

Clinical study of chronic suppurative otitis media in school going children at a tertiary hospital

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Abstract

Background: Chronic Suppurative Otitis Media (CSOM) is defined as chronic inflammation of middle ear cavity that may present with recurrent ear discharges through a tympanic perforation. CSOM and recurrent acute otitis media in childhood are associated with adult hearing loss, underlining the importance of optimal treatment in these conditions. CSOM has received considerable attention, not only because of its high incidence and chronicity, but also because of issues such as drug resistance and ototoxicity with both topical and systemic antibiotics. In present study we assessed patients with 6-15 years age with chronic suppurative otitis media at a tertiary hospital. **Material and Methods:** This prospective, observational study was conducted in department of ear, nose and throat (ENT) in patients in age group 6 to 15 years with a clinical diagnosis of CSOM. **Results:** Total 184 patients were included in present study. Boys(56%) were more than girls (44%). We considered only 6-15 years age group. Among all patients age group 6-8, 9-10, 11-13 and 14-15 years incidence was noted as 23%, 21%, 32% and 24% respectively. Mean age in present study was 11.4± 5.39 years. Safe (tubotympanic) type was more common (87%) than unsafe (atticoantral) type (13%). Unilateral disease was seen in 85% patients and in only 15 % bilateral disease was noted. In 75% patients less than 40 dB hearing loss was noted while in rest 25% patients more than 40 dB hearing loss was noted. In present study hearing loss was normal, conductive, sensorineural and mixed in 23%, 49%, 15% and 13% patients respectively. Ear discharge (86%), Earache (58%) and Nasal discharge (57%) were common symptoms in present study. Various other nasal/nasopharyngeal co-morbidities also noted in present study such as tonsillopharyngitis (53%), allergic rhinitis (48%), asthma (37%), sinusitis (30%), adenoids (13%) and nasal polyps (5%). **Conclusion:** Early detection of disease and health educational training, awareness programs on of the disease for school going children and parents is needed to reduce the prevalence of the disease.

Key Words: Chronic Suppurative Otitis Media, school going children, tubotympanic

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INTRODUCTION

Estimates say that around 42 million people have hearing loss worldwide¹. The major cause for hearing impairment is otitis media, which is second only to common cold as a

cause of infection in childhood. Respiratory tract symptoms such as cough, sore throat, and earache are also frequently seen in children. Incidence of this disease is the higher in developing countries, especially among the lower socioeconomic society because of malnutrition, overcrowding, poor hygiene, inadequate health care, and recurrent upper respiratory tract infection.² Hearing impairment and preventable ear diseases are important health problems among children in India as well with prevalence of ear diseases to be 11.3%.³ The aetiology and duration of otitis media lead to a sequelae of disorders such as acute suppurative otitis media (ASOM), chronic suppurative otitis media (CSOM) and otitis media with effusion (OME). ASOM an acute form of OM, characterized by inflammation and the presence of fluid in the middle ear includes symptoms such as otalgia,

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irritability or fever. CSOM is a recurrent or persistent otorrhea over 2–3 weeks through a permanent tympanic membrane perforation leading to long standing inflammation of middle ear or hearing loss. Based on the propensity to cholesteatoma, CSOM can be further classified as squamous (safe) and mucosal type (unsafe).^{4,5} Chronic Suppurative Otitis Media (CSOM) is defined as chronic inflammation of middle ear cavity that may present with recurrent ear discharges through a tympanic perforation. The HUNT study indicates that CSOM and recurrent acute otitis media in childhood are associated with adult hearing loss, underlining the importance of optimal treatment in these conditions. It suggests that ears with a subsequent hearing loss, after otitis media in childhood age at a faster rate than those without.⁶ CSOM has received considerable attention, not only because of its high incidence and chronicity, but also because of issues such as drug resistance and ototoxicity with both topical and systemic antibiotics.⁷ In present study we assessed patients with 6-15 years age with chronic suppurative otitis media at a tertiary hospital.

MATERIAL AND METHODS

This prospective, observational study was conducted in Department of Otorhinolaryngology and Head Neck Surgery, Bharati Vidyapeeth Deemed (To Be) University Medical College. Study period was from October 2018 to September 2019. Ethical clearance from Institutional Ethical Committee was granted for present study. A written informed consent for participation was taken from parents/guardians. Patients in age group 6 to 15 years with a clinical diagnosis of CSOM, were included present study. Patients less than 6 years or more than 15 years, clinical diagnosis of ASOM, otitis externa or other conditions were excluded. All the study subjects were subjected to detailed history taking, clinical ear, nose and throat (ENT) examination, audiometry. Standard instruments used for routine ENT checkup. The prevalent chronic form of suppurative otitis media in the students was classified into safe (tubotympanic) and unsafe (atticoantral) type.

