

Prevalance and patterns of chronic suppurative otitis media and hearing retardation in Haldwani city of Uttarakhand state: A pilot study

Naveen Kandpal^{1*}, S. C Mishra², Abha Kandpal³

¹Consultant Surgeon, ²Retd. Professor and HOD, ³Medical Officer, ¹Kandpal ENT Hospital Shaktipuram, Nawabi Road Haldwani, Nainital, Uttarakhand, ²King George's Medical University, Chowk, Lucknow, Uttar Pradesh, ³PHC, Kalakhet, Nainital, Uttarakhand, India

Abstract

Two hundred (200) patients with chronic suppurative otitis media (CSOM) in Haldwani city of Uttarakhand state and 100 individuals without otological problems as control group were included in this study, which was done during the period between July'2009 to June'2010 at Base hospital, Haldwani and Krisshna ENT hospital, Haldwani. The clinical study included history taking, particulars of the patients, thorough ENT examination, tuning fork examination, audiological examination (including pure tonometry and tympanometry). 58(29%) patients were suffering from CSOM (2-11 years), followed by 41(20.5%) (11-20 years) and 39 (19.5%) patients were under 2 years of age. Most common type was conductive hearing loss (87%) followed by sensorineural hearing loss (3.9%) and mixed hearing loss (1.2%). It was found that CSOM was most common among infants and children (48.5%). There was significant variation in the prevalence of CSOM, between Terai region (including Haldwani city) and Hilly region.

Keywords: Prevalence, Csom, Hearing retardation, Haldwani, Uttarakhand.

Introduction

Otitis media is inflammation of the middle ear. This is most commonly caused by the buildup of fluid behind the ear drum, as a result of a blockage to the Eustachian tube.⁹ Otitis media is more common in children, as their Eustachian tube is shorter and more horizontal than adults and is made up of more flaccid cartilage, which can impair its opening.¹¹ Otitis media can cause a mild to moderate hearing loss, due to the fluid interfering with the transmission of sound through to the inner ear. It can often affect the tympanic membrane causing it to retract or become inflamed¹⁰

The fluid can cause the tympanic membrane to bulge and become inflamed and occasionally the tympanic membrane will perforate. There are three common types of otitis media, acute purulent otitis media, otitis media with effusion and chronic suppurative otitis media.¹⁴ The etiology and pathogenesis of otitis media are multifactorial and include genetic, infections, allergy, environmental, social & racial factors and eustachian tube dysfunction. It can present itself in different forms because of large variations in the nature of the disease. This could range from "silent otitis media" with clinically undetectable middle ear pathology to late stage intracranial life threatening complications like brain abscess.

According to a World Health Organization survey, 42million people worldwide (older than 3 years) have hearing loss. The major cause for hearing retardation is otitis media,¹⁶ which is second only to common cold as a cause of infection in childhood. It is estimated that about 90% of people have at least one episode of otitis media by their 2nd birthday. For children less than 15 years old, the most frequent diagnosis made in clinical practice is otitis

media.¹⁵ Children from developing countries having unfavorable environments witness an extraordinarily high incidence of severe episodes of otitis media with frequent perforation of tympanic membrane and persistent suppurative discharge and necrotizing process in the middle ear, including destruction of ossicles. Children from lower socioeconomic groups being more vulnerable to otitis media, they have to be given special care to prevent hearing retardation. Otitis media gradually and silently affects the hearing process, which, in turn, adversely affects mental status, socialization and education in such children. After every episode of otitis media in children, fluid persists in the middle ear for weeks to months. This leads to conductive hearing loss. Poor hearing retards development of speech and impacts adversely upon mental ability and self-confidence resulting into social burden.

