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Association of tinnitus and hearing loss in otological disorders: a decade-long epidemiological study in a South Indian population☆

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KEYWORDS

Tinnitus;
hearing loss;
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Otitis media with
effusion;
Otosclerosis

Abstract

Introduction: Tinnitus is a common disorder that occurs frequently across all strata of population and has an important health concern. Tinnitus is often associated with different forms of hearing loss of varying severity.

Objective: The present study aimed to identify the association of tinnitus with hearing loss in various otological disorders of a South Indian population.

Methods: A total of 3255 subjects referred to the MAA ENT Hospital, Hyderabad, from 2004 to 2014, affected with various otological diseases have been included in the present cross-sectional study. Diagnosis of the diseases was confirmed by an ear, nose, and throat (ENT) specialist using detailed medical and clinical examination. Statistical analysis was performed using the χ^2 test and binary logistic regression.

Results: Tinnitus was observed in 29.3% (956) of the total study subjects that showed an increased prevalence in greater than 40 years of age. There was a significant increase in risk of tinnitus with middle (OR = 1.79, 95% CI = 1.02–3.16) and inner (OR = 3.00, 95% CI = 1.65–5.45) inner ear diseases. It was noted that 96.9% ($n = 927$) of the tinnitus subjects was associated with hearing loss. Otitis media (60.9%), presbycusis (16.6%) and otosclerosis (14.3%) are the very common otological disorders leading to tinnitus. Tinnitus was significantly associated with higher degree of hearing loss in chronic suppurative otitis media (CSOM) subjects.

Conclusion: The present study could identify the most prevalent otological risk factors leading to development of tinnitus with hearing loss in a South Indian population.

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PALAVRAS-CHAVE

Zumbido, perda auditiva;
Otite média supurativa crônica;
Otite média com efusão;
Otosclerose

Associação de zumbido e perda auditiva em distúrbios otológicos: estudo epidemiológico de uma década em uma população do Sul da Índia

Resumo

Introdução: O zumbido é um distúrbio comum que ocorre com frequência em todos os estratos da população, constituindo um problema importante de saúde. O zumbido é frequentemente associado a diferentes formas de perda auditiva e sua gravidade é variada.

Objetivo: O presente estudo teve como objetivo identificar a associação entre zumbido e perda auditiva em várias doenças otológicas na população do Sul da Índia.

Método: No total, 3.255 indivíduos encaminhados ao Hospital MAA ENT em Hyderabad de 2004 a 2014, com diversas doenças otológicas, foram incluídos neste estudo transversal. O diagnóstico das doenças foi confirmado pelo otorrinolaringologista por meio de exames médico e clínico detalhados. A análise estatística foi realizada com o teste do χ^2 e regressão logística binária.

Resultados: Zumbido foi observado em 29,3% (956) do total de participantes do estudo, com maior prevalência em indivíduos com mais de 40 anos de idade. Houve um aumento significativo do risco de zumbido em doenças da orelha média (OR = 1,79, IC 95% = 1,02-3,16) e interna (OR = 3,00, IC 95% = 1,65-5,45). Observamos que em 96,9% (n = 927) dos indivíduos com zumbido houve associação com perda auditiva.

Conclusão: O presente estudo pôde identificar os fatores etiológicos mais prevalentes que levam ao desenvolvimento de zumbido associado à perda auditiva em uma população do Sul da Índia. Otite média (60,9%), presbiacusia (16,6%) e otosclerose (14,3%) são doenças otológicas frequentemente associadas ao zumbido. Em indivíduos com otite média crônica supurativa (OMCS), o zumbido foi significativamente associado ao maior grau de perda auditiva.

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Introduction

Tinnitus is a perceptual expression of any sound that originates in an involuntary manner, either unilaterally or bilaterally, in the absence of any external acoustic or electric stimulus.^{1,2} The etiology of tinnitus remains unknown, but some underlying clinical causes such as middle-ear diseases, nasal allergies, autoimmunity, cardiovascular diseases, diabetes, degenerative neural disorders, socio-demographic, and environmental factors have been reported.²⁻⁵ Many clinical studies have reported that otological disorders causes changes in the cochlear structures or neuroplastic alterations in the central auditory pathways, leading to tinnitus.^{2,4,6,7} Globally, about 10–15% of the general population is expected to be affected with tinnitus, with or without concomitant hearing impairment.^{4,8} Moreover, the prevalence of tinnitus correlates with the severity and frequency characteristics of the hearing loss.^{4,9} Further, tinnitus is present in 70–85% of hearing impairment caused by different pathologies of the auditory system.^{2,5,10} In India, it is estimated that approximately 4.5 million people are affected with tinnitus; unfortunately there are no exact data available on the prevalence and etiology of tinnitus.¹¹ Therefore, the present study aimed to establish the prevalence and to identify the potential predisposing factors leading to tinnitus and hearing loss in a South Indian population.

Methods**Subjects**

In the present cross-sectional study, a total of 3255 patients with different otological diseases referred to MAA ENT Hospitals, Hyderabad, Telangana State, over a period of 10 years from 2004–2014 constituted the study subjects. All patients underwent a detailed medical examination and clinical history was recorded. Audiometric thresholds of hearing loss were evaluated using pure tone average for the frequencies 0.5, 1, 2, 4 and 8 kHz. The study has been carried out with institutional ethics committee clearance.

Statistical analysis

The data obtained was coded for statistical evaluations. Appropriate statistical analysis was performed using PASW STATISTICS 18.0 (SPSS Inc. – Chicago, IL, United States). Continuous data is represented as means and standard deviations, whereas categorical data as proportions. The χ^2 test was used to compare the proportions, while binary logistic regression analysis was performed for association of categorical variables.

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