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Original Article

Comparative study of tubotympanic and atticoantral variety of Chronic suppurative otitis media

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Abstract:

Objectives: To find out the difference between tubotympanic and atticoantral type of chronic suppurative otitis media in their presentation, complications and hearing impairment they produce.

Methods: This cross sectional study done in the department of Otolaryngology of Mymensingh Medical College Hospital and Bangabandhu Sheikh Mujib Medical University, during the period of January 2005 to February 2006. For this study 100 Patients who were diagnosed as a case of chronic suppurative otitis media by detailed history, clinical examination and related investigations were collected.

Results: In this study majority of the patients were within 10-20 years of age & male female ratio 2.1:1. This condition was common in rural population with low socio economic status having poor nutrition and those who take bath in river or pond water in rural area. Common presentation of tubotympanic type of CSOM was aural discharge and deafness but presentation of atticdntral type of CSOM was aural discharge and deafness with other symptoms like earache, fever, headache tinnitus and vertigo, etc. Hearing loss was found more in atticoantral type of disease. Complication of CSOM was found only in atticoantral type of disease.

Conclusion: Complications are more frequent and hearing impairment is morein severity in case of atticoantral type of chronic suppurative otitis media

Key word: *CSOM, Tubotympanic, Atticoantral.*

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Introduction:

Chronic suppurative otitis media is a chronic inflammation (>3 month in duration) of the mucoperiosteal lining of the middle ear cleft most frequently caused by gram negative bacilli.[1] It is typically a persistent disease, insidious in onset, often capable of causing severe destruction and irreversible sequelae and clinically manifests with deafness and discharge.[2] Chronic suppurative otitis media associated with either continuous or intermittent otorrhoea through a persistent non-intact tympanic meambrane.[3]

Otological practice in different parts of the world shows it is a very common condition

especially in developing countries. The prevalence of CSOM depends on age, poor socioeconomic status, poor housing, overcrowding and limited access to medical care.[2,3] CSOM is classified into two main groups viz tubotympanic and atticoantral disease. Former is considered as 'safe' from complication while the later has been considered to be a 'dangerous' form of disease in view of the risk of intracranial suppuration[4].

The tubotympanie disease characterized by the presence of intermittent and mainly mucoid or mucupurulent discharge which is precipitated by an upper respiratory tract infection or may follow entry of water through perforation. Central perforation in the pars tensa of varying size and position is seen in this disease. In this condition the risk of developing complication such as intracranial sepsis is very rare but some minor complications may develop like otitis externa, granulation tissue and mucosal polyp.[4]

Atticoantral disease most commonly involves the epitympanum. The typical feature of atticoantral disease is the presence of cholesteatoma.. The relevant aetio-pathology of cholesteatoma is negative maddle ear pressure, invasion of squamous epithelium and squamous metaplasia of middle ear mucosa.[5] Marginal and attic perforation are the typical picture of this disease which expose the anatomical structures of the attic, antrum and mastoid air cells system.[3]

In atticoantral disease various extracranial complications like moastoiditis, various type of subperiosteal abscess, facial nerve paralysis, labyrinthitis and petrositis with bone destruction may occur. The various intracranial complications are extradural abscess, subdural abscess, meningitis, encephalitis, brain abscess, lateral sinus thrombosis and otitic hydrocephalus[6]

Aims & Objectives:

1. To find out different presentation of both tubotympanic and atticoantral varieties of chronic suppurative otitis media (CSOM)
2. To find out the frequency of different complications (both extracranial and intracranial) of chronic suppurative otitis media.
3. To find out the quality and quantity of deafness between two varieties of chronic suppurative otitis media.

Methods:

Type of study: Cross - sectional.

Place of study: Inpatients of ENT departments of Mymensingh Medical College Hospital and Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka.

Duration of study - February 2005 to January 2006.

Sample size: 100 (40 were tubotympanic & 60 were atticoantral disease).

Inclusion criteria: All patients of CSOM of both types, aged 6-50 years who were admitted in inpatient department.

Exclusion Criteria -

1. Patients before 6 years and above 50 years of age.
2. Patient with inadequate information.

Data collection - For the collection of relevant data we used a pre-tested data sheet prior to interview. The purpose of the study was explained clearly to the patients. One data sheet was used for each patients. The findings were recorded in the data sheet.

Data Analysis - All collected datas were checked and verified thoroughly to reduce the inconsistency. The numerical data obtained from this study were compiled and analyzed using standard statistical method. Results are presented here in table.

