ORIGINAL ARTICLE

Clinico-epidemiological study of safe and unsafe chronic suppurative otitis media

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Abstract

Introduction: Chronic Suppurative Otitis Media (CSOM) remains one of the most commonest chronic infectious diseases worldwide particularly in children and adolescents. India has been classified as the high prevalence country with national prevalence of 4%. Knowledge of differential regional prevalence of risk factors is required for adequate health education of masses and for customised preventive and control measures in respective areas. **Aims**: To study the clinical and socio-demographic profile of patients with CSOM. Methods: The study was carried out in the department of Otorhinolaryngology, Jawaharlal Nehru Medical College, AMU, Aligarh from November, 2017 to December, 2019. Patients with CSOM attending the otorhinolaryngology OPD and those admitted in IPD were included in the study. **Results**: A total 200 cases of chronic suppurative otitis media including both safe (mucosal) and unsafe (squamous) type were studied. The mean age of participants was 22.8 ± 15.18 years. Of the total participants, 111 (55.5%, 95% CI 48.6 to 62.2) were males, 89 (44.5%, 95% CI 37.8 to 51.4) were females and the majority (60.5%, 95% CI 53.6 to 67) of them were from rural background. Around one-fourth of the patients were illiterate (23%, 95% CI 17.7 to 29.3) and the patients mostly belonged to lower side (lower middle, upper lower and lower) of the spectrum of Kuppuswamy socioeconomic classification. The distribution of age-group, gender and laterality (side of involvement) was similar (P>0.05) in both safe and unsafe type. Overall, 151(75.5%, 95% CI 69.9 to 80.9) patients were found to have conductive hearing loss, 30 (15%, 95% CI 10.7 to 20.6) with mixed and 19 (9.5%, 95% CI 6.2 to 14.4) did not have any hearing loss at presentation. The distribution of patients with regards to hearing loss was found to be similar in both safe and unsafe groups (P = 0.311). **Conclusion**: CSOM particularly afflicts younger age populations from rural background with poor socioeconomic status. Appropriate timely interventions in the form of health promotion, education about the risk factors and improvement in the living conditions will result in decrease in incidence and prevalence of the disease. Moreover, knowledge of symptoms and signs of the disease is likely to result in early seeking of healthcare and hence better treatment outcomes and prevention of complications.

Keywords

Chronic Suppurative Otitis Media, Clinico-epidemiological, Safe, Unsafe

Introduction

According to WHO/CIBA Foundation workshop, 1996 "Chronic suppurative otitis media (CSOM) is stage of disease in which there is chronic infection of the middle ear cleft, i.e., Eustachian tube, middle ear and mastoid, and in which a non-intact tympanic membrane (e.g., perforation or tympanostomy tube) and discharge (otorrhea) are present for at least 2 weeks or more."(1)

CSOM remains one of the most common chronic infectious diseases worldwide particularly in children and adolescents. The prevalence varies widely across countries, but it is most common in low-income and middle-income countries.(2) WHO/CIBA workshop, 1996,

proposed CSOM prevalence rate of 1-2% as low and 3-6% to be high.1 India has been classified as the high prevalence country with national prevalence of 4%.(3)

CSOM causes a conductive hearing loss and can damage the middle ear ossicles. It also increases the risk for sensorineural hearing loss (hearing loss due to damage to the inner ear) as well as intracranial complications(4). These serious complications and the fact that this disease particularly afflicts children and adolescents underscore the importance of timely preventive and curative interventions. There is a wide geographical variation in the prevalence of risk factors (e.g. low socioeconomic status, exposure to smoke etc.) of the disease. Knowledge of differential regional prevalence of risk factors is required for adequate health education of masses and for customised preventive and control measures in respective areas.

Aims & Objectives

To study the clinical and socio-demographic profile of patients with CSOM in our study area.

Material & Methods

Study Type: Cross-sectional study.

Study Population: Patients attending the otorhinolaryngology OPD and those admitted in IPD during the study duration were included in the study.

Study Area: The study was carried out in the department of Otorhinolaryngology, Jawaharlal Nehru Medical College, AMU, Aligarh.

Study Duration: From November, 2017 to December, 2019.

Inclusion Criteria:

- All patients attending the ENT OPD and diagnosed to be having CSOM.
- All patients with CSOM who were admitted in IPD during the study duration.

Exclusion Criteria:

- Patients less than one year of age.
- History of traumatic perforation.
- Mentally challenged patients.

Data Collection: Data regarding clinical status and putative socio-demographic risk factors was collected on a predesigned semi-structured questionnaire.

