Indian J Otolaryngol Head Neck Surg
(November 2019) 71(Suppl 2):S1276–S1281; https://doi.org/10.1007/s12070-018-1310-y

ORIGINAL ARTICLE

Prevalence of Otitis Media with Effusion in Children with Hearing Loss

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Received: 21 September 2017 / Accepted: 17 March 2018 / Published online: 26 March 2018

Abstract Otitis media is an inflammation of the middle ear cleft, with or without intact tympanic membrane. Otitis media is known to be one of the most common childhood infections. Middle ear effusions have been recognized to grab increasing attention because of the problems they pose in both the diagnosis and the treatment, and because of the fear that effusion is the cause of learning difficulties, irreversible middle ear disease, or both. To study prevalence of otitis media with effusion in children with hearing loss. Materials and methods: This prospective study was conducted on children with hearing loss ageing between 3 and 15 years presenting to ENT OPD of GURU GOBIND SINGH MEDICAL COLLEGE FARIDKOT with complaint of hearing loss from January 2015 to June 2016. Total of 125 children were taken in study. Detailed history and complete ENT examination was done along with pure tone audiometery and impedence audiometery. Most common complaints of patient were otalgia on ototscopic examination majority of patients had congested tympanic membranes. Otitis media with effusion was most common cause of hearing loss. Majority of children diagnosed with otitis media with effusion were in age group of 6–8 years of age. Patients with mild hearing loss due to otitis media with effusion, on pure tone audiometery was more as compared to moderate hearing loss. B type of tympanogram was found in majority of cases. The potential of otitis media with effusion to cause a series of sequels and complications such as tympanosclerosis, retraction pockets, adhesive otitis media and hearing or speech impairment makes the disease an important public health problem. To prevent delayed diagnosis which leads to development of this disease, parents must be informed about the preventable risk factors and symptoms for the development of otitis media with effusion.

Keywords Otitis media with effusion · School going children · Hearing loss · Sequele of otitis media with effusion

Introduction

Otitis media is an inflammation of the middle ear cleft, with or without intact tympanic membrane. Otitis media is known to be one of the most common childhood infections and a leading reason for antibiotic prescriptions in the developed world. It was first described by Hippocrates as early as 450 B.C.

It continues to present itself even today as one of the most perplexing universally observed medical problems of childhood and a leading cause of hearing loss [1].

Middle ear effusions have been recognized at least since the time of Politzer more than 100 years ago [2]. During recent years they have been accorded increasing attention because of the problems they pose in both the diagnosis and the treatment, and because of the fear that effusion is the cause of learning difficulties, irreversible middle ear disease, or both.

Contemporary terminology recognizes that both the suppurative and nonsuppurative forms of middle ear effusion arise from inflammation in the middle ear, and are thus all forms of otitis media with effusion.

It can present itself in different forms because of large variations in the nature of the disease. Otitis media in its

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various forms constitutes single most common problem seen by otorhinolayryngologists and pediatricians. Childhood acute otitis media and otitis media with effusion can both cause long term changes of the tympanic membrane [3].

Otitis media with effusion is known by variety of synonyms. It is also called as serous otitis media, secretory otits media, non suppurative otitis media and is commonly called as Glue ear.

Aims and Objective

To study prevalence of otitis media with effusion in the age group of 3–15 years reporting to ENT OPD with complaint of hearing loss.

Materials and Methods

This prospective study was conducted on children with hearing loss ageing between 3 and 15 years presenting to ENT OPD of GURU GOBIND SINGH MEDICAL COLLEGE FARIDKOT with complaint of hearing loss from January 2015 to June 2016. Total of 125 children were taken in study. Detailed history and complete ENT examination was done. Suspected cases of otitis media with effusion were included in study and record of its findings was maintained. PTA (pure tone audiometery) and Impedence audiometery of cases were done. To prevent seasonal effect on prevalence of otitis media with effusion cases were taken in all seasons.

