

Original Article

Clinical study on chronic suppurative otitis media with cholesteatoma

Mohammed Yousuf¹, Khorshed A Majumder², Akter Kamal³, Ahmed M Shumon⁴, Yeahyea Zaman⁵

Abstract:

Objectives: To find out different etio-pathological factors of the disease and also to rise awareness among all levels of medical practitioners and thus decrease missing of diagnosis by early referral, appropriate surgical intervention, and thereby reduce morbidity and mortality of the patient.

Methods: A total of 100 patients with chronic suppurative otitis media (CSOM) were collected from the department of Otolaryngology - Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital (DMCH) and Sir Salimullah Medical College and Mitford Hospital Dhaka from January 2003 to February 2004. Patients having CSOM with definitive cholesteatoma with or without complications were included in this study in different age & sex belong to different socioeconomic conditions.

Results: One hundred patients of CSOM with cholesteatoma had been included in this study to see the various aspects of the disease with particular attention to know the etiopathology of CSOM with cholesteatoma with or without complications in our perspective. One hundred patients of different age and sex belonging to different socioeconomic conditions were examined meticulously under magnification and investigated as per protocol. The study shows poverty, illiteracy, overcrowding, living in slum with kuntcha floor, bathing in ponds and river with the habit of swimming are the main etiological factors. The study also shows ignorance about primary health care and grave consequences of the disease, nonavailability of trained doctors in the vicinity are also responsible for the development of disease and its complications.

Conclusion: The study concluded that by avoiding etiological factors, improving socioeconomic condition & literacy status and by providing trained doctors in the rural areas, the development of the disease & its complications can be reduced and thus saves thousands of lives with early referral and early surgical intervention.

Key words: *Chronic Suppurative Otitis Media, Cholesteatoma.*

1. Professor, Department of Otolaryngology-Head & Neck Surgery, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh.
2. Professor and Head, Department of Otolaryngology-Head & Neck Surgery, Holy Family and Red crescent Medical College and Hospital, Dhaka, Bangladesh.
3. FCPS course, OSD, DG Health, Dhaka, Bangladesh.
4. Assistant Professor, Department of Otolaryngology-Head & Neck Surgery, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh.
5. Junior consultant, Department of Otolaryngology-Head & Neck Surgery, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh.

Address for Correspondence: Dr. Mohammed Yousuf, Professor, Department of Otolaryngology - Head & Neck Surgery, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh.

Introduction:

Cholesteatoma is a sac lined by stratified squamous epithelium containing concentric layers of keratin materials impregnated with desquamated squamous epithelium with or without cholesterol crystals. It is a lesion of obscure origin, a slowly progressive and destructive disease of the middle ear cleft capable of destroying soft and hard tissue surrounding it, thus producing extra-cranial and intra-cranial complications.¹ According to presumed etiology cholesteatoma may be classified into two general categories: congenital and acquired. Acquired cholesteatomas can be further divided into primary and secondary acquired. Congenital cholesteatomas are thought to arise from embryonal inclusions or rests of epithelial cells present behind an intact tympanic membrane. Acquired cholesteatoma can be classified in three categories; the most common form is primary acquired cholesteatoma, which arises from a skin lined retraction pocket. Other types, the secondary acquired cholesteatoma develops from ingrowths of skin through a tympanic membrane perforation and secondary to episodes of inflammation where the mucosa undergoes metaplasia to squamous type.²⁻⁵

Although exact etiology of cholesteatoma is not known but it is shown that formation and progress of cholesteatoma and development of complications is related with some factors like poverty, recurrent upper respiratory tract infection, enlarged adenoid in childhood, bathing in ponds with swimming habit, living in overcrowded unhygienic condition in slum with kutchha floor, unawareness about the consequences of the disease and lack of trained doctors in the vicinity. The presentation of chronic suppurative otitis media (CSOM) with cholesteatoma is usually discharge and deafness; however with the presence of complications the patient will

develop earache, fever, chill and rigor, post auricular swelling, vomiting, vertigo, headache, post auricular discharging sinus, facial weakness etc.⁶⁻¹⁰ In our country many cases with cholesteatoma present with extra-cranial complications and sometimes with intracranial complications, so early diagnosis and complete eradication is essential for safety of patients. The study aimed to raise awareness among all levels of medical practitioners and thus decrease missing of diagnosis by early referral, appropriate surgical intervention, and thereby reduce morbidity and mortality of the patient.

