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ORIGINAL

Prevalence of bilateral otitis media with effusion in preschool children with speech difficulty in the Audiology unit of E.N.T. department in Hilla general hospital

Prevalencia de otitis media bilateral con derrame en niños preescolares con dificultades del habla en la unidad de audiología del departamento de E.N.T. del hospital general de Hilla

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ABSTRACT

Introduction: otitis media with effusion is a common issue among young children. If not treated, it can lead to serious problems like hearing loss and difficulties in speaking.
Method: the study aims to determine how common bilateral otitis media with effusion is among preschool children experiencing speech difficulties.
Results: out of 343 children included in this study, 7 children were diagnosed as bilateral otitis media with effusion and the prevalence was 2,04 %, the more prevalence was by age of 4 years then 5 years and the least was in 6 years.
Conclusions: prevalence of bilateral otitis media with effusion in preschool age children with speech difficulty in audiology unit in ENT department in Hilla teaching hospital was 2,04 %.

Keywords: Otitis Media with Effusions; Speech Difficulty; Preschool Children.

RESUMEN

Introducción: la otitis media con derrame es un problema frecuente entre los niños pequeños. Si no se trata, puede provocar problemas graves como pérdida de audición y dificultades para hablar.
Método: el objetivo del estudio es determinar la frecuencia de la otitis media bilateral con derrame en niños preescolares con dificultades para hablar.
Resultados: de los 343 niños incluidos en este estudio, 7 fueron diagnosticados de otitis media bilateral con derrame y la prevalencia fue del 2,04 %; la mayor prevalencia se dio a los 4 años, luego a los 5 años y la menor a los 6 años.
Conclusiones: la prevalencia de otitis media bilateral con derrame en niños en edad preescolar con dificultades del habla en la unidad de audiología del departamento de ORL del hospital universitario de Hilla fue del 2,04 %.

Palabras clave: Otitis Media con Derrames; Dificultad del Habla; Niños en Edad Preescolar.

INTRODUCTION

Otitis media with effusion (OME) refers to the build-up of mucus in the middle ear and occasionally in the mastoid air cell system. When the fluid persists for 3 months or more, the condition is typically classified as chronic. In children, OME can lead to hearing difficulties, delayed speech and language skills, social behavior issues, and in younger kids, problems with balance. The condition is widely known among both ear'.[1] Approximately 80 % of all children under 3 years old and 40 % of them will experience three or more episodes.[2]

When both ears are affected by Otitis Media with Effusion (OME), it is more likely to last longer compared to when only one ear is affected. In clinics, children with OME in both ears and a past of respiratory infections are at a higher risk of facing ongoing problems.

Examination

Otoscopy

In some cases, examining the ear with an otoscope may be challenging either due to a child's lack of cooperation or wax blocking the view. In primary care, sodium bicarbonate or olive oil eardrops are often prescribed to soften and encourage dispersal of the wax. In more specialized community clinics and secondary care facilities, tympanometry and audiometry tests can offer valuable insights into hearing loss levels, even when the eardrum view is obstructed by wax (see figure 1).

Figure 1. Normal Right Tympanic Membrane

Investigations

Tympanometry

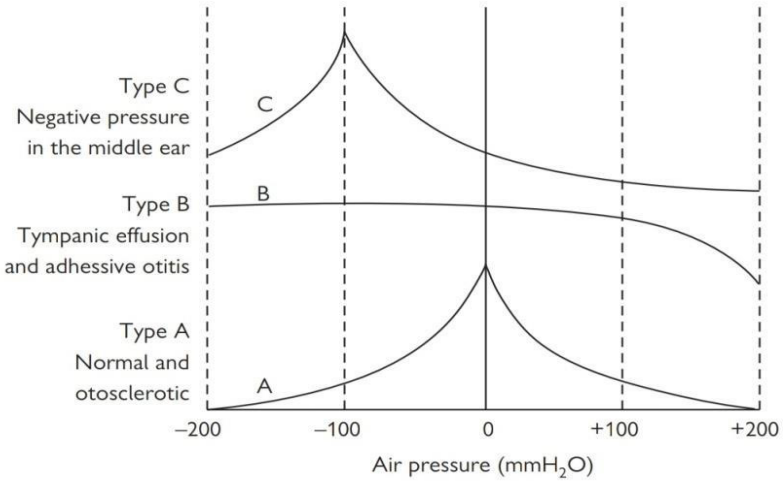

Figure 2. Tympanogram Graphs

For more than 30 years, a method called tympanometry, which uses an automated device to measure ear impedance, has been widely used to detect OME. Although it can be challenging to create a perfect acoustic seal, this method can typically provide bilateral tympanograms for about 98 % of aged of children from 3,5 to