Condition of CSOM and hearing retardation seems to be a "tip of iceberg". WHO (1996)⁸ proclaims prevalence rate of CSOM in India is 2%; whereas, prevalence rate; Ahmed M. Alabassi et.al (2010) reportedly prevalence rate of 25%.¹⁷ Prevalence of hearing retardation is more worse, ICMR, 1983 on multi centric centre's report says 10.7% prevalence rate. According to WHO (1996), 42 million peoples are suffering from hearing retardation, which includes baby older than 3 days. Amit K Verma et al (2005) reported prevalence rate of 71.6%⁷ hearing retardation in Northern India. Okafor et al. (1988) reported prevalence rate of 71%¹ at University college Hospital, Ibadon. Brobby et al (1988) reported prevalence of CSOM at Ghana is 50-70%.²

*Corresponding Author: Naveen Kandpal, Kandpal ENT Hospital Shaktipuram, Nawabi Road Haldwani, Nainital, Uttarakhand, India
Email: naveen_ms1973@rediffmail.com

Materials and Methods

The study was conducted in ENT clinics of Base hospital and Krrishna ENT hospital, Shaktipuram, Haldwani, located in Nainital district of Uttarakhand state of India. A total of 200 peoples were included in this study. The clinical study includes thorough history taking, ontological examination tuning fork examination (for screening), pure tone audiometry and tympanometry. Daily detailed examinations were done by ENT surgeons, medical officer trained in audiological equipments and audiologist, using Arphi diagnostic audiometer²⁰⁰¹ and Amplaidd 756 tympanometer. Two hundred (200) patients with chronic suppurative otitis media (CSOM) in Haldwani city of Uttarakhand state and 100 individuals without otological problems as control group were included in this study, which was done during the period between July'2009 to June'2010 at Base hospital, Haldwani and Krisshna ENT hospital, Haldwani.

Clinical and epidemiological (demographical) studies

Various clinical and demographical parameters were evaluated in this study; these includes

1. Age.
2. Sex.
3. Family history including Mode of smoking in family
4. Type of feeding (breast and bottle feeding)
5. Degree of severity⁹
6. Degree of hearing loss (Conductive, Mixed, Sensorineural)⁹
7. Living modes of patients.

Clinical examination techniques Includes

1. Otological examination to differentiate CSOM from another types (e.g. acute otitis media ,otitis media with effusion, otitis externa)¹⁰
2. Tuning fork examination by using Rinne,s test and Weber,s test for screening¹⁹
3. Audiological investigation by using Pure tone audiometry and tympanometry¹⁹

Results

Table 1: Distribution of patients of csom according to age

Age group	Male	Female	Total	Percentage (%)
Infantile <2 years	20	19	39	19.5
Childhood (2-11Yrs)	31	27	58	29
Adulthood 11-<20 yrs)	20	14	34	17
Group. (20-30 years)	19	22	41	20.5
Group. Over 30 years	18	10	28	14
	105	95	200	100

A total of 200 patients with CSOM were attended to the ENT OPD of Base hospital and Krisshna hospital, Haldwani. Aural swabs were taken from all patients. Patients were distributed according to age and sex. There were 105 (52.5%) males and 95 (47.5%) females, and male to female ratio was 1.1:1; the age of patients were taken from a-60 years and 100 individuals regarded as control without any otolaryngological problems, were also studied.

Prevalence of the patients with csom according to age

Table 1 and Figure 1 shows that the majority of our patients belong to age group 2-11 years (29%), followed by the age group 20-30 years (20.5%) followed by patients less than 2 years (19.5%) were higher than adult age group above 30 years.

Table 2: On examination; Otosopic findings

Otosopic findings	Possible findings	Percentage (%)
Otitis media with effusion	12	6
Healed otitis media	18	9
Retracted tympanic membrane	49	
CSOM with safe perforation	80	40
CSOM with unsafe perforation	32	16
Bilateral CSOM with safe and unsafe perforation	9	4.5

Examination findings on otoscopic examination

Table 2 show that the majority of finding recorded is CSOM with safe perforation (40%), followed by Retracted tympanic membrane (24.5%) followed by CSOM with unsafe perforation (16%). Bilateral CSOM with safe and unsafe perforation was found in (4.5%) cases, which should not be taken quietly. Otitis media with effusion (6%), Healed otitis media (9%), Retracted tympanic membrane (24.5%) are major concern for mild to moderate conductive hearing loss.