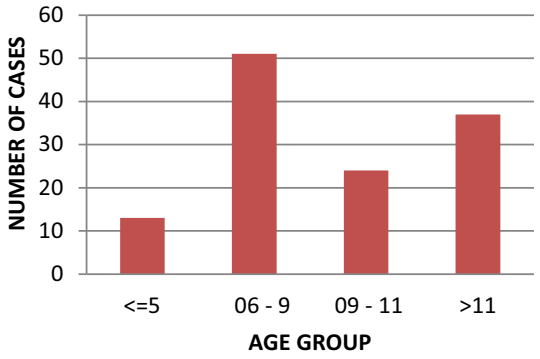
Inclusion Criteria of Cases

- Age between 3 and 15 years.
- Complaint of hearing loss (as told by patient's attendants).
- Complaint of aural fullness/ear ache.

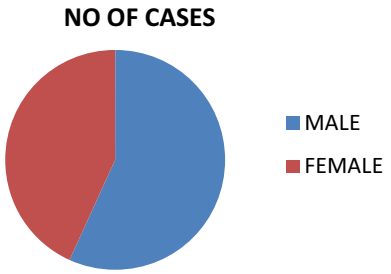
Exclusion Criteria

- Age < 3 and more than 15 year.
- History of otorrhoea.
- Perforation of tympanic membrane.
- History of intake of any ototoxic drug.
- Congenital malformations of ear.
- Any external ear disease.

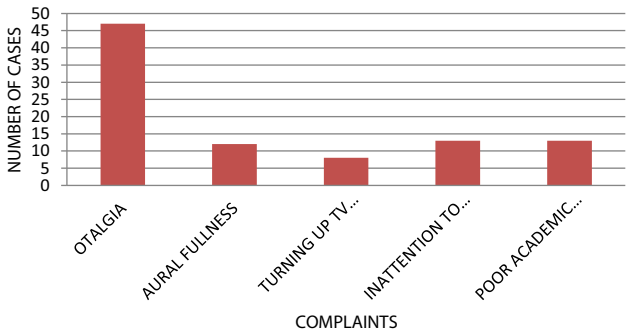
Results and Observation



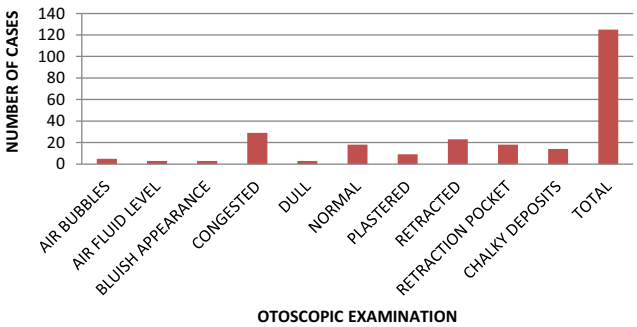
Age distribution pattern (N = 139)



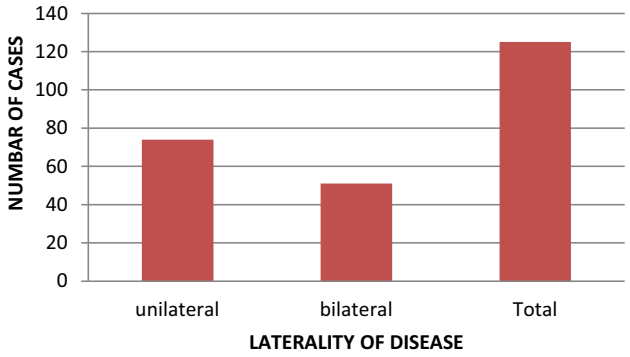
Gender distribution (N = 125)



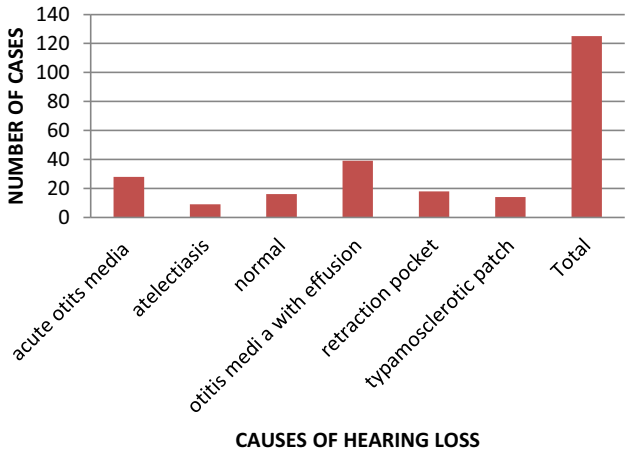
Distribution of chief complaints in children (N = 125)

