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RESEARCH

HEARING LOSS IN ELDERLY*

Orhan YILMAZ[1]
Gökhan KURAN[1]
Erkan VURALKAN[2]
Mustafa SAĞIT[3]
Ozan ELVERİCİ[2]
Sibel ALİCURA[2]

ABSTRACT

Introduction: To evaluate the audiological findings in Turkish elderly people.

Materials and Method: The records of 238 elderly people aged 60 years or over (96 women and 142 men) who described tinnitus, vertigo and hearing loss and 25 people with normal hearing were prospectively reviewed. All patients were examined by an otolaryngologist. Audiological evaluation included pure tone audiometry and speech discrimination scores. Pure tone thresholds and speech discrimination scores were compared by t test.

Results: Average age was 69.0±6.2 years in elderly people and 32.8±6.2 years in the other group. The mean speech discrimination score was 77.0±17.3 in elderly patients and 96.4±3.1 in the other group. A descending type of audiogram curve was the main finding in elderly people. The main symptom of patients was tinnitus. A significant difference was observed between pure tone thresholds and speech discrimination scores of the groups.

Conclusion: The most striking finding is the increased prevalence of hearing loss. Longitudinal studies are needed to better understand age-related hearing loss. Management should be patient-specific and based on a careful analysis of the factors involved in each case.

Key Words: Hearing loss; Tinnitus; Presbyacusis.

ARAŞTIRMA

YAŞLILARDA İŞİTME KAYBI

ÖZ

Giriş: Türk toplumunda yaşlılarda işitme değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Baş dönmesi, çınlama, işitme kaybı olan 65 yaş üstü 238 hasta (96 kadın, 142 erkek) ve işitmesi normal olan 25 kişi çalışmada prospektif olarak değerlendirilmiştir. Tüm hastalar otolaringolog tarafından değerlendirilmiştir. Odyolojik değerlendirme, saf ses odyogram ve konuşmayı ayırt etme değerleri dahil edilmiştir. İşitme eşik değerleri ve konuşmayı ayırt etme oranları t test ile istatistiksel olarak değerlendirildi.

Bulgular: Ortalama yaş yaşlılarda 69,0±6,2; diğer grupta ise 32,8±6,2 olarak saptanmıştır. Yaşlılarda konuşmayı ayırt etme değerleri ortalaması 77,0±17,3; diğer grupta 96,4±3,1 olarak saptanmıştır. Yaşlılarda düşen tip odyogram eğrisi ortak bulgu olarak izlenmiştir. Hastalarda ana belirti çınlama olarak belirtilmiştir. Her iki grup işitme eşik değerleri ve konuşmayı ayırt etme oranları arasında istatistiksel olarak anlamlı fark saptanmıştır.

Sonuç: Çalışma grubunda işitme kaybının prevalansı anlamlıdır. Yaş ile ilişkili işitme kaybının daha iyi anlaşılabilmesi için daha geniş çalışmalara ihtiyaç vardır. Yaklaşım her hasta için özel ve ayrı olmalıdır.

Anahtar Sözcükler: İşitme kaybı; Çınlama; Presbiakuzi.

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İletişim *(Correspondance)*

Erkan VURALKAN
S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi 1. KBB Kliniği ANKARA
Tlf: 0312 596 21 13
e-posta: erkanvuralkan@hotmail.com

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[1] S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi 3. KBB Kliniği ANKARA
[2] S.B. Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi 1. KBB Kliniği ANKARA
[3] SB Şanlıurfa Eğitim ve Araştırma Hastanesi KBB Kliniği, ŞANLIURFA

INTRODUCTION

Aging is a lifelong physiological process which starts at birth. In the social sense, being old leads to dependence on others and isolation from the world. (1). It is difficult to define an age limit to consider a person old. World Health Organization (WHO) accepts persons 65 years of age or over as old (2). Due to the increase in the average life span, the proportion of elderly people in the population is increasing steadily, therefore it is a priority to investigate health problems of older people. Progressive hearing loss is a prevalent chronic condition that primarily afflicts older people. Age related hearing deterioration is generally known as presbyacusis. Audiological and clinical manifestations of hearing impairment in the geriatric population are not characteristically uniform (3). Presbyacusis is characterized by decreased hearing sensitivity, reduced speech recognition in a noisy environment, and decreased central processing of acoustic information (1,4,5).

In this study, the audiological findings of Turkish elderly people with hearing loss complaints were evaluated and discussed within our current knowledge.