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7 years, for 90–94 % of infants aged 2–11 months,[3,4] and for 78–88 % of infants aged 12–24 months.[5] In clinical settings, a modified version of the Jerger classification system is commonly utilized, which assesses compliance and pressure visually through a compliance curve (see figure 2). When comparing the results of middle ear fluid observed during myringotomy with the tympanometry outcomes, a type B tympanogram often indicates the presence of OME, Type A tympanograms are less frequently linked to OME, while type C falls somewhere between these two categories.[6]

In a primary care environment, when skilled operators use this equipment, if a type B tympanogram is classified alongside a type C2 tympanogram, the sensitivity and specificity (100 % and 75 %) are similar to those of traditional impedance bridge tympanometry.[7]

A combined analysis of otoscopy and tympanometry showed sensitivity and specificity above 90 % when both methods agreed.

Acoustic Reflexes

However, measuring the acoustic reflexes alongside tympanometry classification as peaked or non-peaked is not recommended due to its low sensitivity, as indicated in the study.[8]

METHOD

This study was carried out in the audiology unit at Hilla General Teaching Hospital's ENT department, the number of children with speech difficulties aged 4-6 years visited this department during period from December 2018 to December 2019, were 343 (133 females and 210 males), part of the children came when their parents noted that their children had speech delay in comparism with other children at the same age, while other part of children came to this department by referal from inside or outside the hospital according Aspecial questionare paper including questions to the parents was given to them, all these children underwent full ENT examination, Regarding to the vaccination status of the children including in our study all of them hade fall vaccination. The otoscopic examination aimed to identify abnormalities indicative of otitis media with effusion. These abnormalities include a loss of drum translucency (appearing dull, yellow-orange, or bluish), a diffused or distorted cone of light, a prominent short process of the malleus handle, the presence of fluid in the middle ear like air bubbles or an air-fluid level, and any other observations such as perforations or the presence of a grommet tube.[9] All children with hereditary or congenital or acquired syndromes excluded from study (like congenital Sensory neural hearing loss, Autism, mental retardation).

After examining the ears with an otoscope, tympanometry was conducted using a portable device called MAICO, as illustrated in figure 3. The results of the tympanometric curve were classified into different types using a modified Jerger's system: type A (peak between +100 and -100), type C1 (peak between -101 and -200), type C2 (peak more than -200), and type B (a flat curve without a distinct peak).

All children with bilateral otitis media with effusion with speech difficulties fallow up by medical treatment like:

Nasal decongestant, antibiotics fault, allergic medication with speech therapy for 4-8 weeks if there no response in clinical and tympanometry results go to surgical management like adenoidectomy and myringotomy with or without grommet implantation supported by speech therapy and tympanometry fallow up for 4-8 weeks.

All the children have good result after 3-5 months of treatment.

Children displaying symptoms and signs of bilateral otitis media with effusion during the otoscopic examination, along with a type B tympanogram, were diagnosed with otitis media with effusion and included in the research study.

Figure 3. Tympanometry

RESULTS

The children included in this descriptive, cross-sectional study were 343 children, 133 females (38,8 %), and 210 males (61,2 %), the children age ranged from 4-6 years, 148 (43,1 %) children were four years old, 107 (31,2 %) children were five years, and 88 (25,7 %) were six years old as shown in the (table 1), figure (4).

