Bangladesh J Otorhinolaryngol 2012; 18(2): 138-144

Original Article

Clinicopathological study on CSOM: a comparison between tubotympanic and atticoantral variety

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Abstract:

Introduction: This study aimed to compare the clinico-pathological features of the tubotympanic and atticoantral variety of chronic suppurative otitis media (CSOM).

Methods: This was a cross sectional observational study conducted in the department of Otolaryngology – Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU) and Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh. The study was done over a period of six months and a total of 60 cases were selected. In group A 30 cases of CSOM tubotympanic variety were included while in group B 30 cases of atticoantral variety of CSOM were selected. The two groups were compared with regard to their clinical presentations, the type and degree of hearing loss and their associated complications by taking a detailed history followed by clinical examination and doing the relevant investigations.

Results: In group A, the patients presented with a profuse non smelly discharge. All had a central perforation and majority had mild conductive hearing loss. There were no associated complications. In group B, the aural discharge were foul smelling and scanty. The perforations were 66% in the attic while 33.3% had marginal perforations. The hearing loss was mainly conductive in nature but in group B it's more severe in degree and also there were more associated severe to profound sensori-neural hearing loss. There were also associated extracranial and intracranial complications in group B patients.

Conclusion: The atticoantral variety of CSOM is associated with a foul smelling scanty discharge with severe hearing loss and complications than the tubotympanic variety of CSOM. Therefore early detection becomes essential especially in the primary care setting for appropriate referral to higher centers for better management.

Key words: *Chronic suppurative otitis media; tubotympanic; atticoantral*

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Introduction:

Chronic Suppurative Otitis Media applies to a permanent abnormality of the pars tensa or pars flaccida, most likely as a result of earlier inadequate treatment of acute suppurative otitis media (ASOM), Otitis Media with effusion (OME) or negative middle ear pressure[1]. CSOM is typically a persistent disease with insidious onset capable of causing severe complications and irreversible sequelae. In Bangladesh the prevalence of CSOM is 4.5% according to a WHO situation review report in 2007[2]. Two different studies found out the prevalence rate to be 7.39% among children in slums and a prevalence rate of 12.44% in children from rural areas[3,4].

CSOM is classified based on the location the perforation and presence of pathologies like cholesteatoma and retraction pockets. When there is a central perforation in the pars tensa it is called the tubotympanic variety of CSOM. On the other hand when there is attic or marginal perforation it is called the atticoantral variety of CSOM.

The tubotympanic variety of CSOM can present with aural discharge and hearing impairment. A study done in India found little difference in the duration of the ear discharge between the two groups of CSOM[5, 6]. In the tubotympanic variety, the average duration was found to be 7.32 years while in the atticoantral case it was found to be for 7.74 years. In inactive cases, there can be only hearing impairment without discharge or it may an incidental finding.

The classical presentation for the atticoantral variety is a foul smelling aural discharge and hearing impairment. But many patients are unaware of the discharge and therefore can present with only hearing impairment. Conventionally, the loss of the hearing in CSOM was thought to be only in terms of conductive component. In India it was found that 24% of sensori-neural hearing loss (SNHL) in a study of 100 cases[7]. A similar study in India have found a mixed hearing loss of 85.71% in cases of atticoantral variety of CSOM and 42.7% in tubotympanic variety of CSOM[6, 8].

The atticoantral variety is more commonly associated with complications when compared to the tubotympanic variety. In a series, 78% of the subjects who had complications secondary to CSOM were found to have cholesteatoma[8, 9]. In Bangladesh too, a study have confirmed that complications occur only in the atticoantral variety of CSOM and most of them have presented with symptoms like fever, headache, vertigo, earache etc[7, 10].

It is very important to differentiate between the atticoantral and tubotympanic variety of CSOM in order to prevent complications by timely management. Therefore this study is intended to compare the two varieties of CSOM with regard to their clinical presentation, socio-demographic factors, etiological aspects, the type and degree of hearing loss and the rate of complications. This would be particularly useful in the primary care setting in order to select the right cases for referral.

Methods:

The study was designed to be a cross sectional observational study. The study was carried out in the Department of Otolaryngology – Head & Neck surgery in BSMMU and DMCH from February 2011 to July 2011. A total of 60 cases of CSOM i.e. 30 cases of CSOM tubotympanic variety group A and 30 cases of atticoantral variety of CSOM were selected group B. The previously operated cases of CSOM were excluded from the study. A detailed history was taken followed by relevant ENT examinations. The data was then entered into the data collection sheet prepared for the purpose of this study. Standard statistical methods were then used for the analysis of data.

