorders (F.32).

Operational Psychodynamic Diagnostic (OPD)
In addition to using the ICD psychodynamic psy-
chotherapists also classify symptoms according to the
“Operational Psychodynamic Diagnostic” (OPD)
[2] instrument. The OPD distinguishes between seven
mental conflicts and includes a category for the limited
perception of conflicts and feelings:
1) Dependence vs. autonomy,
2) Submission vs. control,
3) Desire for care vs. autarchy,
4) Conflicts of self-value,
5) Guilt conflicts,
6) Sexual conflicts,
7) Identity conflicts,
8) Limited perception of conflicts and feelings.
All eight categories are judged on the basis of ideal
type descriptions according to presence by a dimen-
sional evaluation from ‘not present’ to ‘present and not
significant’ to ‘present and significant’ to ‘present and
very significant’. This is especially important for soma-
tizing patients. In the OPD system the descriptions of
the basic conflicts and how they are processed are con-
ected with the most important areas of the life of the
subject, such as his relationships, family, career, pos-
sessions, behaviour in groups and previous experience
of illnesses. This is because not only lasting conflicts
but also other major conflicts can arise in response to
acute life-changing stressors, such as tinnitus.
Results

Sex: 31 men and 21 women were examined.
Age: Their ages ranged from 17 to 84 years (SD = 49.3).

Audiological findings

Only 9 (17%) of the tinnitus-patients had a completely normal hearing status, 34 patients (65%) had an inner ear hearing loss in high frequency, 9 patients (17%) had a low-frequency of pantonal hearing loss, none had a retrocochlear origin.

Mean tinnitus frequency was 5700 Hz (700-14000 Hz). Intensity was 5-15 dB above subjective threshold.

DPOAE were recorded according to the subjective hearing status in 65%, whereas 35% showed hypermobility of outer hair cells (increased growth function).

Indication for a hearing aid

20 of the patients (38%), who suffered from subjective tinnitus, fulfilled the indication for the prescription of a hearing aid according to the German guidelines. This means that even in the ear, which could hear best, the hearing loss was at least 30 dB in one or more of the frequencies between 500 and 3000 Hz.

Psychological diagnosis according to ICD – 10

14 of the patients showed no symptoms that necessitated a psychological diagnosis according to the ICD – 10. Three of these wanted to know if the sound in the ear was dangerous and after being told that it was not, were able to stop worrying. The other 11 were looking for information and counselling, which they had not previously found. In three of these cases we combined counselling with advice on hearing aids.

15 of the patients showed signs of an “Adjustment Disorder” (F.43). According to the ICD – 10 an adjustment disorder refers to states of subjective distress and emotional disturbance, which usually interfere with social functioning and overall performance. These states take place in the period of adaptation to a significant life change or a stressful event. Their manifestations vary and include a depressed mood, anxiety or worry (or a mixture of these), a feeling of inability to cope, plan ahead or continue in the present situation as well as some degree of disability. The predominant feature may be a brief or prolonged depressive reaction or a disturbance of other emotions as well as behaviour. These patients were recommended for a psychologically supported tinnitus retraining. Eight of these patients were also advised to use a hearing aid.

Of the other patients 10 suffered from depression (F.32), 8 showed signs of a somatised disorder (F.45) and 5 complained of symptoms of anxiety (F.41). 20 of these 23 patients were advised to participate in ambulant psychotherapy and the other three were directed to stationary treatment. 9 of the patients were instructed to wear hearing aids.

Additional diagnostic according to the Operational Psychodynamic Diagnostic (OPD)

According to the OPD, the 29 patients, who either had no ICD diagnosis or an adjustment disorder, showed a remarkable amount of conflict regarding their suffering from tinnitus. The situation with the other 23 patients, who suffered from depression, somatised disorder or anxiety symptoms, was as follows:

• 4 showed a limited perception of conflicts and feelings except for “sensing” tinnitus,
• 7 lived in dependent situations but wanted autonomy,
• 3 suffered from conflicts of self-value,
• 2 were conflicted by feelings of guilt,
• 7 suffered from identity conflicts, which mainly concerned the loss of loved-ones and problems at work problems,

Discussion

Tinnitus is always caused by physical factors. Chronic suffering from subjective tinnitus however is caused by psychological factors. Therefore the treatment approaches must be varied and include physical as well
as psychological exams. 38.0% of the patients we examined fulfilled the indication for a hearing aid. 73% were classified with a psychological illness. These results highlight the need for a combined approach.

The high rate of hearing impairment we found in our sample is comparable to that of specialised tinnitus clinics [10].

DPOAE findings revealed a large number of hyperfunction of outer hair cells (hypermotility), coinciding with findings of Bartnik et al. [1] and Hesse et al. [9].

In all those cases the competency of ENT specialists is needed to ensure that hearing is restored as much as possible in order to facilitate a successful habituation of the tinnitus. Tinnitus perception can usually be measured 10-15 dB above hearing level. In cases of impaired hearing this can mean that the tinnitus contributes 90% of the hearing reality. Figure 1 shows the difference between impaired hearing and the extension of the acoustic range by a hearing aid for tinnitus sufferers. The hearing aid can reduce the perception of tinnitus dramatically by lowering the percentage of the tinnitus in relationship to the entire auditory range.

The high level of psychological co-morbidity in this sample (73.0%) can be explained by the fact that our patients were looking for an out-patients department specialising in ENT and psychosomatic expertise. Normally the percentage of patients with psychogenic illness in an ENT ambulance is much lower [14]. However an individual and gradual approach to each patient is recommended.

Goebel [6] suggests a procedure according to the results of the Tinnitus-Questionnaire by Goebel-Hiller [5], whereas Hesse [8] and Skarzynski [20] focus on the neurootological aspect as the basis for treatment. Our study shows that both aspects are necessary. Ideally both the possibility of hearing and psychological impairments should be taken into account. The first step in the treatment tinnitus is proper counseling, which should be based on a solid neurootological examination. For many sufferers of chronic tinnitus this type of counseling provides sufficient facilitation of the habitation of tinnitus and no further treatment is necessary [12].

Depending on the status of the patients’ auditory system, supplying and treating them with hearing aids or noise generators, can be very effective. For a long term success in treatment it is necessary to ensure that the patients are motivated to continue practicing what they have learnt and employ their knowledge efficiently. Cognitive behavioral therapy models and manuals [4, Kröner-Herwig 1997] are useful in explaining why a patient’s symptoms can persist or change due to learning through experience.

However it may be worthwhile to look beyond the symptoms and into the psychodynamic situations of the patients suffering from tinnitus. As shown in this study, problems and conflicts which patients themselves may not even perceive, can be relevant factors for the continuation of their suffering from tinnitus. Thus the use of a psychodynamic approach in addition to cognitive and neurootological treatment can enhance the effectiveness of tinnitus therapy [19].

Conclusion

Tinnitus therapy should focus on optimizing the functionality of all the components involved in acoustic perception. These components include emotional and psychological ones. Initially this can be achieved by employing TRT (tinnitus retraining therapy) if the patient cooperates and his psychosomatic status is sufficiently stable. In case of a psychological co-morbidity, integrative psychosomatic approaches are required.

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