Results and observations:

One hundred cases of CSOM were included in this study. Out of this 60 cases were atticoantral and 40 cases were tubotympanic variety. All information about the cases was compiled and relevant data were analyzed and shown in tabulated form.

Table-I

Distribution of types of CSOM

Types	No. of patients (n=100)	Percentage (%)
Tubotympanic	40	40
Atticoantral	60	60

Table-II

Age distribution of patients

Age group (years)	No. of patients (n=100)	Percentage (%)
0-10	20	20
11-20	50	50
21-30	15	15
31-40	10	10
41-50	5	5

Table-III

Socioeconomic condition

Socioeconomic condition	No. of patients (n=100)	Percentage (%)
Poor	70	70
Middle	22	22
Affluent	8	8

Table-IV

Presenting symptoms and signs in patient of tubotympanic type of CSOM (n=40)

Symptoms/ signs	No. of patients (n=40)	Percentage (%)
Discharging ear	22	55
Dry ear	18	45
Impairment of hearing	40	100
Earache	10	25
Tinnitus	10	25
Itching	6	15
Mucosal polyp	5	12.5

Table-V

Presenting symptoms and signs in atticoantral variety of CSOM (n=60)

Symptoms	No. of patients (n=60)	Percentage (%)
Aural discharge	60	100
Impairment of hearing	60	100
Earache	40	66
Fever	42	70
Headache	40	66
Tinnitus	12	20
Vertigo	12	20
Vomiting	25	41.66
Diplopia	3	5
Signs		
Cholesteatoma	46	76.66
Granulation tissu polyp	14	23.33
Mastoid abscess	13	21.66
Post auricular discharging sinus	6	10
Neck rigidity	10	16
Facial nerve paralysis	2	3.33
Papilloedema	2	3.33

Table-VI

Character of discharge of tubotympanic type of CSOM (n=22)

Odour (n=60)		Amount (n=60)			Nature (n=60)		
Malodorous	Non-odorus	Scanty	Profuse	Purulent	Blood stained	Muco purulent	Mucoid
60 (100%)	-	50 (84%)	10 (16%)	40 (66.6%)	14 (23.3%)	4 (6.66%)	2 3.33%)

Table-VII

Character of discharge of atticoantral type of CSOM (n=60)

Odour (n=22)		Amount (n=22)			Nature(n=22)		
Non-odorus	Malodorous	Profuse	Scanty	Mucoid	Muco Purulent	Purulent	Blood stained
20 (91%)	2(9%)	20 (90.09%)	2(9%)	16 (73%)	4(18%)	2(9%)	-

Table-VIII

Type of perforation of tympanic membrane (n=100)

Types of disease	Types of perforation		
	Central Attic	Attic	Postero-superior marginal
Tubotympanic (n=40)	40 (100%)	-	-
Atticoantral (n=60)	1(.6)	40(66.6%)	19(31.66%)

Table-IX

Level of hearing impairment in both types of CSOM.

Types of CSOM	Mild (26-40dB)	Moderate 41-55dB	Moderately servere(56-70dB)	Severe 71 -90dB	Profound >90dB
Tubotympanic(n=40)	26(65%)	12(30%)	2(5%)	-	-
Atticoantral(n=60)	10(16.66%)	32(53.33%)	16(26.77%)	2(3.33%)	-

Table-X

Complication among different types of CSOM (n=100).

Types of CSOM	Complication	Extracranial	Intracranial
Tubotympanic n=40	0	0	0
Atticoantral n=60	24(40%)	22(36.66%)	6(10%)

Table-XI
Different types of extracranial complications (n=22).

Complications	No. of patients (n=22)	Percentage (%)
Mastoid abscess	11	50.00
Post auricular discharge sinus	6	27.27
Labyrinthitis	2	9.09
Facial paralysis	3	13.13
Bezold's abscess	2	9.09
Zygomatic abscess	1	4.50

Table-XII
Intracranial Complications of CSOM (n=6).

Complications	No. of patients (n=6)	Percentage (%)
Meningitis	5	83
Brain abscess	4	66.7
Extradural abscess	2	33.3

Discussion:

Tubotympanic and atticoantral type of CSOM are quite common (about 30%) in developing countries. A large number of people of younger age group and low socioeconomic group are more sufferers.[7] This type of disease is also common in our country.