Table 1. Age And Gender Children Distribution

Gender	Frequency	Ratio (%)
Male	210	61,2
Female	133	38,8
Age (Year)		
4	148	43,1
5	107	31,2
6	88	25,7
Summation	343	100

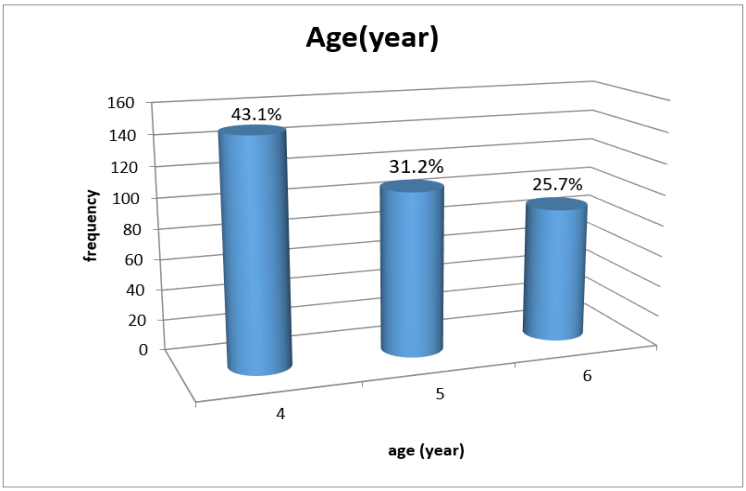

Figure 4. Age Distribution of The Children

Children were found to have bilateral OME depending on features of OME and tympanogram type B were 3 females (42,86 percent) and 7, 4 males (57,14 percent) as shown in table (2) and figure (5), so the prevalence of bilateral OME was 2,04 % as shown in figure (6) below.

Table 2. Prevalence of Bilateral OME According to The Genger

Gender	No. of children with bilateral OME	%
Male	4	57,14
Female	3	42,86
P value < 0,001		

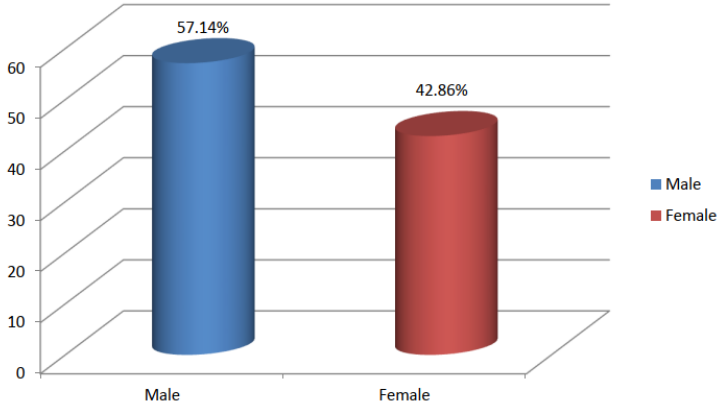

Figure 5. Prevalence of Bilateral OME According to Gender

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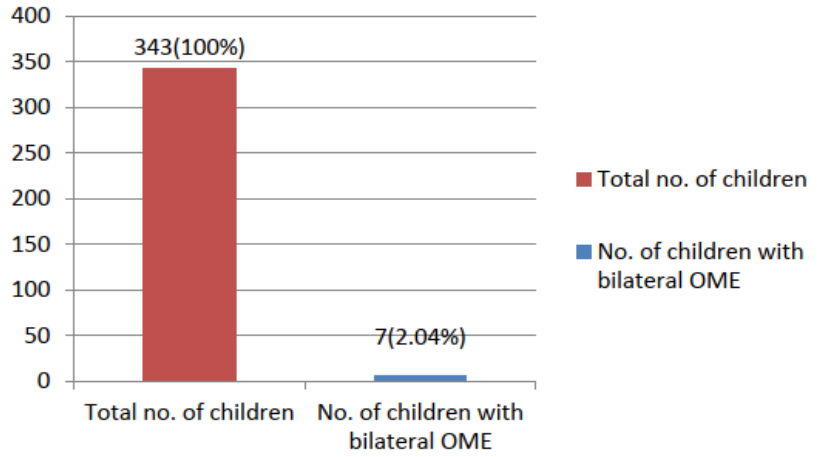

Figure 6. Prevalence of bilateral OME

The prevalence of bilateral OME according to the age of children was 4 (4,7 %) children aged four years, 2 (2,8 %) children aged five years, and 1 (2,3 %) child aged six years as shown in table 3 and figure (7) below.

