Braz J Otorhinolaryngol. 2015;81(6):653–657

Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

ORIGINAL ARTICLE

Hearing loss assessment in primary and secondary acquired cholesteatoma☆,☆☆

Julia Maria Olsen[a,*], **Fernando de Andrade Quintanilha Ribeiro**[b], **Mariana Mieko Mendes Yasui**[c], **Ivan Taylor Ribeiro dos Santos**[c]

[a] *Faculdade de Saúde Pública, Universidade de São Paulo (USP), São Paulo, SP, Brazil*
[b] *Department of Otorhinolaryngology, Faculdade de Ciências Médicas da Santa Casa de São Paulo, São Paulo, SP, Brazil*
[c] *Department of Medicine, Faculdade de Ciências Médicas da Santa Casa de São Paulo, São Paulo, SP, Brazil*

Received 3 July 2014; accepted 23 November 2014
Available online 8 September 2015

KEYWORDS
Hearing loss;
Cholesteatoma;
Suppurative otitis media;
Audiometry

Abstract
Introduction: Acquired middle ear cholesteatoma can be classified as primary or secondary. Although both can result in hearing loss, it is still controversial whether there is an association between the type of cholesteatoma and the degree of hearing loss.
Objective: To analyze the association between hearing loss and the type of acquired cholesteatoma, and the status of the ossicular chain.
Methods: This was a cross-sectional historical cohort study involving patients diagnosed with acquired cholesteatoma who were surgically treated. Air and bone conduction thresholds, air–bone gaps and the status of the ossicular chain were analyzed for both types of cholesteatoma.
Results: Eighty patients aged 5–57 were included in the study. Fifty-one patients had primary cholesteatoma and 29 had secondary cholesteatoma. Both types of cholesteatoma determined greater air–bone gaps at 0.5 kHz. Secondary cholesteatoma determined greater hearing loss in all analyzed frequencies and higher air conduction and air–bone gap means.
Conclusion: There was association between hearing loss and the type of cholesteatoma. Secondary cholesteatoma resulted in greater hearing impairment.

☆ Please cite this article as: Olsen JM, Ribeiro FAQ, Yasui MMM, dos Santos ITR. Hearing loss assessment in primary and secondary acquired cholesteatoma. Braz J Otorhinolaryngol. 2015;81:653–7.
☆☆ Institution: Department of Otorhinolaryngology, Santa Casa de Misericórdia de São Paulo, São Paulo, SP, Brazil.
* Corresponding author.
E-mail: juolsen@hotmail.com (J.M. Olsen).

http://dx.doi.org/10.1016/j.bjorl.2014.11.009

PALAVRAS-CHAVE
Perda auditiva;
Colesteatoma;
Otite média supurativa;
Audiometria

Avaliação da perda auditiva no colesteatoma adquirido primário e secundário

Resumo
Introdução: O colesteatoma adquirido de orelha média pode ser classificado como primário e secundário. Ambos podem ocasionar perda de audição, mas ainda há controvérsia quanto à relação dos tipos de colesteatoma com a perda auditiva.
Objetivo: Analisar a relação dos tipos de colesteatoma e da erosão da cadeia ossicular com a perda auditiva.
Método: Estudo de coorte histórica com corte transversal, envolvendo pacientes que receberam o diagnóstico de colesteatoma adquirido e foram submetidos à cirurgia otológica. Foram analisados os limiares ósseos, aéreos e a diferença aéreo-óssea, e suas associações com os tipos de colesteatoma e com a presença de erosão na cadeia ossicular.
Resultados: No estudo foram incluídos oitenta pacientes, com idade entre 5 e 57 anos, sendo 51 com colesteatoma primário e 29 com colesteatoma secundário. Ambos os tipos de colesteatoma determinaram maior diferença aéreo-óssea na frequência de 0,5 kHz. O colesteatoma secundário determinou uma perda auditiva maior em todas as frequências analisadas, e maiores médias do limiar aéreo e da diferença aéreo-óssea.
Conclusão: Houve associação entre o tipo de colesteatoma e a perda de audição. O colesteatoma secundário determinou maior comprometimento da audição.

Introduction

Cholesteatoma is defined as the presence of skin in any air-filled area of the temporal bone, and can be congenital or acquired.[1] Acquired middle-ear cholesteatoma can be classified according to its origin as primary or secondary.[2–6] The primary type originates from pars flaccida retraction and the secondary type from the involvement of the pars tensa of the tympanic membrane.[5,7,8]

Studies have shown that the incidence and prevalence of cholesteatoma are much higher in developing countries, highlighting its association with low socioeconomic status, poor hygiene, and delay in seeking health care or poor health services.[9,10]

Cholesteatomas determine mechanical compression of adjacent structures and have cells with hyperproliferative characteristics (cytokeratin 16, KI67, and inflammatory cytokines), which may cause temporal bone and ossicular chain erosion, resulting in hearing loss.[4,11,12] For this reason and due to the presence of fetid otorrhea, they result in psychosocial damage. As they have a major impact on activities of daily living, they can limit future job opportunities and cause social inclusion difficulties.[9]

There is no consensus in the literature regarding the influence of the type of cholesteatoma on hearing loss, or concerning the frequencies most affected.[11,13–17]

Most studies have shown that there is an association between ossicular chain erosion and magnitude of hearing loss, and that the most affected ossicle is the incus.[12,15,17]

The aim of this study was to analyze the association of primary and secondary acquired cholesteatoma, as well as ossicular chain erosion with hearing loss.

Methods

The study was approved by the Ethics Committee of the institution under No. 03856512.4.0000.5479.

This was a historical cohort study with cross-sectional design, based on data obtained from medical records of patients treated at the Otorhinolaryngology Outpatient Clinic of a medical teaching institution, between January of 2010 and October of 2013.

Inclusion criteria: patients who were diagnosed with acquired cholesteatoma and submitted to otological surgery.

Exclusion criteria: patients with other concomitant ear diseases or those who had been previously submitted to otological surgery.

Prior to surgery, all patients underwent pure tone audiometry with determination of air thresholds at 0.25, 0.5, 1–4, 6, and 8 kHz, and bone thresholds at 0.5 and 1–4 kHz. Air and bone thresholds and air–bone gaps were evaluated separately at the frequencies 0.5, 1, 2, and 4 kHz. The means were also evaluated for each patient at those frequencies.

The variables studied were: (a) age and gender; (b) type of cholesteatoma: defined according to clinical history, physical examination data, and intraoperative findings described in the standardized surgical description form, classified as primary cholesteatoma when originating from pars flaccida retraction and secondary when originating from the involvement of pars tensa of the tympanic membrane[8]; (c) presence of ossicular chain erosion, defined by the intraoperative findings, noted as present or absent.

Statistical analysis was performed using Stata™ software, version 11. The association between hearing loss and the assessed variables was performed using Pearson's