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ETIOLOGICAL CONSIDERATIONS REGARDING TRANSMISSION HEARING LOSS

MIHAELA CHIALDA[1]

[1]*Sibiu County Emergency Clinical Hospital*

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Abstract: *The paper is a retrospective clinical-statistical study on patients diagnosed with pathologies that associate transmission hearing loss in order to obtain data on the etiological considerations of transmission hearing loss, its frequency and predisposition.*

INTRODUCTION

Transmission hearing loss is a complex condition with a multifactorial etiology, found in patients of all ages, in varying degrees of severity. It is considered a sensory disability along with other types of hearing loss, and the increased number of people affected justifies the approach to transmission hearing loss as a public health problem, imposing specific health policies.

The choice of the study topic is motivated by the magnitude of the problems caused by transmission hearing loss, the patient being affected, both physically and psychologically, but especially socially. Therefore, the knowledge and study of etiological factors is particularly important, especially for the early detection of the disease in order to establish an adequate treatment, possibly curative.(1-10)

AIM

Evaluation of the incidence and prevalence of transmission hearing loss in patients hospitalized in the Otorhinolaryngology Clinic (ENT Clinic) of the Sibiu County Emergency Clinical Hospital between January 1, 2018 - December 31, 2019.

Assessment of the conditions that caused the occurrence of transmission hearing loss in the aforementioned patients, in order to establish the dominant etiological factors.

Monitoring the predisposition of transmission hearing loss for a certain sex, environment of origin, or for a certain age category, depending on the determining pathology.

MATERIALS AND METHODS

In the elaboration of the paper, we had at our disposal the register of patients hospitalized in the ENT clinic of the Sibiu County Emergency Clinical Hospital, between January 1, 2018 - December 31, 2019.

We conducted a retrospective clinical-statistical study, selecting from the 913 patients admitted in the previously mentioned period, those 246 patients diagnosed with pathologies associated with transmission hearing loss, in order to obtain data on the etiological considerations of transmission hearing loss, frequency and predisposition. In the data processing we used the Microsoft Excel 2016 program (Microsoft Corporation, Redmond, Washington, U.S.A.).

RESULTS AND DISCUSSIONS

Between January 1, 2018 - December 31, 2019, in the ENT clinic of the Sibiu County Emergency Clinical Hospital, 913 patients were hospitalized, of which 246 presented pathologies associated with transmission hearing loss. Thus, we observe that the transmission hearing loss is present in 27% of the cases hospitalized in the clinic during the studied period. The group of 246 patients includes a number of 130 male patients and 116 female patients. Therefore, the predominance of males in the studied group is noticeable, with a slight percentage dominance of 53%, compared to females, which has a percentage value of 47%. In the studied group we meet both patients with an urban and rural background. The dominance of the urban environment is clear, with a percentage of 70% and a total of 172 patients, of whom male patients and female patients, while the rural environment totals a number of patients, males and females, representing 30% of the total number of patients in the group.

The above data show a predominance of female patients in the urban community and a predominance of male patients in the rural community. For the distribution of patients in the group according to age, a template composed of 8 age categories was selected, as follows: 16-20 years, 21-30 years, 31-40 years, 41-50 years, 51-65 years and patients over 65 years of age. There is a prevalence of patients aged 16-20 years (13%), 31-40 years (13%) and 41-50 years (12%). Then, follow the patients who have passed the 5th decade of life, divided into 2 age categories: 51-65 years (11%) and over 65 years (10%), the former being more numerous.

The least numerous are the patients aged between 21-30 years, with a percentage of 9%. Despite the total dominance of males in the group of patients, they do not dominate every age category, there are age groups dominated by females, or age groups in which the two sexes have the same predisposition. Thus, in the following age categories we meet a male majority: 21-30 years, 31-40 years, 41-50 years and those over 65 years. Female dominance is found in the category of patients aged 16-

[1]Corresponding author: Mihaela Chialda, B-dul. Corneliu Coposu, Nr. 2-4, Sibiu, România, E-mail: mihaela_chialda@yahoo.com, Phone: +40744 551390
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20 years, where, of the 46 patients, 22 are males and 24 females. A balance between males and females is found in patients aged 51-65 years, where, of the 36 patients, 18 are males, 18 females.

The pharyngeal diseases encountered in the studied group are nasopharyngeal tumour formations. These conditions cause transmission hearing loss through the effects on the Eustachian tube.(11,12)

The otological conditions encountered are extensive and include: acute and chronic suppurative otitis media, in various clinical forms, acute catarrhal otitis media, chronic serous otitis media, complications of otitis media such as acute and chronic otomastoiditis, diffuse external otitis, external auditory canal boil, formations tumours of the outer and middle ear and traumas of the outer and middle ear (consequences of craniocerebral trauma).(5,10,11,12,13,14)

Figure no. 1. Distribution of patients according to the dominant pathology

Diagnosis	Number of cases
Nasopharyngeal tumor formations	17
Acute suppurative otitis media	41
Chronic suppurative otitis media	49
Acute catarrhal otitis media	9
Chronic serous otitis media	11
Acute otomastoiditis	20
Chronic otomastoiditis	26
Diffuse otitis externa	27
Boiling of the external auditory canal	23
Tumours of the ear	19
Ear injuries	9
Total cases	246

There is a predominance of chronic suppurative otitis media, totalling 49 cases, and acute suppurative otitis media, with a number of 41 cases. Transmission hearing loss caused by diffuse otitis externa is the 4th most common in the study group, counting 27 cases. Very close in frequency are patients with chronic otomastoiditis (20 cases), patients who have developed a boil of the external auditory canal (25 cases) and those with acute otomastoiditis (24 cases). Ear tumours affect 19 of the 246 patients in the group, placing the condition in 8th place in frequency.