1. Tubotympanic type: In these type central perforations of all variety were included (active, quiescent and inactive state)
2. Atticoantral type: Posterosuperior marginal perforation and perforation of pars flaccida, retractions with granulations and or cholesteatoma at similar site were included under this heading.

Data was collected in pre-designed proforma. Data entered in Microsoft excel, analysed and expressed in percentage. Statistical analysis was done using descriptive statistics.

RESULTS

Total 184 patients were included in present study. Boys(56%) were more than girls (44%). We considered only 6-15 years age group. Among all patients age group 6–8, 9-10, 11–13 and 14-15 years incidence was noted as 23%, 21%, 32% and 24% respectively. Mean age in present study was 11.4± 5.39 years. Safe (tubotympanic) type was more common (87%) than unsafe (atticoantral) type (13%). Unilateral disease was seen in 85% patients and in only 15 % bilateral disease was noted. In 75% patients less than 40 dB hearing loss was noted while in rest 25% patients more than 40 dB hearing loss was noted. In present study hearing loss was normal, conductive, sensorineural and mixed in 23%, 49%, 15% and 13% patients respectively.

Table 1: General characteristics

Characteristic	No. of patients	Percentage
Sex		
Boys	103	56%
Girls	81	44%
Age of onset (years)		
6–8	43	23%
9-10	39	21%
11–13	58	32%
14-15	44	24%
Mean ± SD (years)	11.4± 5.39	
Type		
Safe (tubotympanic)	161	87%
Unsafe (atticoantral)	23	13%
Otososcopic findings - Laterality		
Unilateral	156	85%
Bilateral	28	15%
Degree of hearing loss (decibels-dB)		
<40 dB	138	75%
>40 dB	46	25%
Types of hearing loss		
Normal hearing	43	23%
Conductive hearing loss	90	49%
Sensorineural hearing loss	28	15%
Mixed hearing loss	23	13%

Ear discharge (86%), Earache (58%) and Nasal discharge (57%) were common symptoms in present study. Vertigo (37%), post nasal drip (25%), fever (19%), tinnitus (14%), cheek pain (12%), snoring (6%), facial pain (5%) and jugular nodes (4%) were other signs and symptoms in present study.

Table 2: Distribution of symptoms

Parameters	No. of patients	Percentage
Ear discharge	159	86%
Earache	106	58%
Nasal discharge	104	57%
Vertigo	68	37%
Post nasal drip	46	25%
Fever	35	19%

Tinnitus	26	14%
Cheek pain	22	12%
Snoring	11	6%
Facial pain	10	5%
Jugular nodes	8	4%

Various other nasal/nasopharyngeal co-morbidities also noted in present study such as tonsillopharyngitis (53%), allergic rhinitis (48%), asthma (37%), sinusitis (30%), adenoids (13%) and nasal polyps (5%).

Table 3: Distribution of nasal/nasopharyngeal co-morbidities

Nasal/Nasopharyngeal Co-morbidity	No. of patients	Percentage
Tonsillopharyngitis	98	53%
Allergic rhinitis	88	48%
Asthma	68	37%
Sinusitis	56	30%
Adenoids	24	13%
Nasal polyps	10	5%

Few serious complications such as post-auricular abscess (3 patients), pyogenic meningitis (2 patients), post-auricular fistula (2 patients), mastoiditis (2 patients), temporal lobe abscess (1 patients) and facial nerve palsy (1 patients) were noted in present study.

Table 4: Incidence of Complications

Complications	No. of patients (%)
Post-auricular abscess	3
Pyogenic meningitis	2
Post-auricular fistula	2
Mastoiditis	2
Temporal lobe abscess	1
Facial nerve palsy	1

DISCUSSION

Among all ear diseases, ear infections are a common but treatable cause of morbidity in children. In children and young adults, OM is the commonest cause of persistent mild to moderate hearing impairment.⁸ High prevalence of CSOM in children may be attributed to the fact that they are more prone to upper respiratory tract infections. Long-term consequences of persistent severe ear infection can arise in untreated cases like speech development disorders, poor academic and educational development and lower overall quality of life.⁹ In developing countries like India, the main predisposing factor for Otitis media is lower Socio-economic status. Overcrowding, poor hygiene and sanitation, inadequate health care and education and malnutrition lead to upper respiratory tract infection including otitis media. Infection can spread from middle ear to vital structures such as mastoid, facial nerve, labyrinth, lateral sinus, meninges and brain leading to mastoid abscess, facial nerve paralysis, deafness, lateral sinus thrombosis, meningitis and intracranial abscess.¹⁰ The treatment itself of ear diseases in childhood is associated with significant morbidity and mortality due to surgery and also puts a significant financial burden on family and health care services.¹¹ The