Aims and objectives:

- a) To find out the variation in behavior of CSOM with cholesteatoma in relation to age, sex, educational status, socioeconomic condition of the disease with or without complications.
- b) To raise awareness among all levels of medical practitioners and thus decrease missing of diagnosis by early referral, appropriate surgical intervention, and thereby reduce morbidity and mortality of the patient.

Methods:

A total of 100 patients were collected from the department of Otolaryngology - Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital (DMCH) and Sir Salimullah Medical College and Mitford Hospital Dhaka from January 2003 to February 2004. Patients having CSOM with definitive cholesteatoma with or without complications were included in this study in different age & sex groups belong to different socioeconomic conditions.

Results:

One hundred patients diagnosed as CSOM with cholesteatoma were included in this

study where 69% of the cases presented without complications, 25% with extra cranial complications and 6% with intracranial complications.

In this study lowest and highest age of the patients at presentation was 06years and 40 years respectively with a mean age of 17.2 years.

Table-I
Age distribution of patients (n=100)

Age group (years)	Number of patients	Percentage
0-10	20	20
11-20	54	54.0
21-30	16	16.0
31-40	10	10.0
>40	0	0.0

The highest number of patients was in the age group of 11-20 years.

Table-II
Socioeconomic condition (n=100)

Socioeconomic condition	Number of patients	Percentage
Very poor	44	44%
Poor	40	40%
Middle class	16	16%

As per the socioeconomic condition and educational status, majority of the patients either came from very poor (44%) or poor (40%) socioeconomic group either having no education (22%) or having primary education (40%). We also found that rich or higher class people usually do not come to the above mentioned government hospitals.

In this study most of the patients are unilateral. The study also shows that peoples

living in rural and slum areas having swimming habit in ponds and rivers suffered more from cholesteatoma than who resides in the city and baths in supply water.

As per the clinical presentations, almost all the patients presented with multiple symptoms of which otorrhoea (100%) was commonest followed by hearing impairment (80%).

Table-III
Clinical presentation (n=100)

Symptoms	Number of patient	Percentage
Discharge from ear	100	100.0
Hearing impairment	80	80.0
Earache	15	15.0
Fleshy mass in ear	15	15.0
Post auricular painful swelling	12	12.0
Post auricular discharging sinus	10	10.0
Fever	10	10.0
Headache	6	6.0
Vomiting	5	5.0
Vertigo	5	5.0
Neck rigidity	4	4.0
Facial paralysis	3	3.0
Tinnitus	2	2.0

As per the character of discharge it was shown that all the ears with cholesteatoma had malodorous discharge (100%) of which 82.70% had scanty, 18.27% had profuse discharge, 14.5% had blood stained discharge and granulation tissue polyp were found in (14.42%) of cases.

All cases of cholesteatoma either had a perforation in the poster superior marginal (69.23%) or in the attic region (30.77%).

In this series it was found that most of the cases (69%) were presented without complications,

Table-IV

Cholesteatoma with complications (n=100)

Complications	Number	Percentage of patient
Post auricular abscess	12	12.0
Post auricular sinus	10	10.0
Facial palsy	03	03.0
Extradural abscess	01	01.0
Lateral sinus thrombophlebitis	01	01.0
Meningitis	03	03.0
Temporal lobe abscess	01	01.0

25% with extra cranial complications and 6% with intracranial complications were found at presentation.

