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Directive Counselling in Tinnitus Retraining Therapy

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Abstract

Introduction: Tinnitus retraining therapy (TRT) focuses on the behavioural retraining of the associations induced by tinnitus perception and on inducing and further facilitating the process of habituation of tinnitus perception. It has two main elements: directive counselling which is more important and sound therapy.

Objective: To determine the effects (success or failure) of counselling in TRT as a habituation method in the management of patients suffering from tinnitus.

Research Design and Methods: Full history taking, clinical examination (otoscopic, audiologic and medical), and categorisation of patients according to TRT categories in 137 chronic tinnitus patients into: groups I: 52 patients receiving counselling only (TRT Category 0), group II: 21 patients receiving counselling and noise generators (TRT category 1), and III: 34 patients receiving counselling and hearing aids (TRT category 2) and group IV 30 patients receiving medication. The Tinnitus Handicap Inventory (THI) translated into Arabic was used for scoring.

Results: A pre- and post-treatment score difference of at least 20 points revealed effectiveness of TRT compared to medical treatment. But was not revealed if the patient changed to a less severe handicap with a score difference of 18.56± 10.48.

Conclusion: Although THI exists an important guide in individual management and monitoring to evaluate tinnitus treatment outcome, comparing the results with other studies is difficult due to the non-standardized scoring of the real improvement as well as the different questionnaires used.

Key Words: *Directive counselling - Habituation - Neurophysiological model of tinnitus - Sound generator - Noise generator - Tinnitus - Tinnitus retraining therapy - Tinnitus Handicap Inventory.*

Introduction

TINNITUS is "the conscious experience of a sound that originates in the head of its owner" [1] or "an auditory phantom perception" [2]. Tinnitus is a symptom of many pathologies but the pathophysiologic cause of tinnitus is still unknown. In considering the treatment of tinnitus, it is important to consider the heterogenecity of both the aetiology and the experience of the patient. Management of tinnitus is based on an individual approach; there is no single treatment or regimen for it [3]. Although some relief has been observed to patients treated with auditory masking procedures [1], electrical stimulation [4,5], pharmacological and other methods [6,7], most approaches for the treatment of tinnitus seem to act on the patient's attitude rather than on the underlying mechanisms [4,8,9]. Three possible cochlear mechanisms for production of tinnitus were suggested [10]. On the other hand, data based on auditory event-related potential measurements as well as clinical data imply that tinnitus has a central origin [2,11-14]. It has also been speculated that peripheral pathologies can sensitize central structures and the resulting hyperactivity is responsible for the perception of tinnitus [15]. A new clinical approach based on a new neurophysiological model of tinnitus (NPM) have created a totally new treatment for tinnitus and hyperacusis. Its goal is to induce habituation of tinnitus (by interfering with tinnitus- related neuronal activity (TRNA) above the tinnitus source) [2,16,17]. The habituation technique consists of a process by which using specific protocols; patients can reach a state of being unaware of the presence of tinnitus, except when they deliberately concentrate their attention on it. It is thought to be a reconditioning of connections within subcortical centres. It involves extensive directive counselling (DC) and use of binaural broadband noise generators (NG). It requires at least 12 months, and is recommended that patients continue for an additional 6 months [17].

The aim of this study is to determine the effects (success or failure) of Tinnitus Retraining Therapy as a habituation method in the management of patients suffering from tinnitus.

Material and Methods

This study comprised 137 patients suffering from chronic tinnitus (tinnitus was considered to be chronic when it has been present for more than three months without signs of spontaneous resolving [18]. Patients were of different age groups. No restrictions have been imposed on the level of hearing. Patients were collected from the audiology unit outpatient clinic, otorhinolaryngology department, in Kasr El-Eini Teaching Hospital, Cairo University, in the period between September 1999 and September 2002. The subjects were divided into four groups: Group I: No. = 52, consisted of patients receiving counselling only (TRT Category 0). Group II: No. = 21, consisted of patients receiving counselling and sound (noise) generators (TRT category 1). Group III: No. = 34, consisted of patients receiving counselling and hearing aids (HA) (TRT category 2). Group IV: No. = 30, consisted of patients receiving medical treatment in the form of Ginkgo Biloba: one tablet three times a day, for three months, repeated with monitoring of platelet count.