Ethics: Ethical clearance was obtained from Institutional Ethics Committee, Jawaharlal Nehru Medical College, AMU, Aligarh. Informed consent was taken from patients or their guardians (as applicable) prior to their enrolment in the study.

Statistical Analysis: The data so collected was tabulated and presented as frequencies and percentages. Appropriate statistical tests of significance were applied.

Results and Discussion

Sociodemographic Profile: Socio-demographic profile of patients is presented in Table 1. A total 200 cases of chronic suppurative otitis media including both safe (mucosal) and unsafe (squamous) type were studied. The mean age of participants was 22.8 ± 15.18 years (95% CI 20.7 to 24.9) ranging between 7 years to 60 years. Raushan EA et al.(5) (2016) in their study from Moradabad, UP reported mean age of 27.17 ± 16.8 years with a range from 6 to 70 years. Almost half of the patients (46%, 95% CI 38.9 to 53.2) were in the age group of 11-20 years. Earlier presentations have been reported by Rupa V et. al.(6) (1999) and Vikram BK et. al.(7) (2008). WHO also reported(8) a higher prevalence in younger age groups and attributes it to predominantly younger population in developing countries with poor living conditions.

Of the total participants in our study, 111 (55.5%, 95% CI 48.6 to 62.2) were males, 89 (44.5%, 95% CI 37.8 to 51.4) were females. In a community based study in the same study area Parvez A et al(9) (2016) found an almost equal prevalence (49.9% vs 50.1%) in males and females. The slight higher prevalence in our hospital based study may be due to male gender preference of parents/guardians in seeking health care. Majority (60.5%, 95% CI 53.6 to 67) of the patients in our study were from rural background. In the study by Raushan EA et al.5 (2016) 79% patients were from rural areas as compared to 21% from Urban areas. Dutton DB(10), Tiwari R et. Al(11) and Bandyopadhyay R et. al.(12) also reported higher proportion of patients from rural areas.

Around one-fourth of the patients were illiterate (23%, 95% CI 17.7 to 29.3) and the patients mostly belonged to lower side (lower middle, upper lower and lower) of the spectrum of Kuppuswamy socioeconomic classification.(13) Arunabha et al(14) (2010) and Basak B et al(15) (2014) have also reported similar prevalence in patients of lower socioeconomic status.

Clinical Profile: A clinical diagnosis of safe (mucosal) type of CSOM was made in 115 (57.5%, 95% CI 50.6 to 64.1) patients and the remaining 85 (42.5%, 95 % CI 35.9 to 49.4) were found to have unsafe (squamous) type of CSOM. The distribution of age-group, gender and laterality (side of involvement) was similar (P>0.05) in both types [Table 2]. Majority of the patients presented with either ear discharge (97.5%, 95%CI 94.3 to 98.9) or hearing loss (90.5%, CI 85.6 to 93.8) as the chief complaint [Figure 1]. Shetty S(16) (2012) found that 100% of patients undergoing tympanoplasty complained of hearing loss and ear discharge. All patients with safe type invariably had ear discharge as one of their symptoms as opposed to 94.1% of patients with unsafe type (P=0.030). Tshering P et al(17) (2012) from their study in Dhaka, Bangladesh reported ear discharge in all patients with either safe or unsafe type of CSOM. Shrestha BL et al(18) (2010) and Rehman HR et al(19) (2014) reported presentations similar to our study. The characteristic of ear discharge is presented in (Table 2). Patients with safe type of CSOM usually presented with profuse, mucopurulent or purulent non foul-smelling discharge while patients with unsafe type mostly presented with scanty, mucopurulent or

mucoid foul smelling discharge. These findings corroborate with studies by Shrestha BL et al(18) (2010), Tshering P et al(17) (2012) and Rehman HR et al(19) (2014).

Overall, 151 (75.5%, 95% CI 69.9 to 80.9) patients were found to have conductive hearing loss, 30 (15%, 95% CI 10.7 to 20.6) with mixed and 19 (9.5%, 95% CI 6.2 to 14.4) did not have any hearing loss at presentation. Islam et al(20) (2010) reported 17.7% prevalence of mixed hearing loss and Gulati et al(21) (2002) had found 22.5% incidence of mixed hearing loss in patients with CSOM. The distribution of patients with regards to hearing loss was found to be similar in both safe and unsafe groups (P = 0.311) [Figure 1]. Tshering P et al(17) (2012) also reported similar results in the two types of CSOM.