Table 3: Prevalance According To Geographical Distribution

Geographical area	No. of patients	Percentage (%)
Terai region including haldwani city	82	41%
Rural (hilly and terrain areas)	118	59%

Prevalence of the patients according to geographical distribution

Table3 and Figure 2 shows that the majority of our patients belong to rural areas, which include hilly and terrain areas, 118(59%), followed by the patients belonging to Terai areas including Haldwani city 82(41%) This illustrates highly statistical difference. (p<0.01)

Table 4: Clinical features of patients with CSOM

Clinical features	Number of patients
Otorrhoea	142
Hearing retardation	90
Otalgia	62
Odor ful discharge	34
Itchy ear	48
Tinnitus	40
Vertigo	26

*P<0.01

Clinical features of patients with CSOM

Table 4 and Figure 3 shows that Otorrhoea (140) was the most common presenting symptom followed by hearing retardation (90) and Otalgia in 62 ears. Itchy ear (48), Tinnitus (40), Odorful discharge (34) and vertigo (26) were also presented in some ears.

Table 5: Audiological examination-at a glance (after wax and pus cleaning)

Nature of hearing loss	Ears affected
Conductive hearing loss (in 1/both ears)	174
Mild to moderate hearing loss	160
Mixed hearing loss	9
Sensorineural hearing loss	6

Audiological examination-at a glance (after wax and pus cleaning)

Table 5 and Figure 4 shows that conductive hearing loss in one or both ears are found in 174 ear was the most common presenting symptom out of which in 160 ears, hearing loss was mild to moderate. In 9 cases, there was mixed hearing loss, whereas in 6 patients there was sensorineural hearing loss.

Table 6: Impedance profile of patients with intact tympanic membrane

Type 'a' Jerger's	6 (11.11%)
Type 'b' Jerger's	12(22.22%)
Absence of any peak pressure	36(66.67%)

In 54 patients, after thorough otoscopic examination and wax removal, tympanometry was done. In 6(11.11%) patients Type 'A' Jerger's tympanogram was noted, in 12(22.22%) patients Type "B" was noted and in 36(66.67%) patients no peak was observed till 200daPa.

Discussion

Discharging ears (CSOM) grossly neglected in our society is found second only to common cold as a cause of childhood and infantile age groups. It is particularly common in low socio-economic status like ours, in the developing countries. Prevalence rates of CSOM are variable depending on different social strata, different racial groups and different study groups too.

In this study, 58(29%) patients were suffering from CSOM (2-11 years), followed by 41(20.5%) (11-20 years) and 39 (19.5%) patients were under 2 years of age. Mishra et al (2002)⁶ reported Prevalence rate (PR) of 12.13% with door-to door survey and cohort of above 1000 subjects. Alabassi¹⁷ reported 25% PR from Basra. P. Adhikari (2009)⁸ reported PR of 7.6 in eastern Nepal. Amit K Verma (1995)⁷ reported PR of 15.3 from Northern India. V. Rupa³ reported 6% PR in southern India. WHO⁸ reports PR of CSOM in India is to be 2%. Brobby et al (1988)² reported PR of 50-70% at Ghana. Differences in prevalence's are due to different socioeconomic status, inadequate data sampling for the available city/state/country, to be labeled and smaller cohorts. Hospital based studies can also modify prevalence rate in contrast to field study. But both institutional/field surveys have their pitfalls. Despite all odds, CSOM should be considered as big challenge and shouldn't be overlooked, significantly when at least 40-65% of disease burden can be corrected surgically.

Patients coming from Hilly area were 118 (59%) in comparison to 82(41%), as there is no available data to compare; this increase of patients of CSOM from hilly areas may be due to lack of health awareness, difficult socio-economic life, lack of health education and paucity of ENT surgeons in Hilly region of Kumaon hills.