Radiological and Audiological test were done in most of the cases where radiological findings (X-ray mastoid n=75, CT scan n=06), shows that circumscribed cavity found in 52.0% of X-ray mastoid Towne's and Stenver's view done in 75 patients. Space occupying lesion found in only 2% of total cases in CT scan of brain done in 6 patients with intracranial complications.

Table-V

Audiological findings of patients of CSOM with cholesteatoma (n=94 ears).

PTA findings	Number of ears	Percentage
Mild deafness (26-40 dB)	18	19.15
Moderate deafness (41-70 dB)	70	74.47
Severe deafness (71-90 dB)	6	6.38

Shows that maximum number of patients had moderate conductive deafness (74.47%) followed by mild conductive deafness (19.15%) and only few with severe mixed deafness (6.38%). Audiological tests are not done in patients with intracranial complications. Although 80% of patients were complaining of deafness but PTA shows deafness in 100% of patients.

Discussion:

One hundred patients of different age and sex were included in this series with definitive cholesteatoma after taking relevant history, clinical examinations and investigations.

In the present study, the highest number of cases belongs to the age group of 11-20 years (54%). The youngest patient in this series was 6 years old and the eldest patient 40 years old (Table-1), which is supported by other studies.^{4,5,11} The number of males was found to be higher than the females with a male-female ratio 2.33:1. This is consistent with other findings.¹²⁻¹⁶ There is a close correlation between patients with cholesteatoma and socioeconomic condition, where very poor (44%) and poor group (40%) having higher incidence, which were supported by some studies.¹⁷⁻²⁰

In this series, the educational status shows that most patients are from either in illiterate group (22%) or in primary education group (40%) who suffered more from the disease, which coincides with the findings by other series.^{15,18,19} People living in slum and tin-shade houses with kuntcha floor are more susceptible to suffer from cholesteatoma (80%) than those living in buildings. This is because in the slum areas there is prevalence of upper respiratory tract disease due to poverty, overcrowding, malnutrition, where chronic ear diseases are prevalent, consistent with other findings.^{15, 20, 21}

Those who live in rural Bangladesh are habituated to swim in the nearby ponds and rivers and in this series it was seen that these people suffer from cholesteatoma more (60%) than those who use to take bath in supply water (40%). This may be due to chronic ear disease due to entry of infected water in the ear.

Almost all the patients presented with multiple symptoms. Otorrhoea (100%) was the commonest symptom, followed by hearing impairment (80%), otalgia (15%), some fleshy mass (15%) in the external auditory meatus, post-auricular discharging sinus (10%) and only 6% of patients presented with intracranial complications, this could be due to ignorance of etiopathology of the disease & its consequences & lack of trained medical personnel in the locality which well coincides with the series by other.^{10, 15, 21}

The discharge was fowls smelled (100%), scanty (86%) and bloodstained (15%). These findings are in consistent with other series.²¹⁻²⁴

Regarding complications, it is observed in this series that only 6 cases presented with intracranial complications, three with meningitis, one with extra-dural abscess, one with lateral sinus thrombophlebitis and one with temporal lobe abscess. Almost one-fourth of the total cases presented with extra cranial complications, 12 with sub-periosteal abscess and 10 with post-aural discharging sinus and 3 with facial nerve palsy, these findings are consistent with the other findings.²⁵ In this series it supports the late presentation of cholesteatoma in our country.

As per the audiological findings, hearing impairment were found in all tested patients, and maximum patients had moderate conductive of deafness (74.47%) followed by mild conductive deafness (19.15%) and a few with mixed deafness (6.38%) which correlate with the another study.^{15, 26} It is concluded

that, by raising awareness among all levels of medical practitioners and thus decrease missing of diagnosis by early referral, appropriate surgical intervention in time reduce mortality and morbidity from the disease.