early diagnosis and management can prove to be effective, in reducing socioeconomic burden and prevention of deafness.¹² Various studies have reported different prevalence of CSOM as Adhikari *et al.*¹³ have reported a prevalence of 5.7% while Akinpelu *et al.*¹⁴ have found the prevalence in school going children of Nigeria to be 11.1% and Basak *et al.*¹⁵ have stated a prevalence of 37.54%. The reasons for these differences may be different geographical location with respect to socioeconomic and environmental conditions, different age groups of the children studied and different diagnostic criteria used for diagnosing CSOM. The most useful symptom for diagnosis is otalgia (ear pain). Children may also display symptoms of an upper respiratory tract infection, abnormal ear tugging, fever, otorrhoea, hearing loss, irritability and not settling at night (pain increases when supine).¹⁶ Similar complaints were noted in present study. CSOM produces painless mucoid otorrhoea without fever, unless accompanied by Otitis Externa or complicated by an extra cranial or intracranial infection. Fever is noted more in Otitis Media than in Otitis Externa. Hearing loss is common among patients with CSOM and exceeds 30 dB and with a tendency to occur in about 50 to 60% of such patients.¹⁷ Conductive hearing loss is typically moderate to severe in up to two-thirds of patients and being marked at low frequencies and with increased bone conduction threshold tendency.¹⁸ The site of the perforation corresponds to degree of hearing loss, with posterior perforations having greater decibel level loss probably as a result of loss of protection of the round window membrane from impinging sound pressure waves.¹⁹ Safe (tubotympanic) type was more common (87%) than unsafe (atticoantral) type (13%). Similar findings were noted in other studies also.^{13,20} Gupta and Mittal in their study noted CSOM distribution as tubotympanic (89.43%) and atticoantral (10.57%).²¹ Unilateral disease was seen in 85% patients and in only 15 % bilateral disease was noted. The prevalence of unilateral disease is believe to be good as it proffers a better prognosis in limiting the risk of disability from accompany hearing loss than for bilateral disease. Rakesh kumar study²² shows that among 115 patients most of the patients were between age group 11-20 years (39.13%) and CSOM was found to be more common in male patients (61.73%) than in female (38.26%) patients. The most common organisms for CSOM are *seudomonas aeruginosa* (46.08%); *Staphylococcus aureus* (33.19%); *Proteus species* (6.95%); *Escherichia coli* (3.47%); *Coagulase negative Staphylococcal species* (5.21%); *Klebsiella species*, (2.60%); and *Citrobacter* (1.73%). *Staphylococcus aureus* was more sensitive to linezolid and vancomycin and majority of gram negative isolates were sensitive to meropenem. Aspirate the discharge

from the middle ear and submit for culture and sensitivity studies. Both gram positive and gram negative organisms are responsible for infection of middle ear.²³ Appropriate antimicrobial drugs should be prescribed after proper diagnosis of the causative organism and its antimicrobial susceptibility pattern. The two principal aims of management are the eradication of infection and the closure of the tympanic perforation. If the perforation does not close and the discharge doesn't recur after conservative treatment, tympanoplasty (closure of the tympanic perforation by a soft tissue graft with or without reconstruction of the ossicular chain) with or without mastoidectomy (removing the mastoid air cells, granulations and debris) is performed restore hearing loss and eradicate the infection. Even in this era of variety of powerful antibiotics available, CSOM still consumes considerable medical expenditure, especially in the poorer sections of the society. Future studies should focus on the bacterial profile of multidrug-resistant strains resulting from indiscriminate use of antibacterial agents. An empirical antibiotic policy of a specified geographical region is of vital importance. This will have a huge positive impact by avoiding surgical procedure, minimizing the health care expenditure and more importantly preserving the quality hearing, to lead a normal social life.

CONCLUSION

Early detection of disease and health educational training, awareness programs on of the disease for school going children and parents is needed to reduce the prevalence of the disease. Improvement of health care facilities and awareness among health-care providers for early treatment would definitely be helpful in reducing the further hearing loss and other complications.