MATERIALS AND METHODS

In this study we evaluated a sample of 238 patients with any ear-nose-throat complaint aged 60 years and over, who were examined in otolaryngology policlinics of Dışkapı Yıldırım Beyazıt Research and Training Hospital and compared them with a control group of 25 patients without hearing loss. During the visits the patients' audiological complaints and other accompanying health problems (hypertension, diabetes mellitus, hyperlipidemia, noise exposure) were asked. Patients with an early diagnosis of ear disease, a high degree and deep hearing loss, a story of exposure to excessive noise or ototoxic drugs were excluded. For each patient, complete ear nose and throat examination was done and audiological tests were completed in our hospital's audiology and speech pathology section. Patients were evaluated with pure tone audiometry and speech audiometry tests.

Pure tone audiometry and speech audiometry measurements were performed with inter-acoustic AC-33 (Erişçi Electronics) clinical audiometer. In pure tone audiometry, average air conduction thresholds were calculated over speech frequencies of 250, 500, 1000, 2000 and 4000 Hz. and bone conduction thresholds were calculated for frequencies between 500 and 4000 Hz.

The pure tone thresholds and speech discrimination scores were evaluated for statistical significance using the *t* test. Confidence intervals were obtained at a significance level of .05. All statistical analyses were done using SPSS (Statistical Package for the Social Sciences Program, for Windows, version 13,0)

RESULTS

The sample group (Group 1) consisted of 238 patients aged 60 years and over (mean age 69.0±6.2) and the control group (Group 2) consisted of 25 patients (mean age 32.8±6.2). There were 142 men (59.7%), and 96 women (40.3%) in Group 1, and 15 men (25%) and 10 women (40%) in Group 2.

Table 1 shows the observed levels of the patients in frequencies of 250, 500, 1000, 2000 and 4000Hz.

The speech discrimination scores for the groups are shown in Table 2.

92% of women and 88% of men had hearing loss as an essential complaint. For both (women and men) the second most frequent accompanying complaint was tinnitus, seen in 72% of women and 65% of men. Downsloping sensorineural type hearing loss was the most frequently observed result, which was seen in 65% of women and 82% of men. In addition, flat type hearing loss was also common especially in older women, affecting 35% of them.

There were significant differences in the pure tone thresholds and speech discrimination scores between the groups. ($p<.05$)

Table 1— The Pure Tone Audiometry Hearing Tresholds for the Groups

Frequencies	Group 1 (dB)	Group 2 (dB)	p value
250 Hz	35.8±21.2 (5-110)	15.0±4.9 (10-30)	<0.05
500 Hz	35.2±20.6 (5-120)	12.4±3.8 (10-20)	<0.05
1000 Hz	39.5±20.4 (10-120)	12.2±3.8 (10-20)	<0.05
2000 Hz	45.2±21.7 (10-120)	11.8±3.4 (10-20)	<0.05
4000 Hz	58.4±22.0 (5-120)	16.4±4.4 (10-20)	<0.05

Tablo 2— The speech discrimination scores (SDS) for the groups

	Group 1	Group 2	p value
SDS (%)	77.0±17.3 (20-100)	96.4±3.1 (88-100)	p<0.05

CONCLUSION

Most alterations in hearing start at young adulthood but usually become evident at 60 years of age or over (2,6,7). Hearing loss in older adults affects physical, cognitive, emotional, and social functioning and diminishes their quality of life (8,9). The initial failures in hearing can first be detected in high frequencies. In presbyacusis the hearing loss tends to be bilateral, symmetrical and sensorineural in origin (10). In time, symptoms of aging appear in all pathways of auditory processing (11).

In literature it was shown that hearing loss in presbyacusis starts to worsen after the fourth decade of life (1,12). In our study this factor was taken into consideration and the subjects chosen were older than 60 years of age. Hearing loss worsened in time. Comparisons can be made according to the definition of hearing loss and prevalence of hearing loss criteria in the elderly. The symmetrical type was the most frequent form of hearing loss, which suggests that hearing loss is related to age.

According to Kırkım et al (1), the statistical significance of speech discrimination scores decreased with older age, especially in the seventh and eight decade of life. This noteworthy finding is a proof of the correlation between hearing loss and age. Our findings were similar, and especially in very elderly patients low thresholds were observed in speech audiometry. With the decrease in speech discrimination scores, hearing thresholds also worsened. After audiological evaluations, hearing aid was provided if necessary.

History of systemic diseases and smoking were recorded and the appropriate advice and therapy were provided for patients.

Some studies show that hearing loss is a risk factor for psychosis in the elderly (13,14). According to van der Warf et al. (13), self-reported hearing problems rather than audiometric or remediated hearing loss may contribute to the development of psychotic experiences in younger rather than in older individuals.

Audiology for the elderly is a recent development in public health (15). Hearing loss requires multidisciplinary evaluation and early intervention. Specific auditory retraining programs could be a tool to improve the quality of life of elderly people with hearing loss. Although hearing loss seems to be related to age, particular differences of patients should also be taken into consideration.

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