The incidence of tubotympanic variety of CSOM was more common in children and young adults (i.e. 4 months to 14 years 3 months).[8] In this study the incidence of atticoantral disease was more common in 11-20 years age group. The age range was compatible with many studies in home and abroad.[9] In this study out of 100 cases 68 were male and 32 were female. Male to female ratio was 2 :1. In both type of CSOM males were more affected than female (4:2.2) Rural people from low socioeconomic status having poor nutrition were the common victim of CSOM already evident in different studies.[8]

The most common symptoms of tubotympanic disease were discharging ear, impairment of hearing, earache and tinnitus. Findings were profuse, mucoid and non-odorous discharge with central perforation. Similar symptoms and findings were already described in different literature.[10]

Regarding atticoantral disease the most common symptoms were scanty, malodorous discharge hearing impairment, otalgia, headache and fever. Finding were foul smelling, scanty purulent discharge associated with cholesteatoma and/or granulation tissue the polyp. Perforation were attic, postero-superior marginal and central. In the series all the symptoms and findings are consistent with published series.[11] But in this series, one case of CSOM with central perforation having cholesteatoma was found which was probably due to breakdown of retraction pocket with the resultant isolation of squamous epithelium in the middle ear.[12]

Mild (26-40 dB) to moderate (41-55dB) degree of hearing impairment observed in tubotympanic variety was conductive in type. On the other hand moderate (41-55 dB) to severe (71-90dB) degree of hearing impairment was observed in atticoantral disease, among them 96.66% were conductive and 3.33% were sensorineural deafness. In this series sensorineural hearing loss was found only in atticoantral disease which was consistent with another study.[13]

Extracranial and intracranial complications are more common in atticoantral disease[3]. In this series out of 100 patient, 60 patient's having atticoantral disease of which 22 had extracranial and 6 had intracranial complications. Again 4 patient having both

extra and intracranial complications was consistent with other studies.[11]

Among the extracranial complications of CSOM, mastoid abscess was one of the common complication; reasons behind this was cholesteatoma. In this study mastoid abscess was the common complication following Bezold's abscess and Zygomatic abscess in small number consistent with another study[11]. In this study post-auricular discharging sinus (25%) was second most extracranial complication. The result keeping agreement with other studies.[4,8] The cause of these findings might be the consequence of long lasting, untreated mastoid abscess. So mastoid abscess undergo spontaneous rupture to create a discharging sinus at post-auricular region.

The incidence of facial nerve paralysis in our study was found as 12.5% which correspond to the value of other studies.[13,14] In all cases mastoidectomy was done with facial nerve decompression.

In the present study labyrinthitis was found in 25% cases which was consistent with other studies.[15] It occurred when the infection spread to inner ear through round and oval windows or through one of the semicircular canals exposed by bony erosion. All these patients were treated by antibiotics before mastoidectomy, similarly described by another studyes.[11]

Among the intracranial complications, meningitis was the most common complication followed by brain abscess.[9,10] In the previous studies the incidence varied from 34-77 percent.[10] In this study the rate was 83%. Neck stiffness and headache were the most important findings of meningitis. CT scan was done in all cases to confirm diagnosis. Mortality rate from meningitis was zero which was not consistent with different articles,[10] possibly due to less number of patients included in this study.

Brain abscess is by far the most serious otogenic complications which required prompt diagnosis and treatment[7]. Another study[14] indicated that brain abscess was the most frequent intracranial complication (57.4 per cent), in our study it was the second most common (66.7%). All these patients were diagnosed by clinical examination and cranial CT scan. All patients having CSOM with cholesteatoma had direct extension of infection from the middle ear to cranial cavity which was the main mechanism. None of the patient's died from brain abscess in our series whereas in different studies the morality rate was reported between 3.8 and 50 per cent.[10,15] The reason lies behinds due to the small number of patients included in this study.

Two patients of extradural abscess (33.3%) was found in this study. Local tenderness and headache were the most important features. The diagnosis was made on clinical examination and CT scan of brain. The incidence of extradural abscess in patient with intracranial complications reported in various studies was 16-22 per cent.[15] In this series, patients with intracranial complications, the incidence of extradural abscess was 33.3% which was nearly consistent with above study and no patient died from this complication.

Total number of patients of atticoantral disease with intracranial complications was 6 in this series. More than one intracranial complication was found in 5 patients. Though the total number of patients was 60 but complications were found in 11 patients.

Conclusion:

Analyzing the findings of the present study it was clearly noted that prevalence of CSOM is still high in rural people of younger age group in low socioeconomic classes with poor nutrition and lack of health education. Therefore morbidity due to CSOM is could

be minimized by organizing health education from local and national levels for all quarter of rural population. Early diagnosis and treatment could prevent the development of extra and intracranial complications of chronic suppurative otitis media.

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