All patients under study were subjected to the following protocol: Initial contact with the patient: Questionnaire: The Tinnitus Handicap Inventory (THI) [19] translated into Arabic (Appendix 1) was administered to all patients. It is a 25-item questionnaire. There are three responses for each question: 1st response (yes) is awarded 4 points, the 2nd response (sometimes) is awarded 2 points, the 3rd response (no) is awarded 0 point. Accordingly, scores for the total scale could range from zero to 100 points, with higher scores representing greater perceived handicap. The THI has 3 subscales: Functional subscale (11 items) reflecting the impact of tinnitus on everyday function: the role limitations in the areas of mental functioning, social/occupational functioning, and physical functioning. Emotional subscale (9 items) representing a broad range of affective responses to tinnitus. Catastrophic subscale (5 items) reflecting patient's desperation. Handicap severity categories for the Tinnitus Handicap Inventory [20]: No handicap: if the total THI score is 0 to16. Mild handicap: 18 to 36 Moderate handicap: 38 to 56. Severe handicap: 58 to 100. Improvement was considered if there was a change from a category to a less severe category after treatment, or if pre- and post- intervention scores differed by at least 20 points. Full history taking, otoscopic and audiologic examination including basic audiometry, loudness discomfort levels (LDL) and tinnitus analyses in the form of Pitch matching, tinnitus Loudness matching (TLM) and minimal masking (suppression) level. A normogram [21] was used to convert the TLM into the equivalent hearing level (dBHL) in a normal listener. N.B. Auditory brainstem response or Electronystagmography, were performed only if there was indication of medical problems extending beyond tinnitus. Medical evaluation was done to exclude any known medical condition that has tinnitus as one of its symptoms. Patients were then categorized into the tinnitus retraining therapy categories: Group I: comprised patients of TRT Category 0 Group II: comprised patients of TRT Category 1 which consisted of patients who have significant tinnitus but no hyperacusis and no subjective hearing loss. Group III: comprised patients of TRT Category 2 which consisted of patients with characteristics of category 1 but additional significant subjective hearing loss. And a fourth group (IV) that received medical treatment. Retraining counselling was given to groups I, II, and III including clear information about the mechanisms of hearing and tinnitus and how the tinnitus could be influenced adversely or beneficially according to Jastreboff and Jastreboff [22]. Frequency of counselling was 10 times in a period of one year. Fitting bilateral broadband noise generators for group II including: Silent Star (Viennatone/ReSound, USA), behind the ear type, with a non-occluding ear mould. Instruments were used for a minimum of 8 hours continuously per day during the quiet times of the day and were used for duration of 12 months. The volume control was set at or just below the mixing point of tinnitus and noise (at this point, both the tinnitus and noise generator should be audible, and the tinnitus should not be altered in any way). Instructions were given to the patient regarding the use of their noise generators. Follow-up visits for those of the 4 groups. Patients were asked to return to the tinnitus clinic weekly in the 1st month, then monthly till 6 months then every 3 months till the 12th month.

Results

The 137 patients were 51.8% males, and 48.2% females, with an age range of 16 to 82 years. Table (1) shows the distribution of improvement in the tinnitus handicap severity in the four groups according to the pre- and post-treatment total score difference (Td). Improvement = (Td ≥ 20 points).

Table (2) shows the distribution of improvement in the tinnitus handicap severity after treatment among the 4 groups under study: No improvement = the patient remained in the same severity of handicap. Improved = the patient changed to a less severe handicap. Worsened = the patient changed to a more severe handicap.

Table (1): Distribution of improvement in the tinnitus handicap severity among the 4 groups according to the pre- and post- treatment total score difference (Td).

		Gr. I	Gr. II	Gr. III	Gr. IV	Total
Td≥20 points	No.	11	9	9	1	30
	%	21.2	42.9	26.5	3.3	21.9
0≤Td <20 points	No.	32	9	16	22	79
	%	61.5	42.9	47.1	73.3	57.7
Td<0 (i.e. -ve)	No.	9	3	9	7	28
	%	17.3	14.3	26.5	23.3	20.4
Total	No.	52	21	34	30	137
	%	100	100	100	100	100

x^2= 8.142 p<0.05

Table (2): Distribution of improvement in the tinnitus handicap severity after treatment among the 4 groups under study.

		Gr. I	Gr. II	Gr. III	Gr. IV	Total
Improve	No.	23	11	13	7	54
	%	44.2	52.4	38.2	23.3	39.4
No change	No.	25	9	16	19	69
	%	48.1	42.9	47.1	63.3	50.4
Worsen	No.	4	1	5	4	14
	%	7.7	4.8	14.7	13.3	10.2
Total	No.	52	21	34	30	137
	%	100	100	100	100	100

x^2= 6.438 p>0.05

Fig. (1) shows the distribution of those who did not show improvement in the tinnitus handicap severity.