The other pharyngeal pathologies succeed: chronic hypertrophic tonsillitis (18 cases), chronic adenoiditis (13 cases) and nasopharyngeal tumour formations (12 cases). The last pathologies causing transmission hearing loss, in frequency, from the group of patients extracted from the hospitalization register from January 1, 2018 to December 31, 2019, are: chronic serous otitis media (with 11 hospitalized cases), acute catarrhal otitis media (with 9 cases hospitalizations), and ear injuries (9 hospitalized cases).

Figure no. 2. Distribution of patients according to the dominant pathology and gender

Diagnosis	Males	Females
Nasopharyngeal tumour formations	9	3
Acute suppurative otitis media	23	18
Chronic suppurative otitis media	25	24
Acute catarrhal otitis media	5	4
Chronic serous otitis media	5	6
Acute otomastoiditis	11	9
Chronic otomastoiditis	17	9
Diffuse otitis externa	11	16
Boiling of the external auditory canal	11	14
Tumours of the ear	12	7
Ear injuries	7	2
Total cases	181	160

The 246 cases constituting the reference group prove the multifactorial etiological character of the transmission hearing loss and contribute to the establishment of an etiological classification, as follows:

1. Chronic suppurative otitis media - in the studied group, chronic suppurative otitis media includes 2 clinical forms: common chronic suppurative otitis media (majority, with a percentage of 67% of cases of chronic suppurative otitis media) and cholesteatomatous otitis media. Ordinary chronic suppurative otitis media affects patients aged from a few months to patients over the age of 65 and shows an increased incidence in patients aged 31-40 years and in females. Cholesteatoma otitis media affects patients from the age of 31, the incidence being higher in males and in patients aged 41-50 years.
2. Acute suppurative otitis media - the clinical forms of acute suppurative otitis media encountered among the patients in the group are: common suppurative otitis media (85% of all patients with acute suppurative otitis media) and necrotizing otitis media (15%). Ordinary suppurative otitis media affects patients aged between 16 and 50 years (the highest incidence being between 0-6 years) and has a predisposition for males. Necrotizing otitis media includes patients with a pathology associated with diabetes, and other comorbidity.
3. Diffuse otitis externa - is distinguished by a range of patients over 16 years of age and a numerical superiority of the female gender - which dominates the percentage, with a value of 59% of all patients diagnosed with this condition.
4. Chronic otomastoiditis - analysis of cases diagnosed with chronic otomastoiditis, highlighted the presence of the pathology in patients over the age of 16, with a higher rate in those aged 41-65 years and in males.
5. The boil of the external auditory pathway - according to the studied group, affects ages starting from 16 years with a higher preponderance in patients between 16-20 years and a numerical dominance of females of 56%.
6. Acute otomastoiditis - includes patients aged between 7 and 50 years, being more meet those up to 14 years old and have a slight inclination towards females.
7. Tumour formations of the ear - in the studied group, tumour formations of the ears are represented exclusively by benign tumours, such as the osteoma of the outer ear and the hemangioma of the middle ear. Outer ear osteoma is the majority of cases, with a percentage of 63% and affects patients aged 41 years. Middle ear hemangioma mainly affects patients over 65 years of age. Both types of tumours have a higher number of cases in male patients.
8. Nasopharyngeal tumour formations - represented by nasopharyngeal fibroids and nasopharyngeal neoplasm, are found in the etiological classification of transmission hearing loss with a number of 12 cases in the group of 246. Nasopharyngeal neoplasm mainly affects patients over the age of 65, and 67% of total cases of nasopharyngeal neoplasm are represented by male patients.
9. Chronic serous otitis media - evaluation of cases diagnosed with otitis media hospitalized in the ENT clinic, revealed an increased incidence of female patients and those over the age of 41 years.
10. Acute catarrhal otitis media - although the diagnosis of acute catarrhal otitis media has been noted in patients aged between 16 and 50 years, the numerical superiority is the patients over 31 years of age and those of male sex.
11. Injuries to the ear - most of which occur as a result of head trauma, ear injuries are at the bottom of the etiological classification of transmission hearing loss and constitute a number of 9 cases out of the 246 in the group. The most

numerous are patients aged 31-40 and males.

CONCLUSIONS

The analysis and processing of data extracted from the hospitalization register from January 1, 2018 to December 31, 2019, highlighted a significant incidence of pathologies associated with transmission hearing loss in the ENT clinic of the Sibiu County Emergency Clinical Hospital, cumulating about a quarter of the total number of hospitalized cases. Given the wide range of diseases encountered in the ENT specialty, which require hospital medical care, a percentage of 27% of hospitalizations represented by transmission hearing loss, gives this condition the status of a topical problem, with a high prevalence in the ENT field.

Of particular importance are the results obtained from the distribution of cases in the group, depending on the age of the patients, according to the predetermined age ranges. They revealed a numerical dominance of young patients, aged between 16 and 20, which raises an alarm signal regarding the hearing integrity of the young generation.

The predominance of males among patients diagnosed with diseases associated with transmission hearing loss, is another aspect revealed after evaluating the cases in the reference group, the percentage ratio between sexes being 53% males and 47% females. The percentage difference, however, is not so significant; therefore, it is not possible to establish exactly the superior predisposition of males in the development of pathologies associated with transmission hearing loss.

Regarding the distribution of patients according to the environment of origin, we can notice an impressive majority of patients in urban areas, with a dominant percentage of 70%.

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