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Retrospective analysis of quality of life in patients with idiopathic sudden sensorineural hearing loss

Ani idiopatik sensorinöral işitme kaybı olan hastalardaki yaşam kalitesinin retrospektif analizi

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Abstract

Aim: Idiopathic sudden sensorineural hearing loss (ISSNHL) is the unfortunate experience of rapid hearing loss and may affect patients' quality of life at different levels. The study's purpose is to measure how individuals were affected socially, psychologically, and mentally after they experienced ISSNHL.

Methods: This study was designed as a cross-sectional study with archive research and included patients who were diagnosed with ISSNHL between 2015 and 2020. Patients were asked to answer the Short Form 36 (SF-36) questionnaire form via tele-conversation. According to pure tone audiometry tests performed after treatment, patients were divided into two groups: "completely recovered" (<20 dB) and "partially recovered" (thresholds remained >20 dB). Mean scores of SF-36 quality of life subcategories were analyzed for each group

Results: The patients included 48 (58.5%) males and 34 (41.5%) females. As a result of the analyses, there were significant differences in physical functioning (p=0.046), vitality (p=0.049), and general health scores (p=0.038) between the two groups after the ISSNHL treatment. Although the mean scores of patients who were completely recovered were higher, no significant difference was found in the physical-role (p=0.125), emotional-role (p>0.05), mental health (p>0.05), bodily pain (p=0.48), and social role (p=0.713) subcategory scores between the two groups.

Conclusions: Our results showed that successful treatment and recovery prevented all kinds of the disease's potential physical and mental complications. Morbidity effects were felt by patients with somewhat more serious problems and could not make a full recovery.

Keywords: Idiopathic sudden sensorineural hearing loss, quality of life, general health, Short Form-36.

Öz

Amaç: Ani idiyopatik sensörinöral işitme kaybı (AİK), işitme kaybının hızla gerçekleştiği ve bireylerin yaşam kaliteleri üzerinde değişken seviyelerde etkisi olabilen talihsiz bir hastalık olarak karşımıza çıkmaktadır. Bu çalışma, kişilerin AİK geçirdikten sonra sosyal, psikolojik ve mental olarak nasıl ve ne düzeyde etkilendiklerini değerlendirmeyi amaçlamaktadır.

Yöntemler: Retrospektif arşiv taraması yapılarak kesitsel olarak planlanan çalışmaya 2015 ve 2020 yılları arasında AİK tanısı almış hastalar dahil edildi. Hastalara telefon görüşmesi yoluyla Short Form 36 (SF-36) yaşam kalitesi ölçeği anketi uygulandı. Tedavi sonrası saf ses odyometri test sonuçlarına göre hastalar 2 gruba ayrıldı: 'tam iyileşen' (<20 dB) ve 'tam iyileşmeyen' (eşikler >20 dB olarak devam eden). SF-36 yaşam kalitesi alt ölçekleri için ortalama skorlar iki grup için de hesaplandı.

Bulgular: Toplam 48 (58,5%) erkek ve 34 (41,5%) kadın hasta dahil edildi. Analizlerin sonucunda, AİK tedavisi sonrasında 2 grup arasında fiziksel fonksiyon (p=0,046), enerji-canlılık-vitalite (p=0,049) ve genel sağlık ölçütü (p=0,038) skorlarında anlamlı fark bulundu. Fiziksel rol güçlüğü (p=0,125), emosyonel rol güçlüğü (p>0,05), ruhsal sağlık (p>0,05), ağrı (p=0,48) ve sosyal rol güçlüğü (p=0,713) alt kategorileri skorlarında 2 grup arasında anlamlı fark olmasa da tam iyileşen hastaların ortalama skorları daha yüksek izlendi.

Sonuç: Sonuçlarımız, başarılı bir tedavi ve iyileşme sürecinin hastalığın potansiyel tüm fiziksel ve mental komplikasyonlarının önüne geçtiğini göstermiştir. Tam iyileşemeyen hastaların edindiği bu morbiditenin kişi üzerinde etkileri ise bir şekilde daha ciddi sorunlar ile ileride hissedilmeye başlanmaktadır.