REFERENCES

- Maharjan M, Bhandari S, Singh I, Mishra SC. Prevalence of otitis media in school going children in Eastern Nepal. Kathmandu Univ Med J. 2006;4(16):479–482.
- Kumar H, Seth S. Bacterial and fungal study of 100 cases of chronic suppurative otitis media. J Clin Diagn Res. 2011;5:1224-7.
- Srivastava DK, Tripathi D, Gour N, *et al.* Morbidity profile of under five children in urban slum of Utawah district. Ind J Community Health. 2012;24(2):153–157.
- Browning GG. Condition of middle ear-classification. In: Kerr AG, ed. Scott-Brown's otolaryngology. London: Arnold; 2008:3396–3401.
- Qureshi A, Lee Y, Belfield K, Birchall JP, Daniel M. Update on otitis media – prevention and treatment. Infect Drug Resist. 2014;7:15–24.
- Aarhus L, Tambs K, Kvestad E, Engdahl B. Childhood otitis media: A cohort study with 30-year follow-up of hearing (The HUNT Study). Ear Hear. 2015;36(3):302-8.
- Malkappa KS, Kondapaneni S, Supam BR, Chakraverti K T. Study of bacterial isolates and their antibiotic susceptibility pattern in Chronic Suppurative Otitis Media. Indian Journal of Otolaryngology. 2012; 18(3):136-139.
- Biswas AC, Joarder A H, Siddiquee BH. Prevalence of CSOM among rural school going children. Mymensingh Med J. 2005; 14: 152-5.
- Baumann I, Gerendas B, Plinkert PK, Praetorius M. General and disease-specific quality of life in patients with chronic suppurative otitis media—a prospective study. Health Qual Life Outcomes. 2011;9:48.
- Wiwanitkit S, Wiwanitkit V. Pyogenic brain abscess in Thailand. N Am J Med Sci. 2012; 4: 245–8.
- Jones LL, Hassani A, Cook DG, Britton J, Leonardi-Bee J. Parental smoking and the risk of middle ear disease in children: a systematic review and meta-analysis. Arch Pediatr Adolesc Med. 2012;166(1):18–27.
- Gupta R, Mittal M. A study on clinical and epidemiological profile of chronic suppurative otitis media (CSOM) at a tertiary care center. Int J Med Sci Public Health. 2016;5(5):1021-4.
- Adhikari P, Kharel B, Ma J, Baral DR, Pandey T, Rijal R, *et al.* Pattern of otological diseases in school going children of Kathmandu Valley. Int Arch Otorhinolaryngol. 2008;12(4):502-5.
- Akinpelu OV, Amusa YB, Komolafe EO, Adeolu AA, Oladele AO, Ameye SA. Challenges in management of chronic suppurative otitis media in a developing country. J Laryngol Otol. 2008;122(1):16-20.
- Basak B, Gayen GC, Ray R. Pattern of aural morbidity among children in a rural tertiary care hospital. IOSR J Pharm. 2013;3(7):58-62.
- Shaikah N, Hoberman A, Kaleida P, *et al.* Diagnosing otitis media - otoscopy and cerumen removal. N Engl J Med. 2010; (20):e62.
- Azevedo AF, Pinto DC, Souza NJ, Greco DB, Gonçalves DU. Sensorineural hearing loss in chronic suppurative otitis media with and without cholesteatoma. Revista Brasileira de Otorrinolaringologia. 2007;73(5):671–4.
- Lasisi AO, Sulaiman OA, Afolabi OA. Socio-economic status and hearing loss in chronic suppurative otitis media in Nigeria. Ann Trop Paediatr. 2007;27(4):291–6.
- Maharjan M, Kafle P, Bista M, Shrestha S, Toran KC. Observation of hearing loss in patients with chronic suppurative otitis media tubotympanic type. Kathmandu Univ Med J. 2009;7(4):397–401.
- Abraham *et al.* Prevalence and etiological agents for chronic suppurative otitis media in a tertiary hospital in Tanzania, BMC Res Notes (2019) 12:429
- Gupta R, Mittal M. A study on clinical and epidemiological profile of chronic suppurative otitis media (CSOM) at a tertiary care center. Int J Med Sci Public Health. 2016;5(5):1021-4.
- Rakesh Kumar P, Srivastava M, Sharma S, Rishi 5 PS, Nirwan5 K, Hemwani *et al.* Isolation and antimicrobial sensitivity profile of bacterial agents in chronic suppurative otitis media patients at nims hospital, Jaipur. IJPBS. 2013; 3(4):265-269.
- Hasantha Gunasekera, Peter S Morris, Peter Mc Intyre and Jonathan C Craig. Management of children with otitis media: A summary of evidence from recent systematic reviews. Journal of Paediatrics and Child Health. 2009; 45:554-563.