References:

1. Michael U, Cholesteatoma, grand round presentation, UTMB, Dept. of Otolaryngology, Sept-18, 2002.
2. Roger F. Gray, Maurice Howthorne, Editors, Synopsis of Otolaryngology, 5th edn. 1992; 223 -27.
3. Alan G. Kerr, John B. Booth editors Scot Brown's Otolaryngology, Otology 6th edn. Butterworth and Heinemann 1997. 5-23.
4. Podoshin L et al. Cholesteatoma: An epidemiological study. Ann Otol Rhinol Laryngol 1986; 95: 365-8.
5. Sade J, Shatz A. Cholesteatoma in children. J Laryngol Otol 1988; 102: 1003 - 6.
6. Ludman Harold. Tony Wright, Editors, Disease of the ear, Sixth edn. 1998; 178 - 95.
7. Ballenger JJ. Disease of ear nose throat head and neck, 13th edn. Philadelphia. Lea and Fabiger, 1985; 11360-42.
8. Alauddin M. Complications of Otitis Media: A review. The Orion Medical Journal. 2003; 14: 20 - 3.
9. Savic LD and Deleric DR. Facial paralysis in chronic suppurative otitis media. Clin Otolaryngol 1989; 14: 515-17.
10. Edelstein Dr. Parisier SO. Haun JC. Acquired cholesteatoma in the paediatric age group. Otolaryngol Clin N Am 1989; 22: 955-65.
11. Simon Watts, Liam MF, Tomography, X-ray computed; Temporal bone;

- Cholesteatoma. *J Laryngol Otol*, 2000; 144: 248-253.
12. Ludman H. Applied anatomy In: Mawson's Diseases of the Ear, 5th edn. London, Edward Arnold, 1988; 17-25.
 13. Amin MN, Chowdhury WA, Sheikh MS, Abdullah M. Pattern of ENT diseases in rural Bangladesh. *Journal of BCPS* 1989; 7: 23-27.
 14. Ludman H. Complication of suppurative otitis media. Booth JB, editor. *Scott Brown's Otolaryngology*, 5th ed. vol.3 London: Butterworth, 1987; 264-91.
 15. Sheno PM. Management of chronic suppurative otitis media, In; Booth J ed., *Scott-Brown's Otolaryngology, Otolaryngology*, 5th edn, London: Butterworths, 1987; 215-233.
 16. Majumder KA. Complications of chronic suppurative otitis media, (Thesis) BSMMU, Dhaka, 1998.
 17. Kempainen HO, Puhakka HJ. Epidemiology and aetiology of middle ear cholesteatoma. *Acta Otolaryngol*. 1999; 119: 568-72.
 18. Browning GG, Pathology of inflammatory conditions of middle ear, In: both Booth JB ed, *Scott-Brown's Otolaryngology (otology)*, 5th ed. London: Butterworths, 1987; 53-84.
 19. Sheno PM, Management of chronic suppurative otitis media, In: both booth J ed., *Scott-Brown's Otolaryngology, Otolaryngology*, 5th edn, London: Butterworths, 1987; 215-233.
 20. Manni JJ, Lema PN. Otitis media in Darres Salam, Tanjania, *J Laryngol Otol* 1987; 101: 222 - 8.
 21. Hassan M. Clinical presentation of cholesteatoma (Dissertation) Bangladesh College of Physician & Surgeons, Dhaka 1993; 23 - 28.
 22. Ustun O, Cureoglu S, Otitis media, suppurative, complications. *J Laryngol Otol* 2000; 114: 97-100.
 23. Amin ASA, Joardar MAH et al. A Study on complications of chronic suppurative otitis media. *Northern Medical Journal* 1996; 5: 1- 4.
 24. Nasima Akter et al. Hearing loss in chronic suppurative otitis media, *Bangladesh J Otorhinolaryngol* 2003; 9: 19 - 23.
 25. Alho OP, Jokinen K et al. Chronic suppurative otitis media & cholesteatoma, Vanishing disease among western populations. *J Otolaryngol* 1997; 22. 258-361.
 26. Chowdhury MA, Alauddin M. Comparative study between tubotympanic and atticofacial types of chronic suppurative otitis media. *Bangladesh Me Res Counc Bull* 2002; 28: 36 – 41.