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ORIGINAL ARTICLE

Study of the relationship between the degree of tinnitus annoyance and the presence of hyperacusis☆

Alexandre Caixeta Guimarães[a,*], Guilherme Machado de Carvalho[a], Márcia Maria de Freitas Dias Voltolini[b], Carlos Eduardo Monteiro Zappelini[a], Raquel Mezzalira[a], Guita Stoler[a], Jorge Rizzato Paschoal[a]

[a] *Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil*
[b] *Departamento de Medicina da Aeronáutica, São Paulo, SP, Brazil*

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KEYWORDS
Tinnitus;
Hyperacusis;
Audiometry;
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Abstract
Introduction: Hyperacusis can be defined as a manifestation of an increased of central auditory pathways gain and can be considered a pre-tinnitus state. In some cases tinnitus can be caused by such increased gain.
Aim: To evaluate the prevalence of hyperacusis in patients with tinnitus and its relation to the annoyance of tinnitus.
Materials and methods: Retrospective study with patients from the neurotology service complaining of tinnitus in the first consultation were submitted to clinical evaluation, a questionnaire and audiological evaluation of tinnitus and hyperacusis. The degree of annoyance of tinnitus and hyperacusis was measured using a visual analog scale.
Results: We analyzed medical records of 309 patients, 169 (54.7%) females and 140 (45.3%) males. The mean age was 53 years. The median degree of tinnitus annoyance was 7. Hyperacusis was present in 57 (18.4%) patients, with a median degree of 5. The degree of annoyance due to tinnitus patients with hyperacusis was similar to that of patients without hyperacusis.
Conclusion: Hyperacusis was present in 18.4% of patients with tinnitus. The degree of annoyance due to tinnitus had no correlation with the presence of hyperacusis.

PALAVRAS-CHAVE
Zumbido;
Hiperacusia;
Audiometria;
Transtornos da audição

Estudo da relação entre o grau de incômodo de pacientes com zumbido e a presença de hiperacusia

Resumo
Introdução: A hiperacusia pode ser definida como uma manifestação de ganho central aumentado das vias auditivas, compreendida como um estado pré-zumbido. Em alguns casos, o zumbido pode ser secundário a esse ganho aumentado.
Objetivo: Avaliar a prevalência da hiperacusia em pacientes com zumbido e sua associação com o incômodo do zumbido.
Materiais e métodos: Estudo retrospectivo envolvendo pacientes do ambulatório de otoneuro-

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* Corresponding author.
E-mail: alecgxl2@hotmail.com (A.C. Guimarães).

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logia com queixa principal de zumbido que foram submetidos a avaliação clínica, audiológica e a questionário de avaliação da hiperacusia e do zumbido. O grau de incômodo da hiperacusia e do zumbido foi classificado utilizando a Escala Visual Analógica.
Resultados: Foram analisados prontuários de 309 pacientes, 169 (54,7%) do sexo feminino e 140 (45,3%) do sexo masculino, com idade média de 53 anos. O grau de incômodo do zumbido apresentou mediana de sete. A hiperacusia esteve presente em 57 (18,4%) pacientes, com mediana de grau de incômodo de cinco. O grau de incômodo pelo zumbido nos pacientes com hiperacusia foi semelhante ao dos pacientes sem hiperacusia.
Conclusão: A hiperacusia esteve presente em 18,4% dos pacientes com zumbido. O grau de incômodo do zumbido não teve correlação com a presença da hiperacusia.

Introduction

Tinnitus is defined as the perception of sound in the absence of an external generating source.[1,2] It affects between 14% and 32% of the population,[3] and can have a negative impact on quality of life, and interfere with concentration, sleep, social activities, and even the emotional stability.[1,4,5] It is a complex symptom, as it is usually associated with other neurotological complaints, such as hearing loss, dizziness, and hyperacusis.[2]

Hyperacusis is hypersensitivity to sound, in which a common sound stimulus is perceived as extremely intense or uncomfortable.[6] Jastreboff and Hazell defined hyperacusis as the manifestation of increased gain in the central pathways of the auditory system, considering it a pre-tinnitus state; in some cases, tinnitus may be secondary to this increased gain.[7] The higher prevalence of hyperacusis in tinnitus patients, even in the absence of hearing loss, suggests that there is a common origin for these two symptoms. Both hyperacusis and tinnitus would originate from the increased gain in the central auditory pathways; tinnitus would result from a spontaneous central gain and hyperacusis from the central gain through a sound stimulus.[8-10]

There are different methods for assessing tinnitus annoyance and hyperacusis, from numerical scales to visual analog scales (VAS). The Tinnitus Handicap Inventory (THI) is the most accepted method for assessing tinnitus, since it is easy to apply and interpret and because it addresses several aspects of patient quality of life.[11,12] However, previous studies have shown that VAS, in which the patient grades the tinnitus annoyance from 1-10, has a good correlation with THI.[11-15]

The annoyance caused by tinnitus can be quite variable, and there are certain factors that appear to be associated with a higher degree of discomfort, such as the presence of stress, psychiatric disorders,[16,17] and female gender.[18-20] Age also appears to be correlated with the degree of tinnitus annoyance, as it is worse in patients older than 50 years.[21] Another study demonstrated that the group aged between 45 and 59 years had a higher degree of annoyance than younger or older patients.[19]

The association between hyperacusis and tinnitus is still unclear. There have been studies that observed no association between the presence of hyperacusis and degree of tinnitus annoyance,[20,22] and others in which tinnitus annoyance was higher in patients with hyperacusis.[21,23]

This study aimed to evaluate the prevalence of hyperacusis in tinnitus patients and its association with the degree of tinnitus annoyance.

Material and methods

This study included patients from the neurotology outpatient clinic of a tertiary university hospital, treated in the last eight years with a chief complaint of tinnitus in the first consultation. All patients answered a questionnaire and underwent clinical and audiological evaluations. The questionnaire aimed to characterize the type, presence of unilateral or bilateral tinnitus, and presence and degree of annoyance of hyperacusis, among other information (Fig. 1). The clinical examination included neurological and otorhinolaryngological assessment, whereas the audiological evaluation consisted of tonal audiometry, logoaudiometry, and immitanciometry.

The study excluded patients with para-auditory tinnitus, presence of infectious disease in the middle or external ear undergoing treatment, and incomplete questionnaires.

The degree of tinnitus and hyperacusis annoyance was classified using the VAS (Fig. 2). Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS), release 19. Nonparametric Mann-Whitney's test was performed to evaluate the correlation between tinnitus annoyance and hyperacusis, whereas the chi-squared test was used to assess the presence of hyperacusis according to gender. A p-value < 0.05 was considered significant.

The study was approved by the research ethics committee of the institution, under protocol No. 914/2011.

Results

The medical records of 309 patients were analyzed; 169 (54.7%) patients were females and 140 (45.3%) were males (Fig. 3). The age ranged from 17 to 90 years, with a median of 52 years.

The degree of tinnitus annoyance ranged from 1 to 10, with a median of 7 (minimum of 1 and maximum of 10). In 186 (60.2%) patients, tinnitus was present bilaterally, in 46 (14.9%) only in the right ear, and in 77 (24.9%) only in the left ear.