Conclusion

Chronic Suppurative Otitis Media continues to be one of the commonest diagnosis in Otorhinolaryngology OPD and contributes to majority of admissions in wards. The disease particularly afflicts younger age populations from rural background with poor socioeconomic status. Appropriate timely interventions in the form of health promotion, education about the risk factors and improvement in the living conditions will result in decrease in incidence and prevalence of the disease. People must also be educated about the signs and symptoms of the disease and encouraged to seek timely heath care which will lead to better treatment outcomes and prevention of complications.

Recommendation

Despite the fact that CSOM is preventable and curable, it continues to ail us since a very long time. There is a need of spreading awareness in this regard and providing accessible and affordable services for early diagnosis and intervention.

Limitation of the study

Ours was a hospital based study and thus the cases in our study may not be fully representative of cases in the community.

Relevance of the study

Socio-demographic and clinical profile of CSOM patients in our study area was found to be similar to what has been reported from other parts of the world. Our study revealed that younger population from poor socioeconomic and rural background continue to be prone to CSOM.

Authors Contribution

All authors contributed equally.

References

1. WHO/CIBA Foundation Workshop. Prevention of Hearing Impairment from Chronic Otitis Media. CIBA Foundation, London, UK; 1996. Available from : http://WHO_PDH_98.4.pdf [Accessed on 18/03/22]
2. Monasta L. et al. Burden of disease caused by otitis media: systematic review and global estimates. PLoS ONE 7, e36226 (2012).
3. World Health Organization. Chronic Suppurative Otitis Media: burden of illness and management options. WHO 2004. Geneva
4. Verhoeff M, van der Veen EL, Rovers MM, Sanders EA, Schilder AG. Chronic suppurative otitis media: a review. Int J Pediatr Otorhinolaryngol. 2006 Jan;70(1):1-12. doi: 10.1016/j.ijporl.2005.08.021. Epub 2005 Sep 27. PMID: 16198004.
5. Raushan EA, Kumar J, Kapoor S, Pathak SD. Clinico-Epidemiological Profile of Tubotympanic Type of CSOM. Annals of International Medical and Dental Research;2016;2(6):16-19.
6. Rupa V, Jacob A, Joseph A. Chronic suppurative ofitis media: prevalence and practices among rural South Indian children. Int J Pediatr Otorhinolaryngol. 1999: 48(3):217-21.
7. Vikram BK, Khaja N, Udayashankar SG, Venkatesha BK, Manjunath D. Clinico-epidemiological study of complicated and uncomplicated chronic suppurativc otitis media. J Laryngol Otol. 2008; 122:442-6.
8. Chronic suppurative otitis media: Burden of Illness and management options; Child and Adolescent Health and Development Prevention of Blindness and Deafness, WHO report. Geneva. 2004:17-8.
9. Parvez A, Khan Z, Hashmi SF, Khan MS. A cross sectional study of chronic suppurative otitis media and its associated factors among primary school children in rural and urban areas of Aligarh, India. Int J Community Med Public Health. 2016 Aug;3(8):2150-4.
10. Dutton DB. Socioeconomic status and chidren's health. MedCare. 1985; 23(2): 142-56.
11. Tiwari R, Samant H, Verma D. A ckinicoradiological study of cholesteatoma. Ind J Otolaryngol Head Neck Surgery 1991; 43 (3):130-5
12. Bandyopadhyay R, Sengupta A, Dassupta A, Biswas R, Mukherjeen S, Biswas AB. A comparitive study of common ear morbidity pattern among the primary school children of an urban slum of Kolkata and rural area of Hooghly. J Ind Med Assoc. 2005; 103 (8):428-32.
13. Saleem SM, Modified Kuppuswamy socioeconomic scale updated for the year 2020. ***Indian J Forensic Community Med.***2020;7(1):1-3
14. Sengupta Arunbha, Anwar Tarique, Ghosh Debasish, Basak Bijan. A study of surgical management of chronic suppurative otitis media with cholesteatoma and its outcome. Indian J Otolaryngol Head Neck Surg. 2010;62(2):171–76. DOI:10.1007/s12070-010-0043-3.
15. Basak B, Gayen GC, Das M, Dhar G, Ray R, Das AK. Demographic profile of CSOM in a rural tertiary care hospital. IOSR J Pharm. 2014;4(6):43-6.
16. Shetty S. Pre-operative and post-operative assessment of hearing following tympanoplasty. Indian Journal of Otolaryngology and Head & Neck Surgery. 2012;64(4):377-81.
17. Tshering P, Joarder MA, Chowdhury MA, Saha KL. Clinicopathological study on CSOM: a comparison between tubotympanic and atticoantral variety. Bangladesh Journal of Otorhinolaryngology. 2012;18(2):138-44.
18. Shrestha BL, Shrestha I, Amatya RC. Comparison of clinical presentation between Chronic Otitis Media Mucosal with Squamous. Kathmandu University Medical Journal. 2010;8(4):387-91.
19. Rehman HR, Wahid FI, Khan N, Khan A, Khan MR and Shahabi IK. Attico-Antral vs. Tubo-Tympanic Chronic Suppurative Otitis Media. Journal of Rawalpindi Medical College (JRMC); 2014;18(2):257-259 25.
20. Islam MR, Taous A, Hossain MM, Ekramuddaula AFM and Islam MS. Comparative study of tutotympanic and atticoantral variety of chronic suppurative otits media. Bangladesh J Otorhinolaryngol 2010;16;113-9.
21. Gulati SP. , Sachdeva OP and Kumar P, Audiological profile in chronic suppurative otitis media, Indian Journal of Otology.2002;8(1): 24–28.