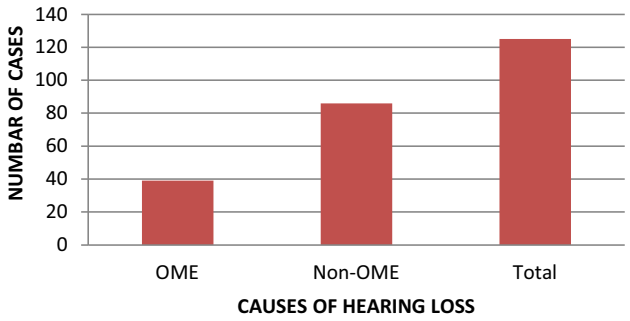


Graph showing status of tympanic membrane on otoscopic examination (N = 125)

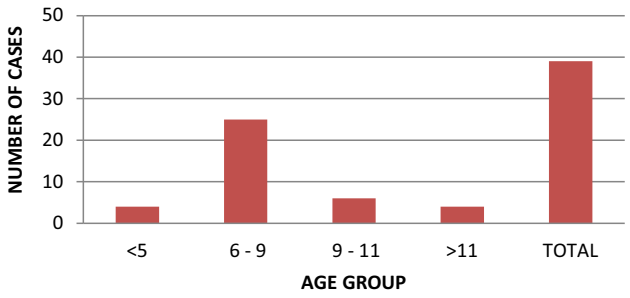


Distribution as per laterality of disease (N = 25)

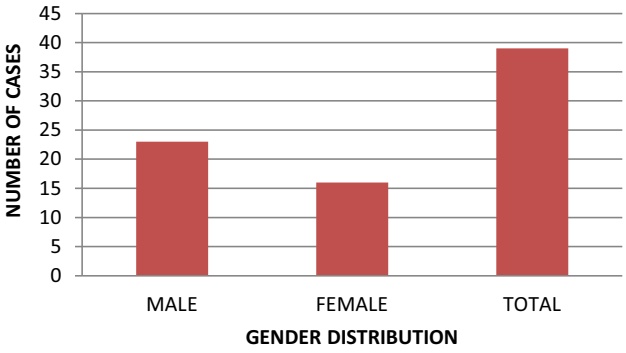




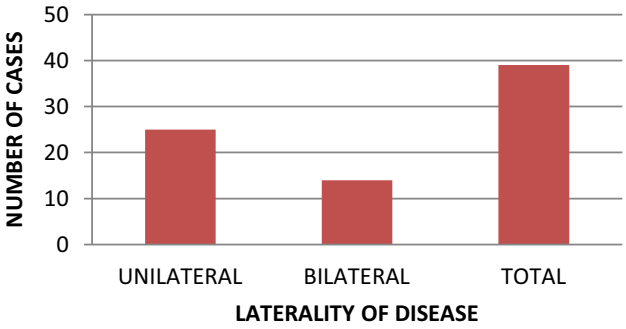
Pathology of hearing loss (N = 125)



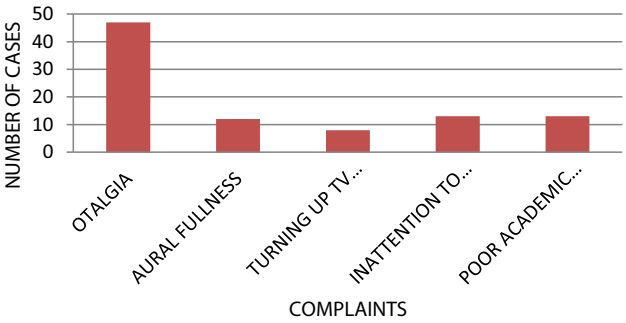
Distribution of children as per different age groups in cases with otitis media with effusion (N = 39)



