

# Audiologic profile in patients over 60 years old

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## ABSTRACT

Presbycusia is a sensorineural hearing loss that occurs because of the damage due to the degeneration caused by old age. There are many different causes and also can be the “result of cumulative disturbs or insults”. The aim of the present study is to point the peripheral hearing, using threshold and speech recognition level, tympanometry and acoustic reflex assessment of people to 60 years old above, attended from March 1998 to March 2000 in the audiological sector of University of the Sacred Heart, 158 men and 173 women, 60 to 90 years old were evaluated.

**KEYWORDS:** presbycusia, hearing loss, oldness hearing.

## INTRODUCTION

It's common to see patients over 60 years old in the routine audiology clinic with complaints about hearing loss, humming and disturbances of the speech understanding. Although complaints are similar, there are different audiological profiles that lead us to think about other factors associated to presbycusia than just natural aging.

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According to Hungria (1987) presbycusis is due to modification in the inner ear and in the central auditory pathways. Hypacusis is bilateral, symmetric, with a steady onset that progresses slowly. It is influenced by environmental causes such as infections, intoxications, trauma, genetic, heredity, metabolic and vascular disorders.

Concerning treatment, Benevides (1997) reported that, presently, there is no efficient treatment for this condition. Vitamins A and D and vasodilators have been recommended without consistent results apart from some improvement in controlling dizziness, a symptom that accompanies presbycusis and is known to be more severe than the actual deafness.

Boone and Plante (1994) refer that a narrow dynamic extension (the difference between the threshold of audibility and the threshold of discomfort) is an additional problem in presbycusis. Patients with such complaint have difficulty to adapt themselves to hearing devices due to intolerance to excessive amplification. However, Katz (1989) reports that the technological advancements have improved the possibilities of responses of such devices. As regards the pathophysiology of presbycusis, the author reports that patients may not present degenerative alterations of a pure nature, but a mixture of various types. Their audiograms, consequently, may be the sum of these various alterations.

Russo and Santos (1991) inform that, in characterizing presbycusis from the audiological point of view, there are few typical results, among them:

1. Progressive bilateral sensorineural hearing loss;
2. Difficulty of understanding speech;
3. Present or absent recruitment;
4. TDT is usually negative;
5. Bekesy test - types I, II or IV, depending on the type of presbycusis;
6. Stapedial reflex – absent or present when recruitment occurs.

According to Gordon-Salant; Lantz and Fitzgibbons (1994) these persons have an excessive difficulty to recognize speech, so that the impact of hearing loss in elderly is greater than that in young persons. Presbycusis patients, according to Davidson (1986), show diminution of speech discrimination, needing repetition and showing a difficulty to hear in noisy environments. It is also observed the phenomenon of recruitment, which means perceiving low noise as unpleasantly high.

Based on such information, it is clear that the audiological evaluation of the elderly and the orientation for care and rehabilitation are fundamental to assure better conditions of life and social integration. The present study aims to analyze the audiological profile of patients above 60 years of age as well as the referral to rehabilitation.

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## MATERIAL AND METHODS

In the Audiology Clinic of the University of the Sacred Heart were evaluated 331 patients, ages ranging from 60 to 90 years, being 173 (52.3%) female and 158 (47.7%) male.

All cases were referred by ENT doctors and the audiological evaluation consisted of anamnesis, tonal liminar audiometry (VA and VO) and logaudiometry using an MA-41 audiometer; tympanometry and specific measure of contra-lateral acoustic reflex were done with an AZ-7R imitancimeter.

From the data obtained tables and graphics were prepared on the reported symptoms, type and degree of hearing loss, configuration of the curve, tympanometry and acoustic reflex. Data were compared to those available in the literature.

## STATISTICAL METHODOLOGY

The study of the association among the different categories and the comparison among sexes was made by the test of Goodman for contrast among and within multinomial populations (GOODMAN, 1964; GOODMAN, 1965).

Low case letters were used to indicate the results for comparison among groups with fixed category of response and capital letters in the comparison of the category of response within the groups. The interpretation of the letters is as follows:

- I) two proportions followed by at least one low case letter do not differ from the respective group in the category of response taken into consideration;
- II) two proportions followed at least by one capital letter do not differ from the respective category of response within the group in consideration;

All the conclusions in this study were discussed in a 5% level of significance.

## RESULTS AND COMMENTS

The analysis of the distribution of the sample concerning sex did not show statistical difference among them.

In TABLE 1 it is possible to see the antecedents and symptoms reported by patients of both sexes:

TABLE 1: Referred symptoms in both sexes.

SYMPTOMS	MALE (%)	FEMALE (%)
Dizziness	11	15
Hypertension	28	32
Diabetes	7	10
Unbalance	11	12
Familial antecedents	8	9
Noise	30	11
Lipidic disturbs	4	6
Hormonal alterations	1	5

It can be observed that in males, noise is the most incident complaint (58) followed by hypertension (55), dizziness (22). In females the most common symptom was hypertension (93), followed by dizziness (44), unbalance (34), familial antecedents (26), lipid disturb (16) and hormonal alteration (15).

