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STUDY OF CHOLESTEATOMA CASES AT ALMOUWASAT UNIVERSITY HOSPITAL, DAMASCUS, SYRIA

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ABSTRACT

Objective: This study aimed to study the prevalence of cholesteatomas and its complications and the effect it conducts on auditory ossicles. **Materials and Methods:** This study was a retrospective study of the files of the patients who reviewed AlMouwasat University Hospital and were diagnosed with middle ear cholesteatomas. This study included all cases from 1/1/2016 to 30/11/2019. Only the authors to ensure the privacy collected all the data and all the names and personal information were blinded. Statistical analysis was done using SPSS 25.0. **Results:** 27% of all patients were children (≤16 years old) and 73% were adults (>16 years old). Males were more dominant with 54% compared to females with 46%. Otorrhea was found in 91.2%, hypoacusis in 87.8%, tinnitus in 32.7% and vertigo in 24.5%. Labyrinthine fistula was found in 2 cases and neurological symptoms (facial nerve palsy) in 4 cases. Erosion of ossicles was found in 79% with the Incus in 91.3%, Stapes in 50% and Malleus in 38%. **Conclusion:** The etiology of cholesteatomas remains unknown. Bigger epidemiological and statistical data, surgical reports, and conclusions of experimental studies are needed, as they may provide support for clarifying the pathogenesis of cholesteatoma.

KEYWORDS: Otorrhea, hypoacusis, vertigo, cholesteatomas.

INTRODUCTION

Cholesteatoma may be defined as skin in the wrong place[1], which causes middle ear chronic inflammation, leading to ossicles and bone erosion. Chronic otitis with cholesteatoma is divided into congenital and acquired forms. The former is more frequent in young patients and is caused by skin growth behind the eardrum since birth. The latter is more frequent in adults and originates from tympanic retraction pockets or from migration of skin through perforations of the tympanic membrane into the middle ear.[4-6] The incidence of cholesteatoma ranges from 3/100,000 in children to 9/100,000 in adults.[3]

It is well acknowledged that skin in cholesteatoma differs histologically from normal skin, showing a matrix of squamous keratin stratified epithelium with a connective envelope (peri-matrix), separated by an inflammatory layer rich in lymphocytes and mast cells which are thought to play a major role in both symptoms and complications.[11] Some recent studies tried to explain the molecular characteristics in cholesteatoma. High levels of caspase-14 mRNA may explain its aberrant terminal differentiation[7]; the expression of p63, a p53 homologue, and surviving, an inhibitor of apoptosis, suggests a common origin with tumours[8,9]; chromosome copy number alterations relate to a more or less aggressive behaviour 10. Although cholesteatoma has been studied from multiple points of view, its aetiology and pathogenesis remain unclear.

At clinical examination, chronic otitis with cholestatoma usually presents with recurrent othorrea and hearing impairment, often conductive, due to erosion of the middle ear ossicles. This happens for two main reasons: chronic inflammation, which leads to cytokine release and osteoclast activation, and pressure necrosis, caused by cholesteatoma expansion.[11]

The air-bone gap (ABG) in patients affected by chronic otitis media has been related to ossicular chain condition by some authors: in particular, narrow ABG would suggest ossicle integrity, whereas wide ABG would predict ossicular erosion.[2] However, it is widely known that pathological tissue can transmit sounds replacing the damaged ossicles[12]; therefore, pure-tone audiometry (PTA) does not always show the real state of the ear transmission system. Moreover, these patients can also show signs of inner ear damage with sensorineural hearing loss (SNHL).[13]

MATERIALS AND METHODS

This study was a retrospective study of the files of the patients who reviewed AlMouwasat University Hospital and were diagnosed with middle ear cholesteatomas. We

collected data regarding the age, gender, onset of symptoms, complains, site, unilateral /bilateral ear involvement and erosion of the auditory ossicles.

This study included all cases from 1/1/2016 to 30/11/2019. Only the authors to ensure the privacy collected all the data and all the names and personal information were blinded. Statistical analysis was done using SPSS 25.0.

RESULTS

Table 1: Age of participants in our study.

		Frequency	Percent
Age	0-5	1	1
	5-10	7	4
	11-20	56	38
	21-30	20	14
	31-40	26	18
	41-50	24	16
	51-60	10	7
	>60	3	2
Total		147	100.0

Table 2: Gender of participants in our study.

		Frequency	Percent
Gender	Female	68	46.3
	Male	79	53.7
	Total	147	100.0

Table 3: The ear affected in participants in our study.

		Frequency	Percent
Ear	Right	77	52.4
	Left	70	46.9
	Total	147	100.0

Table 4: Onset of symptoms in participants in our study.

		Frequency	Percent
Onset of Symptoms	<1 year	45	31
	1-3 years	16	11
	3-5 years	24	16
	5-10 years	29	20
	10-15 years	19	12
	>15 years	14	10
	Total	147	100.0

Table 5: Symptoms of participants in our study.

		N	%
	Otorrhea	134	91.2
Symptoms	Hearing Loss	129	87.8
	Itching	66	44.9
	Tinnitus	48	32.7
	Vertigo	36	24.5
	Pain	69	46.9

Table 6: Complications of cholesteatomas in participants in our study.

		Frequency	Percent
Complications	Facial Nerve Palsy	4	66.7
	Labyrinthine fistula	2	33.3
	Total	6	4.1

Table 7: Status of ossicles in participants in our study.

		N	%
Ossicles	Intact	24	21
	Erosion	92	79

Table 8: Distribution of erosion of ossicles in participants in our study.

		N	%
Erosion Total=92	Incus	84	91.3
	Stapes	46	50
	Malleus	35	38

DISCUSSION

In our study, 27% of all patients were children (≤16 years old) and 73% were adults (>16 years old). This was similar to another study with 84% adults and 16% children.[14]

In our study males were more dominant with 54% compared to females with 46%, which was also similar to other studies (64.7% males, 35.3% females).[14]

The duration of the disease from the onset of symptoms varies significantly among patients. In a similar study[14], about 30% of these patients had complains from 6 to 15 years before seeking medical help. In our study, it was similar, we had 32% of all patients who had symptoms from 5 to 15 years.

In a similar study[14], the most frequent symptom of cholesteatomas was otorrhea (66.5%), followed by combined otorrhea- hearing loss -tinnitus (23.3%), and hearing loss (7.6%). In our study, otorrhea was found in 91.2%, hearing loss in 87.8%, tinnitus in 32.7% and vertigo in 24.5%. Vertigo was found in 15.6% of all cases.[15]

Regarding complications, in a similar study[15], labyrinthine fistula was found in 6.25% and neurological symptoms in 4.68%. In our study, labyrinthine fistula was found in 2 cases and neurological symptoms (facial nerve palsy) in 4 cases.

The perforation site on the tympanic membrane was central in 13.3%. Perforation was marginal and attical in 73.6% of cases.[14] In our study, it was central in 12.2%, marginal in 18% and attical in 40%.

Erosion of the auditory ossicles was found in 92% of cases with the Incus being the most common in 75% followed by the Stapes in 66% and Malleus in 41%.[15] In our study, erosion of ossicles was found in 79% with the Incus in 91.3%, Stapes in 50% and Malleus in 38%.

Compliance with Ethical Standards

Funding: This study was not funded by any institution.

Conflict of Interest: The authors of this study have no conflict of interests regarding the publication of this article.

Ethical approval: The names and personal details of the participants were blinded to ensure privacy.

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