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STUDY OF CLINICAL PICTURE AND HEARING IMPAIRMENT IN CHRONIC SUPPURATIVE OTITIS MEDIA IN DAMASCUS HOSPITAL

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INTRODUCTION

Chronic suppurative otitis media (CSOM) is a common public health problem worldwide and a major cause of hearing impairment among children in developing countries. The disease and its associated problems constitute a hidden disability,[1] putting children at risk of poor school performance, delayed language and speech development, and poor cognition.

Defined as the persistent discharge of pus through a perforated tympanic membrane for more than two weeks,[2] CSOM is widely seen in children especially during early childhood[3] and often follows acute otitis media (AOM), a middle ear infection. The disease and its sequelae produce substantial economic and societal costs.[4] A prevalence of CSOM greater than 1% in children in a defined community indicates that there is an avoidable burden of the disease. A prevalence of 4% or greater indicates a public health problem that needs urgent attention.[4]

The burden of CSOM varies. Global prevalence rates estimates a range between 1% and 46%; it has been estimated that 65–330 million individuals have discharging ears, 60% of whom suffer from significant hearing impairment.[5] According to the World Health Organization (WHO), Western Pacific countries have the highest prevalence (2.5% to 43%), followed by South East Asia (0.9% to 7.8%), Africa (0.4% to 4.2%), South and Central America (3%), the Eastern Mediterranean (1.4%), and finally Europe (average prevalence of 0.4%).

We sought to obtain accurate information about the prevalence of CSOM in Syria. The objective of the study was to estimate CSOM prevalence and its association with hearing impairment, gender, age, and other potential contributing factors.

MATERIALS AND METHODS

This study is a retrospective study of the files of the patients who reviewed Damascus Hospital and were diagnosed with Chronic Suppurative Otitis Media. We collected data regarding the age, gender, symptoms and hearing tests. This study included all cases from 1/1/2015 to 30/3/2019. 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: Variables of our study.

		N	%
Age	6-10 Years	14	9.1
	11-20 Years	37	24.0
	21-30 Years	28	17.5
	31-40 Years	32	20.1
	41-50 Years	30	19.5
	51-60 Years	14	9.1
	61-70 Years	1	0.6
Gender	Male	60	38.5
	Female	96	61.5
Side of Lesion	Left	81	51.9
	Right	67	42.9
	Bilateral	8	5.1
Symptoms	Ear Discharge	162	98.7
	Hearing Loss	145	88.4
	Ear Pain	45	27.4

	Dizziness	42	25.6
	Tinnitus	20	12.2
	Pressure in Ear	4	2.4
	Ear Itching	12	7.3
Ear Discharge	Pus	140	86.4
	Bloody Pus	14	8.64
	Mucous	8	4.96
Hearing Loss Degree	Mild	60	45. 1
	Moderate	54	40.6
	Severe	19	14.3
Hearing Loss Type	Conductive	71	53.4
	Mixed	62	46.6
Perforation of Tympanic Membrane	Central	96	66.7
	Marginal	48	33.3
Diagnosis	Tubotympanic Type Of CSOM	102	62.2
	Atticoantrum Type Of CSOM	62	37.8
Middle Ear Ossicles	Normal	60	67.4
	Necrotic	20	22.5
	Sclerotic	9	10.1
Place of Necrosis	Long Process of Incus	12	60.0
	Incus and Malleus	5	25.0
	Incus, Malleus and Stapes	3	15.0

Table 2: Hearing Threshold, Bone Hearing Threshold and Air Bone Gap.

		N	%
Hearing Threshold	1 – 20	2	1.5
	21 – 30	25	18.4
	31 – 40	35	26.5
	41 – 50	27	19.9
	51 – 60	27	19.9
	61 – 70	15	11.0
	71 – 80	3	2.2
	81 – 90	1	0.7
Bone Hearing Threshold	1 – 20	75	55.6
	21 – 30	48	35.6
	31 – 40	8	5.9
	41 – 50	3	2.2
	71 – 80	1	0.7
Air Bone Gap	1 -10	1	0.7
	11 – 20	31	23
	21 – 30	59	43.7
	31 – 40	31	23
	41 – 50	10	7.4
	51 – 60	3	2.2

Table 3: Correlation of Tinnitus with diagnosis and Dizziness with diagnosis.

Tinnitus with Diagnosis			**Chi Square Test**	
	Tubotympanic type	**Atticoantrum type**	**Chi Square Value**	**p-value**
Tinnitus	12.7%	46.8%	23.438	0.000*
Dizziness with Diagnosis			Chi Square Test	
	Tubotympanic type	Atticoantrum type	Chi Square Value	p-value
Dizziness	7.8%	19.4%	4.772	0.028*

Table 4: Correlation of Bone Hearing Threshold with Diagnosis.