Conductive hearing loss is the most common findings in 875 cases of CSOM out of which 80% cases were having mild to moderate hearing loss. Mixed hearing loss was found in 1.2% and sensorineural hearing loss was found in 3.9%. Amit K Verma (1995)⁷ reported PR of hearing retardation of 71.6% in school going children. Okafor et al (1988)¹, reported PR of 71%. Our findings are in accordance of both the studies Increased hearing loss figures are may be due to (a) we performed audiological assessment only after wax and pus clearance. (b) We performed audiometry in sound proof room; which may be not possible in field studies.

We found 6, 12 and 36 case of type As, Type B and Absence of any peak respectively on tympanometry. They were managed conservatively and improving by the time this report was in process.

Source of Funding

None.

Conflict of Interest

None.

References

- Okafor B.C: The chronic discharging ear in Nigeria. J.L.O 1984, 98:113-119.
- Brobby GW: Peculiarities of middle ear infections in Ghana. *Ghana Med J* 1988;22(3):68-73.
- V.Rupa. CSOM Prevalence and practices among rural south india children. *Int J Paediatr Otolaryngol* 1999;48(3):L217-21.
- Maharjan M, Bhandari S, Singh I, Mishra SC; Kathmandu University *Med J* 2006;4(16):479-82.

5. Healy GB. Otitis media and middle ear effusions. In: John J. Ballenger: The Ear, Williams & Williams, Baltimore, 1996;1003-9.
6. Mishra SC, Shah PK & Kandpal N: Hearing retardation amongst school age Bhutanese refugees. *Indian J Otolaryngol* 2002;8(1):5-8.
7. Amit K Verma. Epidemiology of chronic suppurative otitis media and deafness in a rural area and developing an intervention strategy. *Indian J Paediatr* 1995;62:725-9.
8. Prevention of hearing impairment from chronic otitis media. WHO/CIBA foundation workshop report. London, UK, 19-21, November 1996
9. Probst R, Grevers G, Iro H (2006). Basic Otorhinolaryngology Thieme publication 2nd edition. Pp.166-97.
10. Uhari M, Hietala J, Tuokko H (1995). Risk of acute otitis media in relation to viral etiology of infections in children. *Clin Infect Dis* 20:521-24.
11. Vanderveen EL, Schilder AG, VanHeerbeek N, Verhoeff M, Zielhuis GA, Rovers MM et al. Predictors of chronic suppurative otitis media in children. *Arch Otolaryngol Head Neck Surg* 2006;132(10):1115-8.
12. Verhoeff, M, Vander V, Rovers MM. Chronic suppurative otitis media: A review. *Int J Pediatr Otorhinolaryngol* 2006;70(1):1-12.
13. Paul. J, Bhatia. M.L. Deafness among the urban community- An epidemiological survey at Lucknow (UP): *J Med Res* 1974;62(1):857
14. Berman S (1997). Classification and criteria of Otitis Media. *Clin Microbiol Infect* 3:1-4.
15. Seely DR, Gloyd SS, Wright ADO, Susan J. Norton: Hearing loss prevalence and risk factors among Sierra Leonean children. *Arch Otolaryngol Head Neck Surg* 1995;121:853-8
16. Bluestone CB, Klein JO: Epidemiology, otitis media in Infants and Children, W. B. Saunders, Philadelphia, 2001;58-78.
17. Seely DR, Gloyd SS, Wright ADO, Susan J. Norton: Hearing loss prevalence and risk factors among Sierra Leonean children. *Arch Otolaryngol Head Neck Surg* 1995;121:853-858
18. Ahmed M Alabassi, Ihsan E Alsaaimy, Jassim M Najim. Prevalence and patterns of chronic suppurative otitis media and hearing impairment in Basrah city. *J Med Med Sci* 2010;1(4):129-33.
19. PK Wakode, SV Joshi, SH Gawale; *Indian J Otolaryngol HNS* 58(2).
20. Finitzo T, Friel-Patti S, Chinn K, Brown O. Tympanometry and Otoscopy prior to myringotomy: issues in diagnosis of otitis media. *Int J Pediatr Otorhinolaryngol* 1992;24:101-10.

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