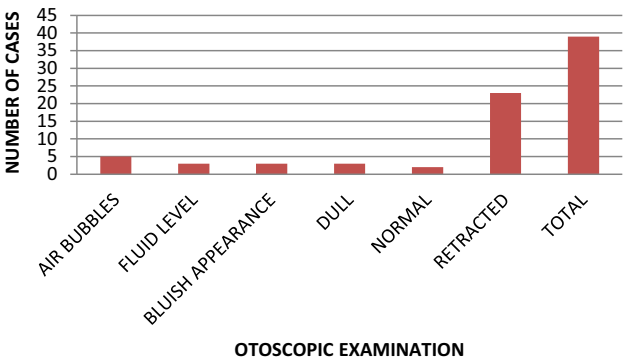
Gender distribution in cases of otitis media with effusion (N = 39)



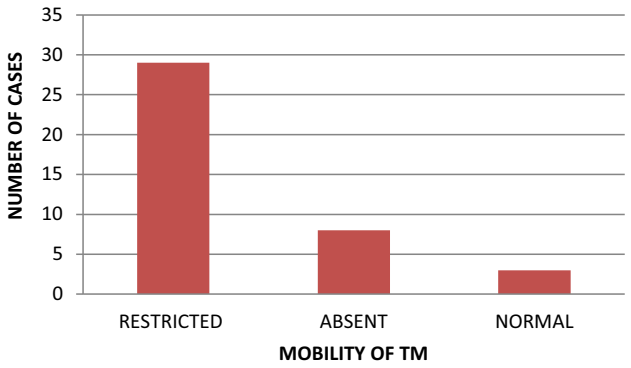
Laterality in cases of otitis media with effusion (N = 39)

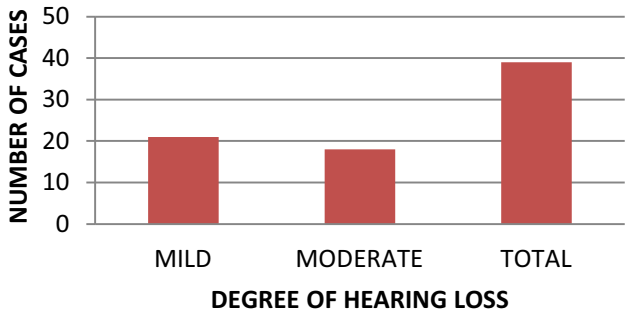


Graph showing complaints of cases with otits media with effusion (N = 39)

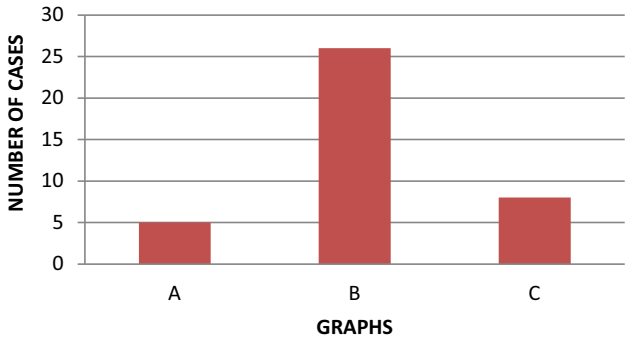


Otoscopic examination of cases with otitis media with effusion (N = 39)





Degree of hearing loss in cases with otitis media with effusion (N = 39)



Graphs obtained on impedence audiometery (N = 39)

Discussion

In our study we had taken 125 children within age group of 3–15 years with complaint of hearing loss. Majority of cases were in 6–9 years (40.80%) followed by children in 11–15 years (29.60%) followed by children in 9–11 years and lastly children in age group of 3–5 years(10.40%).

Geoffrey et al. [4] studied children studying in grades 1–6 and took sample population of 6035 children out of which 202 complained of hearing loss.

Olusyna et al. [5] studied 359 children and found prevalence of hearing loss was found to be 13.90%.

Sharma et al. [6] studied 300 children with age between 3 years to maximum of 12 years. Of 300 patients, only 32% complained of hearing loss. [6].

In our study in children with hearing loss, most common complaint was otalgia (36.60%) followed by aural fullness (6.40%) and turning up of TV volume (6.40%) and poor academic performance (10.40%).