Hypertension was frequent in elderly of both sexes, but exposition to noise was more frequent in males. This can be due to the fact that, in the productive phase of these persons, men were prominently involved with working in industries and in the commerce and thus, more exposed to noise. Most probably this picture will change since women are nowadays working outside of the home. It is interesting to note that, as presbycusis, the NIHL (noise induced hearing loss) compromises the high frequencies preserving the low frequencies.

Both sexes reported unbalance and dizziness, which can be explained by aging modification of the ear, which is also connected with the labyrinth (the organ responsible for body equilibrium). According the literature, all these factors causes worsening of presbycusis (HUNGRIA, 1987; RUSSO; SANTOS, 1991).

In TABLE 2 the otological symptoms reported by patients is presented.

TABLE 2: Other symptoms referred and not referred in both sexes.

SINTOMAS	MALE (%)		FEMALE (%)	
	REFERRED	NOT REFERRED	REFERRED	NOT REFERRED
Hum	70	20	64	20
Otalgia	11	42	15	42
Otorrhea	7	35	5	34
Scaling	0	0	1	2
Itching	12	3	15	2

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In both sexes the most common referred symptom was humming followed by otalgia, itching, otorrhea and scaling (BENEVIDES, 1997).

The tables that follow show the audiological results, which were compared among themselves and among sexes.

TABLE 3: Proportion of response of hearing loss according to sex.

SEX	Hearing loss				TOTAL
	Normal	Conductive	Neurosensorial	Mixed	
Male	0.006 a	0.057 a	0.810 a	0.127 a	158
	A	A	C	B	
Female	0.087 b	0.029 a	0.774 a	0.110 a	173
	A	A	C	B	

In TABLE 3 it can be observed that in both sexes the prevalence of hearing loss was sensorineural, showing a statistical difference when compared to the others. The mixed pathologies came second in incidence and among the conductive and the normal profile there was no significant statistical difference. Comparing sexes, it was observed a greater incidence of normality for females. The other types of loss were similar.

The findings are in accordance with the literature were the description of the physiopathogeny of presbycusis refers to alterations in the inner ear and or in the central auditive pathways (HUNGRIA, 1987, RUSSO; SANTOS, 1991).

TABLE 4: Proportion of response in the configuration of the audiometric curve according to sex.

SEX	Configuration			TOTAL
	Ascendant	Descendent	Flat	
Masculino	0.006 a	0.943 b	0.051 a	158
	A	B	A	
Female	0.029 a	0.861 a	0.110 a	173
	A	C	B	

The most prevalent configuration (TABLE 4) was the descendant in both sexes, which agrees with the literature that refers a greater loss in the high frequencies (RUSSO; SANTOS, 1991). Among ascendant and flat configurations in males there was no difference, but among females the flat configuration was more incident. This type of curve is more common in metabolic problems, which indeed occurs more among females (RUSSO; SANTOS, 1991).

TABLE 5: Proportion of the response of the types of the impedanciometry curve according to sex.

SEX	Types of curves						TOTAL
	Tipo A	Tipo Ar	Tipo Ad	Tipo B	Tipo C	Perforation	
Male	0.748 a	0.014 a	0.098 a	0.035 a	0.049 a	0.056 a	143
	C	A	B	A	A		
Female	0.778 a	0.049 a	0.043 a	0.056 a	0.056 a	0.019 a	162
	B	A	A	A	A		

It can be seen that for both sexes that the type A tympanometric curve was more prevalent (TABLE 5), indicating either normality or the presence of sensorineural diseases such as presbycusis. The other tympanometric findings are consistent to the audiometric findings. The remaining tympanometric configurations refers to sporadic cases with alteration of the middle ear concomitant to presbycusis without a direct relation among them; exception made for the cases of rigidity and flaccidity that may compromise the structures of the external and middle ear of elderly persons.

TABLE 6: Proportion of response to stapedian reflex according to sex.

SEX	Types of Reflexes				TOTAL
	Normal	Recruitant	Adaptant	Absent	
Male	0.308 a	0.448 b	0.000 a	0.245 a	143
	B	C	A	B	
Female	0.284 a	0.259 a	0.006 a	0.451 b	162
	B	B	A	C	

It was observed a difference in incidence between sexes since in males the greater prevalence was for recruitant individuals followed by normal and lastly by absents whereas in females the greatest incidence was for absent reflex followed by normal and finally by recruitment (TABLE 6). There was no available data in the literature to compare the results of this study in this regard.

## CONCLUSION

It was possible to conclude from this study that the characteristics of the manifestation presented with greater incidence, among the 331 cases above 60 years of age, were similar according to the sex and that there was no statistical significant difference. The average age was 67 for males and 69 for females.

As to the antecedents and symptoms reported by patients, there was difference among sexes. Noise, hypertension, dizziness and unbalance were more common among males; hypertension, dizziness, unbalance

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and noise were more common in females. However, humming was common in both groups and appeared as the most evident symptom.

In the audiometry, neurosensorial hearing loss was more prevalent (81.0% and 77.4%), and the descendant configuration (98.3% and 86.1%) for males and females respectively.

In imitanciometry there was a predominance of type A (circa 75%) in both sexes. The contralateral reflex showed difference among sexes, being recruitment most common in males (44.8%) and absent reflex more common in females (45.1%).

It is concluded that the difference among sexes is not significant and that the greater occurrence of hearing loss in the elderly is due to presbycusis, although ambient factors and personal antecedents cannot be neglected.

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