Anahtar Kelimeler: Ani idiyopatik işitme kaybı, yaşam kalitesi, genel sağlık, Kısa Form-36.

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Introduction

Idiopathic sudden sensorineural hearing loss (ISSNHL) is defined as a sensorineural hearing loss of 30 dB or more in at least three consecutive frequencies in pure tone audiometry and occurring over a period of 72 hours or less. Yearly incidences of ISSHL are reported as 5–30/100,000 [1]; however, the actual number of incidences is thought to be even more due to mildly affected individuals who rapidly recover and do not seek medical help [2]. The incidence peaks at 40–60 years of age, but it could be seen at any age and equally in males and females [3]. ISSNHL, which comprises only 1% of all sensorineural hearing losses [4], is an otologic emergency and requires early treatment as soon as diagnosed. While spontaneous recovery rate is reported as 32–65% (mean 46.7%) in different studies [5, 6], the onset of treatment is an important factor for a successful recovery in patients who do not recover spontaneously [7]. Some patients may not recover whether he or she had various treatments, including salvage therapy, or did not have any treatment at all; this status may affect their quality of life to different extents as seen in other hearing losses [8–10].

In this study, we aim to measure how and to what extent individuals were affected socially, psychologically, and mentally after they received ISSNHL treatment, to gain insight into their post-treatment states of health, and how they maintain their lives both physically and psychologically in a healthier manner.

Material and methods

This study was designed as a cross-sectional study with a questionnaire and retrospective archival research in Medeniyet University, Faculty of Medicine, Department of Otorhinolaryngology. Istanbul Medeniyet University, Göztepe Prof. Dr. Süleyman Yalçın City Hospital, Clinical Investigation Ethics Committee approved the study (December 2, 2020 / Number: 2020/0716).

Patient Selection

Individuals who were diagnosed with ISSNHL in our otorhinolaryngology department between January 1st, 2015-May 5th, 2020 and followed treatment for at least six months were chosen for this study. Patients <18 and >70 years old were excluded. Patients whom the department did not follow up with or with psychiatric disorders and those with severe hearing loss that prevented them from a phone conversation were also excluded from the study. Of the 299 patients admitted to our clinic during the given timeframe due to ISSNHL, 102 patients were reached and 82 of those (48 males and 34 females) consented to participate in the study.

Quality of Life (SF-36) Questionnaire

Consenting patients were contacted over the telephone and interviewed using the Quality of Life Form 36 (SF-36) [11] questionnaire, which consists of 36 questions across seven general health subcategories (bodily pain, vitality, physical functioning, physical-role, general health, emotional-role, and mental health). With the answers obtained, information about patients' quality of life at least six months after the onset of the disease was gathered. The SF-36 health survey results of the patients were calculated by scoring each question in a range from 0 to 100, and their means were obtained. Scores closer to 0 indicated a worse health status, whereas those closer to 100 indicated a better state of health [12]. After scoring the 36 questions, each patient had a score in each subscale of health status.

Archival research

We conducted archival research for the pure tone audiometry test results, which were performed at the time of diagnosis and a six-month follow-up after diagnosis, of the patients who answered the questionnaire. According to the six-month pure tone audiometry tests, patients were divided into two groups: "completely recovered" (air and bone conduction thresholds in 500, 1000, and 2000 Hz speech-frequencies were below 20 dB) and "partially recovered" (thresholds remained above 20 dB). It also noted the patients who received intra-tympanic steroid treatment.

Statistical Analysis

The mean scores of SF-36 subscales were calculated for both groups. In SPSS® v20 for Mac (Statistical Package for Social Sciences, IBM, USA) statistical software, after seeing the normal distribution of the means in Skewness and Kurtosis tests, differences between the general health scores of the patients who were completely recovered and partially recovered were investigated for significance with an independent sample T-test.