Table 3. Prevalence of Bilateral OME According to The Age of Children

Age	No.		Prevalence of bilateral OME (%)
4 year	148	4	2,7
5 year	107	2	1,9
6 year	88	1	1,1

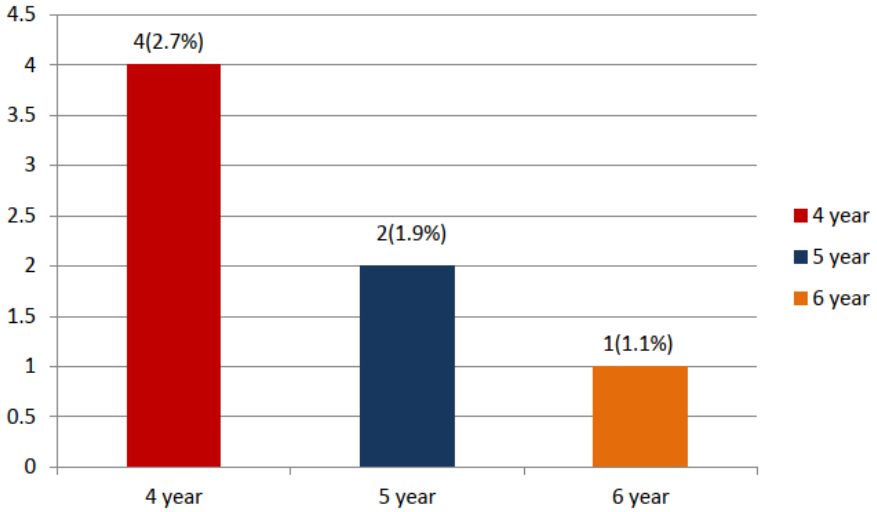

Figure 7. Prevalence of bilateral OME according to age of children

DISCUSSION

This study was conducted at the Hearing and Speech Department in Hilla Teaching Hospital, focusing on otitis media with effusion, a common health issue among preschool-aged children. If left untreated, this condition can result in severe complications like permanent hearing loss or speech impairments.[10] The research revealed a 2,04 % prevalence of bilateral otitis media with effusion. In a separate study in Erbil Governorate by Koye, Z. M, A and Shem, A. A. M. published in ZANCO Journal of Medical Sciences in December 2018, the prevalence among preschoolers was 11,5 %.[11] Similarly, a study in Turkey by Ozlem Celebri Erdivanli and Zerrin Ozergin Coskun, published in Indian J Otolaryngol Head and Neck Surgery in February 2011, showed a 9,9 % prevalence in children aged 4-15 in the Eastern Black Sea region during 2007-2009, with a higher rate of 14,7 % among 4-6 year olds.[12] In a study carried out in Iran's capital, Tehran, by Abbas SN and Ali SN, published in Tanaffos 2002, 1833 children aged 2-6 years and 200 children aged 7-11 years were examined. The study found that the prevalence of otitis media with effusion was 9,1 % in preschoolers and 14,1 % in school-age children.

Variations in prevalence were attributed to the selection of causes related to hearing and speech within the ENT department.

Interestingly, when considering gender, the research revealed a significantly higher occurrence of bilateral otitis media with effusion in males (57,14 %) compared to females (42,86 %). This finding mirrors a similar study conducted in Nijmegen, Netherlands by Anne G.M. Schilder, et al., published in Clinical Otolaryngology in June 1993, which also highlighted a high prevalence of this condition among males.[13,14]

The age of a child significantly influences the likelihood of developing otitis media with effusion. As children get older, the risk of effusion decreases. This occurs because the angle of the Eustachian tube changes from horizontal to vertical as the child ages, and their immune system strengthens through exposure to different allergens.[15] In our research, we observed that four-year-olds had the highest prevalence of bilateral OME at 2,7 %, followed by five-year-olds at 1,9 %, and the lowest rate was seen in six-year-olds at 1,1 %.

Although our study indicated a higher occurrence of otitis media with effusion in four-year-olds, followed by five-year-olds, the difference in prevalence among six-year-olds was not statistically significant due to the limited age range analyzed.

CONCLUSIONS

The research findings indicate that among preschool children with speech difficulties at Hilla Teaching Hospital, the occurrence of bilateral otitis media with effusion was 2,04 %. The highest occurrence was observed in four-year-olds, followed by five-year-olds, and the lowest in six-year-olds. Furthermore, the study revealed a higher prevalence of otitis media with effusion in males compared to females.

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CONFLICT OF INTEREST

None.

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