Kim et al. [7] reported hearing loss as major complaint (4.50%) followed by tinnitus (1.90%), otalgia (0.60%).

Kalpna and Chamyal [8] found most common complaint as hearing loss in 11.00% followed by otalgia in 3.08% followed by aural fullness in 1.00% [8].

Olusanya et al. [5] found aural fullness as most common cause (52.60%) followed by poor school performance (32.00%) and lastly hearing loss (13.90%).

Abdullah et al. [9] reported hearing loss in 52% as major complaint followed by otalgia (18.00%), aural fullness (16.00%) and tinnitus (14.00%).

Mozaffarinia et al. [10] found most common complaint as otalgia in 26.30% followed by turning up of television volume (17.50%), followed by sound like bursting bubble (7.00%) and lastly was hearing loss (1.80%).

Nathan and Minutha [11] reported hearing loss as most complaint (100.00%), followed by ear fullness (96.00%), followed otalgia (15.00%) and tinnitus (5.00%).

Humaid et al. [12] quoted hearing loss in 20.005 followed by poor performance in school (19.60%).

In our study we also had similar complaints of sample population.

In our study we observed higher prevalence in males (58.97%) and lower in females (41.03%).

Geoffrey et al. [4] observed higher prevalence in males (56.40%) and lower in females (43.60%).

Kalpna et al. [8] studied population in which prevalence of males (62.105) outnumbered females (37.87%) being females [8].

Abdullah et al. [9] observed 25 cases (50 ears) of chronic otitis media with effusion and reported gender prevalence of 72% in males and 28% in females.

Sharma et al. [6] observed prevalence of 62% in males and 38% in females. In our study also we have found higher prevalence in males as compared to female similar to other studies.

In our study we examined 125 children with hearing loss and found prevalence of otitis media with effusion in children with hearing loss to be 31.20%.

Geoffrey et al. [4] studied 6035 children from grade 1–6 and found 212 children complaining of hearing loss. After

confirmation of the findings they found 38.40% of population with otitis media with effusion.

Kim et al. [7] in Korea studied 9321 person belonging to different households from 0 to 80 years to find prevalence of various middle ear pathologies. They reported otitis media with effusion as most common cause of middle ear pathology in age group of 0–15 years [7].

Maharjan et al. [13] conducted a study involving 1050 school children in Eastern Nepal found 346 children with ENT related problems. Conductive hearing loss on one or both sides was found in 114 cases.

Various middle ear pathologies were detected in these children, out of which chronic suppurative otitis media was found to be most common to be 35.20% followed by otitis media with effusion which was 24.50% [13].

Yamamah et al. [14] examined 453 cases of primary school age children and found ear disease in 27.5% of the ears examined. The commonest cause was otitis media with effusion (10.80%), followed by occluded earwax (9.50%).

Rowaily et al. [15] diagnosed 45 children with hearing impairment (84.4% conductive and 15.6% sensori-neural). As for conductive deafness, otitis media with effusion ranked first as a cause of deafness (34.90%) [15].

Humaid et al. [12] found prevalence of hearing loss in 20.00% of population (300/1488). Among 300 patients prevalence of otitis media with effusion in hearing loss population was in 37.33% (112/300) [12].

Sanli et al. [16] examined 1165 children and diagnosed 143 with otitis media with effusion. Hearing loss was present in 40 cases with otitis media with effusion out of 170 patients with hearing loss which shows prevalence rate of otitis media with effusion in hearing loss children to be 23.50% [16].

Sharma et al. [6] studied 300 patients diagnosed with otitis media with effusion. Only 32% patients gave a history of hearing loss which shows that prevalence of otitis media with effusion in hearing loss children is 32.00% [6].

Alharbi et al. [17] examined 1220 kindergarten and found 119 children with hearing loss. Among 119 children 6 had sensorineural hearing loss and prevalence rate of otitis media with effusion in children with conductive hearing loss was 24.77% (28/113) [17].

Conclusion

Gender predeliction was found in males (59.00%) as compared to females (41.00%).

Most common complaint was mild ear ache, followed by aural fullness, followed by inattention to parents and poor academic performance.