Results

Of the 82 patients, 34 (41.5%) of them had right-sided ISSNHL and 48 (58.5%) had left-sided ISSNHL. The number of totally recovered patients was 39 (47%) and 43 (53%) for partially recovered patients. The mean age of the total number of participants was found as 44,7 ±13,1 years (min:21, max:70). The mean age of the totally recovered patients was 43,4 ±13.3 years (min: 21, max:70), and the mean age of partially recovered patients was 45.9±13 years (min: 24, max: 69). The mean follow-up period was 36.5±15.9 months (min: 6, max: 60).

The initial and the last pure tone audiometry threshold means of completely recovered patients and partially recovered patients are given in Table 1. The comparison of the initial test and last test results were also found statistically significant for both groups.

Patient's scores for the SF-36 quality of life scale subcategories are compared. We found that totally recovered patients had better SF-36 quality of life scale results than the partially recovered group. These results were most evident in the vitality, general health, and the physical functioning subcategories (p= 0.049, 0.038, and 0.046 respectively; Table 2). The other subcategories, which are physical-role (p=0.125), emotional-role (p>0.05), mental health (p>0.05), bodily pain (p=0.48), and social role (p=0.713), did not show any significant differences (Table 2).

The number of patients who received the intratympanic steroid treatment was three for the recovered group (7.6%) and 21 for the partially recovered group (48.4%).

Table 1. Pure tone audiometric thresholds of the affected ears of ISSNHL patients, comparison of initial test and last test.

	Completely recovered (n=39)		Partially recovered (n=43)	
	Initial test	Last test	Initial test	Last test
Mean ± standard deviation (dB)	33.4 ±11.9	10.7 ±4.1	48.4 ±16.4	40± 16.1
Median (dB)	32	10	47	38
Minimum-maximum (dB)	20-70	3-18	22-83	20-70
p	<0.001		<0.001	

dB: decibel.

Table 2. ISSNHL patients' mean and standard deviation scores of SF-36 quality of life scale subcategories and comparative p values of the scores of completely recovered and partially recovered patients.

	All patients n=82	Completely recovered n=39	Partially recovered n=43	p
Bodily Pain	76.1 ±31.2	78.8 ± 29.5	73.8 ± 32.8	0.480
Vitality	52.0 ±24.5	57.7 ± 23.5	47.0 ± 24.5	0.049
Physical functioning	80.7 ±23.6	86.3 ± 19.9	75.8 ± 25.7	0.046
Physical-Role	68.8 ±37.6	75.6 ± 33.6	63.3 ± 40.9	0.125
General Health	59.5 ±23.5	59.6 ± 23.8	54.4 ± 23.3	0.038
Emotional-Role	66.2 ±27.6	67.5 ± 22.5	65.1 ± 31.6	>0.05
Mental Health	60.9 ±21.5	65.3 ± 20.1	57.0 ± 22.2	>0.05
Social-Role	51.3 ± 17.0	50.6 ± 16.9	52.0 ± 17.2	0.713

All values are mean ± standard deviation.

Discussion

How hearing loss impacts individuals' quality of life has been a research been a research subject for a long time; many studies have been conducted to reveal the possible effects. Zarenoe et al. discussed the negative effects of sensorineural hearing loss and tinnitus and found that hearing aids improve patients' quality of life [13]. Meyer et al. assessed youths with sensorineural hearing loss and also found that hearing aids or implants improve patients' quality of life [14].

Studies on the quality of life of patients with ISSNHL are limited in the literature. This can be attributed to factors such as the disease being infrequent in the general population, difficulties in long-term archival storage, changes in patients' contact information, and the lack of giving consent for such studies. In this regard, we believe that our study will contribute to the growing literature. Härkönen et al. studied the long-term results of sudden sensorineural hearing loss and discussed the poorer quality of life in patients who did not recover [15]. In our study, patients who recovered have mostly better results on quality-of-life questionnaires, which is compatible with the related literature. The mean results of completely recovered patients in our study clearly showed that successful treatment and recovery prevented several of the disease's potential physical and mental complications.