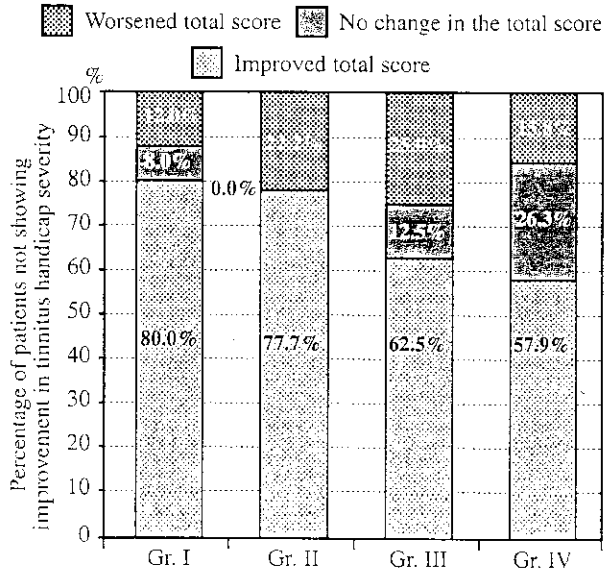

Fig. (1): The distribution of those who did not show improvement in the tinnitus handicap severity

Table (3) shows the distribution of those who did not show improvement in the tinnitus handicap severity compared to the total group number.

Table (3): Distribution of those who did not show an improvement in the tinnitus handicap severity among the 4 groups under study compared to the total group number.

		Gr. I	Gr. II	Gr. III	Gr. IV	Total
Improve total score	No.	20	7	10	11	48
	%	38.46	33.33	29.41	36.67	35.04
No change in the total score	No.	2	0	2	5	9
	%	3.85	0.0	5.88	16.67	6.57
Worsen total score	No.	3	2	4	3	12
	%	5.77	9.52	11.76	10	8.76
Total	No.	52	21	34	30	137
	%	100	100	100	100	100

Table (4) shows the distribution of improvement and difference between the total scores before and after treatment.

Table (4): Distribution of improvement and the difference between total scores before and after treatment.

		Difference score
Improve	Mean	18.5556
	S.D	10.4785
	Min	-16
	Max	42
No change	Mean	3.5072
	S.D	7.877
	Min	-22
	Max	20
Worsen	Mean	-20.5714
	S.D	14.1297
	Min	-44
	Max	-2

Discussion

Newman et al. [20] stated that in order to consider the clinical efforts in managing a tinnitus patient effective, the pre- and post-treatment scores have to differ by at least 20 points. In assessing the improvement of tinnitus handicap severity in the four groups based on this criterion, the results are such that: effective treatment (real improvement) was found in 21.2% of group I, 42.9% of group II, 26.5% of group III and 3.3% of group IV, i.e. group IV showed the least improvement. The improvement was statistically significant regarding the effectiveness of TRT compared to medical treatment, indicating that the medical was not effective (Table 1).

But considering, the change from one degree of handicap to a less severe handicap as a criterion of success, the improvement was: 44.2% of group I, 52.4% of group II, 38.2% of group III and 23.3% of group IV. The improvement was not statistically significant regarding the effectiveness of TRT compared to the medical treatment (Table 2).

Out of those who did not change to a less severe handicap category (did not meet the criteria of success), 80% still showed an improvement in the total THI score, in group I, compared to 77.7% in group II, 62.5% in group III and 57.9% in group IV, calculated as a percentage of the total number of each group who did not show an improvement in the category, (Fig. 1). This represented 38.46%, 33.3%, 29.41% and 36.67% of the total number of group I, II III and IV respectively (Table 3). This revealed the importance of reassessment of THI scores in follow-up sessions to monitor the treatment outcome.

The mean difference in the total score pre and post-treatment was found to be 18.56 in those who showed clinical improvement, with a SD of 10.48. The mean difference in the total score pre and post-treatment in those who showed no clinical change was 3.51 with a SD of 7.88. The mean difference in the total score pre and post-treatment was -20.57 in those who worsened clinically, with a SD of 14.13 (Table 4).

Direct comparison of this study results with other studies is difficult due to the different questionnaires used by several researches to assess their results i.e. different evaluative procedures for example: Results for TRT studies by several researchers are outlined as follows: Jastreboff et al. [23] reported on significant improvements in patients treated with TRT, with respect to percentage awareness, percentage time annoyed by tinnitus, severity, annoyance and effect on life quality. Criteria for success were subjective rating of: same/better/worse. 81.8% of patients stated that they were better.

Bartnik et al. [24] reported on 120 patients, and the criteria of success were: one activity no longer affected by tinnitus and 20% improvement in at least 3 questionnaire scales. TRT treatment lasted for at least one year. Results showed that 77.6% improved. McKinney et al. [25] compared different subgroups: DC alone/DC + just audible NG/DC + just audible NG set at, or just below mixing point with tinnitus/DC + HA/DC + high frequency emphasis HA and DC + combination of instruments. Criteria for response to TRT were set at a 40% improvement after 1 yr. in at least two of the variables: annoyance, life quality, percent of awareness and loudness. No psychometrically validated tests were used as outcome measures. After 2 yrs., 69.8% of the group responded to TRT. Their results pointed out that directive counselling appears to be the most important element of TRT, whereas the gain by wearing any form of instrument is minimal. Tyler et al. [26] also stated that many patients require only initial counselling.