Results:

Table-I

Presenting symptoms in patients with CSOM.

Symptoms of CSOM	Group A (n=30)	Group B (n=30)
1. Aural discharge	30	30
2. Hearing loss	29	29
3. Tinnitus	15	11
4. Earache	5	15
5. Vertigo	1	8
6. Fever	0	3
7. Headache	1	7
8. Nausea and vomiting	0	5
9. Visual disturbance	0	2

All the patients in both groups presented with aural discharge. Symptoms like earache headache, vertigo, fever and vomiting were more associated with group-B type of CSOM.

Table-II

Presenting signs in patients with CSOM.

Signs of CSOM	Group A (n=30)	Group B (n=30)
1. Perforation	30	30
2. Discharge	27	30
3. Retraction pocket	0	23
4. Cholesteatoma	0	19
5. Granulation tissue /polyps	0	11
6. Tympanosclerosis	6	7
7. Ossicular erosion	2	7
8. Post auricular swelling	0	2
9. Post auricular fistula	0	2
9. Facial paralysis	0	1
10. Meningeal signs	0	1
11. Reduced consciousness		0 1

Group-B patients had more ears with retraction. They also had features related to intracranial complications when compared to group-B patients.

Table-III

Characteristics of aural discharge.

	Group A (n=30)	Group B (n=30)
Purulent	10 (33.3%)	0
Mucoid	0	4 (13.3%)
Muco-purulent	26 (86.6%)	20 (66.6%)
Blood stained	0	4 (13.3%)
Profuse	27 (90%)	2 (6.6%)
Scanty	3 (10%)	28 (93.3%)
Foul smelling	2 (6.6%)	28 (93.3%)

The majority of patients in group-A had mucopurulent discharge (86.6%) which were profuse (90%) while those in group-B had a purulent discharge in 33.3% of the cases and mucopurulent in 66.6% of the them. Also in group-B 93.3% of the discharges was scanty and foul smelling.

Table-IV

Types of perforation in the tympanic membrane.

	Group A (n=30)	Group B (n=30)
Central	30 (100%)	0
Marginal	0	11 (36.6%)
Attic	0	19 (63.3%)

All the perforations were central in group-A while in group-B 63.3% were attic perforations and 33.3% marginal perforations

Table-V

Different types of hearing loss in CSOM.

	Group A (n=30)	Group B (n=30)
Conductive	24 (80%)	22 (73.3%)
SNHL	1 (3.3%)	3 (10%)
Mixed	4 (13.3%)	4 (13.3%)
No loss	1 (3.3%)	1 (3.3%)

SNHL: Sensori-neural hearing loss

Hearing loss was conductive type in 80% of group A and 70% in group B,

Sensori-neural hearing loss was slightly higher in group B (10%) while its 3.3% in group A..

Table-VI

Degree of hearing loss.

Degree of hearing loss	Group A (n=30)	Group B (n=30)
Mild	16 (53.3%)	7 (23.3%)
Moderate	10 (33.3%)	14 (43.3%)
Severe	2 (6.6%)	5 (16.6%)
Profound	1 (3.3%)	3 (9.9%)

dB: Decibels

No hearing impairment < 25 dB, Mild impairment 26 dB – 40 dB, Moderate impairment 41 dB – 60 dB, Severe impairment 61 dB – 80 dB, Profound impairment > 81 dB.

Reference – WHO/PDH/91.1Geneva: WHO.

In group A 53.3% were having only mild hearing loss while the rate of moderate, severe and profound hearing loss were higher in group B compared to group A patients.

Table-VII

Complications among different types of CSOM (n=60).

Types of complications	Group A (n=30)	Group B (n=30)
Extracranial	0	4 (13.3%)
Intracranial	0	2 (6.6%)
Total	0	6 (20%)

There were no complications in group A while the rate of complication in group B was about 20%.

Table-VIII

Different types of extracranial complications.

Types of extracranial complications	No. of patients (n=4)	Percentage (%)
Mastoid abscess	2	50%
Post auricular sinus/ fistula	1	25%
Facial nerve palsy	1	25%

Mastoid abscess was the commonest extracranial complication (50%) followed by post auricular fistula and facial nerve palsy with 25% each.

Table-IX

Different types of intracranial complications.

Types of intracranial complications	No. of patients (n=2)	Percentage (%)
Meningitis	1	50 %
Brain abscess	1	50 %

Meningitis and brain abscess accounted equally for intracranial complications.