Unilateral affliction of disease was more (59.40%) as compared to bilateral disease (40.80%).

Otoscopic examination showed retraction in 58.90% of children followed by air bubbles in 12.80% and then fluid level.

On pure tone audiometery mild to moderate hearing loss was found.

Impedence audiometery showed type B curve in majority of cases, 66.66% followed by type C in 20.15% and lastly type A in 12.82%.

From our study we concluded that otitis media with effusion was most common cause of hearing loss in children which can easily go missed by parents and children themselves. Early diagnosis and treatment is key to decrease morbidity.

The potential of otitis media with effusion to cause a series of sequels and complications such as tympanosclerosis, retraction pockets, adhesive otitis media and hearing or speech impairment makes the disease an important public health problem. To prevent delayed diagnosis which leads to development of this disease, parents must be informed about the preventable risk factors and symptoms for the development of otitis media with effusion.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

References

1. Healy GB (1996) Otitis media and middle ear effusions. In: Ballenger JJ (ed) The ear. Williams and Williams, Baltimore, pp 1003–1009
2. Politzer A (1861) Diseases of ear, vol 17, 5th edn. Lea Brothers & Company, New York, p 244
3. Schilder AG (1999) Assessment of complications of the condition and of the treatment of otitis media with effusion. Int J Pediatr Otolaryngol 49:247–251
4. Robinson GC, Anderson DO, Moghadam HL, Cambon KG, Murray B (1967) A survey of hearing loss in Vancouver school children Vancouver, B.C. Can Med Assoc J 97:1199–1207
5. Olusanya BO, Okolo AA, Ijaduola GT (2000) The hearing profile of Nigerian school children. Int J Paediatr Otorhinolaryngol 55(3):173–178
6. Sharma K, Mehan R, Arora A (2015) Clinico-audio-radiological and operative evaluation of otitis media with effusion. Indian J Otol 21(3):174–178
7. Kim CS, Jong H, Young YWK (1993) Prevalence of otitis media and its allied diseases in north Korea. J Korean Med Sci 8(1):34–40
8. Kalpna R, Chamyal PC (1997) Study of prevalence and aetiology of the hearing loss amongst school going children. Indian J Otolaryngol Head Neck Surg 49(2):142–144

9. Abdullah B, Hassan S, Sidek D (2007) Clinical and audiological profiles in children with chronic otitis media with effusion requiring surgical intervention. Malays J Med Sci 14(2):22–27
10. Mozaffarinia K, Teimouri Y, Sarrafinejad A (2010) Serous Otitis Media in Preschool Children. Iran J Otorhinolaryngol 22(60):87–92
11. Nathan S, Minutha R (2012) Hearing loss in otitis media with effusion-types and management-a study of hundred cases. GJMEDPH 1(5):6–10
12. Humaid AH, Ashraf AH, Masood KA, Nuha AH, Saleh AD, Awadh AM (2014) Prevalence and risk factors of Otitis Media with effusion in school children in Qassim Region of Saudi Arabia. Int J Health Sci (Qassim) 8(4):325–334
13. Maharjan M, Bhandari S, Singh I, Mishra SC (2006) Prevalence of otitis media in school going children in Eastern Nepal. Kathmandu Univ Med J 4(4):479–482
14. Yamamah G, Mabrouk A, Ghorab E, Ahmady M, Abdulsalam H (2012) Middle ear and hearing disorders of schoolchildren aged 7–10 years in South Sinai, Egypt. East Mediterr Health J 18(3):255–260
15. Rowaily MA, Alfayez AI, Aljomiey MS, Albadr AM, Abolfotouh MA (2012) Hearing impairments among Saudi preschool children. Int J Pediatr Otorhinolaryngol 23:1674–1677
16. Sanli A, Tasdemir O, Eken M, Celebi O, Yilmaz SH (2014) Prevalence of otitis media with effusion among primary school age-children and etiopathogenic examination.Indian. J Otolaryngol Head Neck Surg 66(1):95–98
17. Alharbi FA, Ahmed RA (2015) Evaluation of hearing among kindergarten children in Jazan (Kingdom of Saudi Arabia). Interv Med Appl Sci 7(3):91–94