Our questionnaire has multiple subgroups that are related with different topics, with mental health being one of them. In our study, we revealed that recovered patients have better mental health results, and these are in a concordance with the current literature [13, 15]. The study also noticed that morbidity effects were felt by patients with somewhat more serious problems and could not make a full recovery.

When we examined patient answers to bodily pain questions, patients who were completely recovered felt less pain, although no significant difference was found in the pain scores between the two groups. In some of the patients who do not show a complete recovery, intratympanic steroid injections, which may cause a sharp pain during the penetration, are performed as salvage therapy, and it should be considered that pain due to this intervention might last for some time [16]. We think that those patients might be making connections to this treatment pain, resulting in slightly different pain scores.

In terms of energy levels, fully-recovered patients felt significantly more energetic than partially-recovered patients based on vitality scores. However, the overall energy levels of both groups were generally less than the Turkish population average [17], and they stated their energy levels were very low due to the COVID-19 pandemic. The literature supports our data, and it was reported that unrecovered ISSNHL patients, especially with tinnitus, were significantly more depressive in major life and physical activities [18]. When limitations in their physical functioning were questioned, patients who were completely recovered had significantly better physical activity compared to those who were partially recovered. However, we noted that some completely recovered patients experienced physical disabilities more than some partially recovered patients. When we examined how they were limited in fulfilling their physical roles (such as carrying items, kneeling or stooping, and climbing stairs), no significant difference was seen between the two groups. Although not significant, it was seen that partially recovered patients were less able to perform these physical activities than those who were completely recovered. When interpreting our results, it should be considered that physical conditions and disabilities could be affected by many factors, such as age, gender, comorbidities, and lifestyle.

The difference between the social role and emotional role functioning scores was minimal and not significant. It was concluded that any kind of recovery did not have a significant effect on the patients' emotional well-being. However, the standard deviations of the two groups (22.5 in completely recovered patients and 31.6 in the partially recovered group) showed that huge differences existed in the emotional role functioning among patients who only partially recovered. It could be said that some of those patients were more emotionally positive, whereas others mental state was much lower. In a previous study, including 198 ISSNHL patients, Zhao et al. [17] revealed that in patients with higher anxiety and depression scores usually suffered from other physical illnesses. In addition, Chen et al. [20] reported that patients with persistent tinnitus showed significantly higher emotional stress and depressive symptoms, and Zarenoe et al. discussed that the control of tinnitus may improve patients' quality of life [13]. In the light of these data, it would not be incorrect to say that emotional status and mental health are affected mainly by the presence of other symptoms rather than the degree of hearing loss.

In this study, we encountered some limitations. First, conducting interviews over the phone was challenging with some patients with severe hearing loss. Second, the limited number of patients who consented to this study underrepresents the population of people affected by ISSNHL. The third limiting factor is that the time between the six-month audiometry test and the survey was highly variable. Due to the nature of this study, we were not able to analyze the effect of the interval between the last follow-up test and questionnaire. In our study, we could not assess the presence of tinnitus, so ignorance of any existing tinnitus effect may be another limitation of this study. Our last limitation was failing to calculate the correlated physical and mental health scores. The related scores require an advanced calculation method, so we could not apply this calculation to this study.

At the end of the 5-year data analyses, among the quality-of-life subcategories, there was a significant difference in physical functioning, vitality, and general health scores between patients who were completely recovered and who were not after ISSNHL treatment. Although the mean scores of patients who were completely recovered were higher, no significant difference was found in the physical role, emotional role, mental health, and bodily pain subcategory scores between the patient groups. Our findings showed that it could be helpful to remark on the changes in the quality of life of patients who experienced ISSNHL in clinical practice and could be a guide for further studies.

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