Bone Hearing Threshold with Diagnosis					T test		
	Diagnosis	N	Mean	Std. Deviation	Mean Difference	T test value	p-value
Bone Hearing Threshold	Tubotympanic Type of CSOM	80	10.9	7.2	-18.3	-11.701	0.000*
	Atticoantrum Type of CSOM	55	29.1	11			

Table 5: Correlation of Middle Ear Ossicles Condition with Diagnosis.

Middle Ear Ossicles Condition with Diagnosis				Chi Square Test	
		Tubotympanic type	Atticoantrum type	Chi Square Value	p-value
Middle Ear Ossicles	Normal	86.1%	54.7%	9.753	0.008*
	Necrotic	8.3%	32.1%		
	Sclerotic	5.6%	13.2%		

Table 6: Middle Ear Ossicles Condition with Type of Tympanic Membrane Perforation.

Middle Ear Ossicles Condition with Type of Tympanic Membrane Perforation				Chi Square Test	
		Type of tympanic membrane perforation		Chi Square Value	p-value
		Central	Marginal		
Middle ear Ossicles	Normal	76.0%	48.3%	7.866	0.020*
	Necrotic	14.0%	41.4%		
	Sclerotic	10.0%	10.3%		

Table 7: Middle Ear Ossicles Condition with Air Bone Gap.

Middle Ear Ossicles Condition with Air Bone Gap								
		N	Mean	SD	95%CI		Min	Max
					Lower limit	Upper limit		
Middle ear Ossicles	Normal	57	24.6	3.8	23.6	25.6	18	30
	Necrotic	20	39.1	6.2	36.2	42	30	50
	Sclerotic	9	40.2	7.2	34.7	45.8	30	50

DISCUSSION

Most of the patients were between 11-20 years old (24%), while only 0.6% were between 61-70 years old, which was the least common.

In our study, most of the patients were females, 51.9% of all cases were in the left ear, 42.9% were in the right ear and in both ears in 5.1%. in similar study[6] most of the patients were females (56%). 42% were in the left ear, 39% were in the right ear and in both ears in 19%.

In our study, Perforation of tympanic membrane was found in 87.8% of all cases, (66%) central and (33%) marginal. However, in a similar study[7] it was central Perforation of tympanic membrane in (60%).

In our study, pure conductive hearing impairment was observed in 53.4%, and mixed in 46.6%, compared to a study in Nigeria[5] found conductive hearing impairment in 82% of cases. hearing threshold was most common in 31-40db range in 26.5%, while bone hearing threshold was in 1-20db range in 55.6%. The air bone gap was 21-30db range in 43.7%. the most common place of necrosis is the long process of incus (60%).

Necrosis of Middle ear Ossicles in marginal tympanic membrane perforation (41.4%) is more than necrosis in central tympanic membrane perforation (14%).

Middle ear Ossicles were necrotic in 9 cases and the air bone gap in them were the highest with a mean of 40.2db, necrotic middle ear ossicles were found in 20 cases and the air bone gap in them were the highest with a mean of 39.1db. Normal Middle ear ossicles were found in 57 cases and the air bone gap in them were the lowest with a mean of 24.6db. necrotic Middle ear ossicles were found in (32.1%) of atticoantrum type of CSOM and (8.3%) in in tubotympanic type of CSOM.

Sclerotic Middle ear ossicles were found in (13.2%) of atticoantrum type of CSOM and (5.6%) in in tubotympanic type of CSOM.
The incidence of tinnitus in patients with atticoantrum type of CSOM was (46.8%), comparing with (12.7%) in patients with tubotympanic type of CSOM.

The incidence of dizziness in patients with atticoantrum type of CSOM was (19.4%), comparing with (7.8%) in patients with tubotympanic type of CSOM.

The mean Bone hearing threshold values in patients with in tubotympanic type of CSOM are smaller than the mean values atticoantrum type of CSOM. (10.9 dB vs. 29.1 dB).

It was found that there was a weak linear correlation between the Bone hearing threshold values and the time

of initiation of the complaint in all patients with chronic Suppurative otitis media.

The equation for predicting the values of Bone hearing threshold by the time the complaint starts is: Y = 15.7 + 0.21 * X
Y: bone hearing threshold
X: time from the first visit
By comparing this relation according to the type of CSOM, we could not found a special relation in patients with tubotympanic type of CSOM, while it was more clearly in patients with atticoantrum type of CSOM.

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