Tables

TABLE 1 SOCIODEMOGRAPHIC PROFILE OF THE STUDY POPULATION

VARIABLE	FREQUENCY	PERCENTAGE (95% CI)
Age Group (in years)		
0-10	8	4.0 (1.7 to 7.7)
11-20	92	46 (38.9 to 53.2)
21-30	65	32.5 (26.4 to 39.3)
31-40	27	13.5 (9.4 to 18.9)
41-50	5	2.5 (1.1 to 5.7)
>50	3	1.5 (0.5 to 4.3)
Gender		
Male	111	55.5 (48.6 to 62.2)
Female	89	44.5 (37.8 to 51.4)
Domicile		
Rural	121	60.5 (53.6 to 67.0)
Urban	79	39.5 (33.0 to 46.4)
Education		
Professional Degree	1	0.5 (0.1 to 2.8)
Graduate	8	4 (2.0 to 7.7)
Intermediate/Diploma	9	4.5 (2.4 to 8.3)
High School	49	24.5 (19.1 to 30.9)
Middle School	55	55 (21.8 to 34.1)
Primary School	32	16(11.6 to 21.7)
Illiterate	46	23 (17.7 to 29.3)
Socioeconomic Class		
Upper Class (UC)	2	1 (0.3 to 3.6)
Upper Middle (UM)	12	6 (3.5 to 10.2)
Lower Middle (LM)	102	51 (44.1 to 57.8)
Upper Lower (UL)	76	38 (31.6 to 44.9)
Lower class (LC)	8	4 (2.0 to 7.7)

TABLE 2 CLINICAL PROFILE OF PATIENTS WITH SAFE AND UNSAFE TYPE OF CSOM

	VARIABLE	SAFE (MUCOSAL) TYPE	UNSAFE (SQUAMOUS) TYPE	SIGNIFICANCE
Age Group	0-10	2 (1.7%)	6 (7.05%)	χ^2=12.91 P=0.024
	11-20	53 (46.08%)	39 (45.08%)	
	21-30	40 (34.7%)	25 (29.4%)	
	31-40	18(15.6%)	9 (10.5%)	
	41-50	3(2.6%)	2 (2.3%)	
	>50	1(0.8%)	2 (2.3%)	
Gender	Male	64 (55.7%)	47 (55.3%)	χ^2= 0.003 P=.960
	Female	51(44.3%)	38 (44.7%)	
Laterality	Right Ear	37 (32.2%)	31(36.5%)	χ^2 = 0.622 P = 0.733
	Left Ear	43 (37.4%)	32 (37.6%)	
	Both Ear	35 (30.4%)	22 (25.9%)	
Type of Ear Discharge	Purulent	32 (27.8%)	9 (10.5%)	χ^2 = 5.827 P = 0.015
	Mucoid	12 (10.4%)	18 (21.17%)	
	Mucopurulent	66 (57.39%)	48 (56.47%)	
	Blood stained	5 (4.34%)	10 (11.7%)	
	Profuse	104(90.4%)	16(18.82%)	χ^2 = 103.911 P<0.001
	Scanty	11(9.5%)	69(81.17%)	
	Foul smelling	10(8.69%)	75(88.32%)	χ^2 = 78.501; P < 0.001

Figures

FIGURE 1 SYMPTOMATIC PROFILE OF PATIENTS WITH SAFE AND UNSAFE TYPE OF CSOM