Discussion:

The study was done with the intention of comparing the clinico-pathological features of the tubotympanic (group A) and atticoantral variety (Group B) of CSOM. The patients with CSOM in this study were in the age range of 10-60 years as shown in similar to other studies[6, 7, 11-16]. However the commonest age group was in the age range of 10-30 years as shown by 63.3% of the cases in group A and 76.6% of the cases in group B.

Aural discharge and hearing loss were the presenting features in both groups of CSOM. In group A, 86.6% of the patients presented with mucopurulent discharge which was profuse in and odourless. In contrast 93.3% of group B patients presented with scanty and foul smelling discharge. This is in conformity with other studies which describe a foul smelling scanty discharge in CSOM of atticoantral variety while the discharge is odourless and mucopurulent in CSOM of tubotympanic variety[1, 7, 10, 12, 17].

Hearing loss was mainly conductive type with 80% in group A and 70% in group B. These findings were also reflected in a study done on the pattern and degree of hearing loss in CSOM[14, 18]. In their study the conductive hearing loss was found in 80.8% followed by 17.7% with mixed hearing loss and 2.01% with sensorineural hearing loss. In this series, mixed hearing loss was equal in both groups

with 13.3% each but sensorineural hearing loss is higher in group A (10%) compared to group-B (3.3%). There was no hearing loss in 3.3% of each group. In group B it may be because of the cholesteatoma which acts as a bridge in the gap between ossicles thereby allowing normal sound conduction. In group A, the normal hearing could be attributed to the small size of the central perforation with minimal interference to the sound conduction process. The degree of hearing loss was greater in group B patients with 46.6% having a moderate degree of hearing loss and 26.5% having severe to profound loss. On the other hand in group A patients, 53.3% had mild hearing loss and only 36.6% had moderate hearing loss with 9.9% having severe to profound loss.

Otoscopic examination revealed all the perforation to be central in group A while in group B 63.3% of the perforations were attic and 36.6% were marginal. Chowdhury MA and Alauddin M had shown in their study[12] that in tubotympanic variety all the perforations were central while in atticoantral variety 67% had attic perforation and 33% were with marginal perforations. Similar findings are also supported by other studies[7, 17-19].

In group B, visible pieces of cholesteatoma were found in 63.3% of the cases which was diagnostic of the atticoantral variety of CSOM. In the remaining cases, it is possible that the cholesteatoma might have been hidden inside a deep retraction pocket which was out of view or the granulation tissue obstructing the view of an otherwise visible cholesteatoma. However the marginal position of the perforation in 36.6% along with granulation tissue in 36.6% of the cases with foul smelling discharge was all suggestive of an atticoantral variety of CSOM. The results are compatible with a similar study[7] which shows that out of the 60 patients with atticoantral variety of CSOM, cholesteatoma was found in 76.66% followed by 23.33% with granulation tissue. Additionally In this series ossicular erosion on otoscopic examination was noted in 7 cases in Group B patients with only 2 cases in group A patients while both groups had almost equal number of patients with tympanosclerosis i.e. 6 cases in group A and 7 cases in group B. The clinical features like earache, headache, vertigo, nausea and vomiting occurred in complicated cases of group B while it's absent in group A patients. Similar studies too have compatible findings like the above[7, 12, 20-22].

The complications of CSOM in this study occurred only in group B patients. This was also observed in a similar study with no complications occurring in the total of 40 cases of CSOM tubotympanic variety in that study[7]. In a similar study of 100 cases of tubotympanic variety they have found the complications to be less and intracranial complications very rare[12]. In group B the over all complication was 20% out of which 13.3% were having extracranial complications and 6.6% intracranial complication. Mastoid abscess accounted for 50% of the extracranial complications while meningitis and brain abscess accounted equally for intracranial complications. These findings correlated well with other studies done on complications associated with CSOM though meningitis was the commonest intracranial complications in these studies[15, 23-25].

This study's main limitation is the small sample size and also the short span of time in which the study was completed. But nonetheless it is able to point out at major differences that exist between the tubotympanic and atticoantral variety of CSOM with regard to the presentation, type and degree of hearing loss and the rate of complications.

Conclusion:

The atticoantral variety of CSOM is associated with a foul smelling scanty discharge with more degree of hearing loss and complications than the tubotympanic variety of CSOM. The study indicates that early detection of CSOM especially the atticoantral variety can help prevent associated complications. This would be very useful in the primary care setting where the right patients can be selected for appropriate referral to higher centers for commencement of timely management.

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