Biesinger et al. [27] reported on 42 study patients who received NG and DC, some patients received a psychological therapy as well. They reported a high degree of compliance regarding the use of the noise devices. The score of the Tinnitus Questionnaire declined by 9.1 points during the first half-year of evaluation, then decreased slightly more and stabilized between years 1 and 2, with no further progress.

THI exists an important guide in individual management and monitoring to evaluate tinnitus treatment outcome. The impact of tinnitus on patient's life and the distress it causes are needed, in addition to PTA and LDL, in the diagnosis to make decision regarding the treatment category. This was also considered in counselling patients, and monitoring results of treatment. This agrees with Newman et al. [19] who stated that self-report tinnitus handicap methods are gaining recognition as tools for quantifying the impact of tinnitus on everyday life which can vary from mild irritation to total disability and, in some reported cases, suicide (Jastreboff [28]). This must be considered in planning the line of treatment (Sweetow [29]).

Conclusions:

THI exists an important guide in individual management and monitoring to evaluate tinnitus treatment outcome. However, comparing the results with other studies is difficult due to the non-standardized scoring of the real improvement as well as the different questionnaires used.

Appendix (1)

Arabic translation of the Tinnitus Handicap Inventory, (Newman et al., 1996) by permission from Dr. Craig Newman for its use in clinical and research purposes.

النسخة العربية المترجمة من أسئله تحديد مدى الإعاقة من طنين الأذن (نيومان و آخرون، ١٩٩٦).

اسم المريض : ..... التاريخ : / / ٢٠

الغرض من قائمة الأسئلة هذه هو معرفة الصعوبات التى تواجهها بسبب طنين الأذن. آجب على هذه الأسئله ب (نعم) أو (بعض الوقت = أحيانا). و يجب الأجابة على جميع الأسئلة.

و – ١	: هل طنين الأذن يسبب لك صعوبة فى التركيز؟	( )
و – ٢	: هل طنين الأذن يسبب لك صعوبة فى سماع الآخرين؟	( )
ع – ٣	: هل طنين الأذن يجعلك تغضب؟	( )
و – ٤	: هل طنين الأذن يجعلك مشوش؟	( )
ك – ٥	: هل طنين الأذن يجعلك يائس؟	( )
ع – ٦	: هل تشتكى كثيرا من طنين الأذن؟	( )
و – ٧	: هل يسبب لك طنين الأذن صعوبة فى الخلود الى النوم؟	( )
ك – ٨	: هل تشعر أنك لا تستطيع الهروب من الطنين؟	( )
و – ٩	: هل طنين الأذن يؤثر على نشاطاتك الأجتماعية؟	( )
ع – ١٠	: هل طنين الأذن يجعلك تشعر بالخيبة والإحباط؟	( )
ك – ١١	: هل طنين الأذن يجعلك تشعر بأنك تعانى من مرض خطير؟	( )
و – ١٢	: هل طنين الأذن يسبب لك صعوبة فى الإستمتاع بالحياة؟	( )
و – ١٣	: هل طنين الأذن يتدخل فى عملك (أو أعمال المنزل)؟	( )
ع – ١٤	: هل طنين الأذن يجعلك تتوتر بسرعة (يجعلك عصبى المزاج)؟	( )
و – ١٥	: هل طنين الأذن يسبب لك صعوبة فى القراءه؟	( )
ع – ١٦	: هل طنين الأذن يجعلك تشعر أنك متقلب المزاج؟	( )
ع – ١٧	: هل طنين الأذن يسبب لك متاعب مع أفراد العائلة أو الأصدقاء؟	( )
و – ١٨	: هل طنين الأذن يسبب لك صعوبة فى تركيز انتباهك على أى شىء آخر غيره؟	( )
ك – ١٩	: هل تشعر بعدم القدره على التحكم فى الطنين؟	( )
و – ٢٠	: هل طنين الأذن يجعلك متعب؟	( )
ع – ٢١	: هل طنين الأذن يجعلك مكتئب؟	( )
ع – ٢٢	: هل طنين الأذن يجعلك مشغول البال؟	( )
ك – ٢٣	: هل تشعر أنك لا تستطيع التكيف مع طنين الأذن؟	( )
و – ٢٤	: هل طنين الأذن يزيد عندما تكون تحت ضغط عصبى؟	( )
ع – ٢٥	: هل طنين الأذن يجعلك تشعر بعدم الآمان ؟	( )

إجمالى و : .....

إجمالى ع : .....

إجمالى ك : .....

الإجمالى الكلى : .....

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