

Original Article

INCIDENCE OF OSSICLES EROSION IN MIDDLE EAR CHOLESTEATOMA

Taimoor Latif Malik and Mansoor Basir Pal

Objective: To assess the incidence of ossicles erosion in chronic suppurative otitis media with middle ear cholesteatoma.

Material and Methods: 100 patients were admitted via outpatient and emergency at the Department of ENT Unit II, Mayo Hospital, Lahore. Patients were selected after fulfilling the inclusion criteria. All the patients having a clinical diagnosis of chronic suppurative otitis media underwent aural microscopic examination. After taking the informed consent surgery was performed. During surgery the operative findings were noted in order to observe the ossicular erosion after middle ear cholesteatoma in chronic suppurative otitis media. All the data was analysed by SPSS version 18.

Results: The study included 100 patients having a clinical diagnosis of chronic suppurative otitis media with cholesteatoma. Out of these 100 patients 62 (62%) were males and 38 (38%) were females. The Mean age was 25±9 years. Radical mastoidectomy was performed in 90 patients (90%). Modified radical mastoidectomy was done in 10 patients. (10%). Ossicles erosion was observed in 80 patients (80%) and 20 patients (20%) had no erosion of ossicles.

Conclusion: Cholesteatoma is a commonest finding in chronic suppurative otitis media (Atico Antral Type). A large number of patients show ossicle erosion especially the incus which leads to conductive deafness. The intracranial and extra cranial complications of cholesteatoma can be prevented by early diagnosis and surgery. The aim of surgery is to eradicate the disease and provide safe and dry ear.

Key words: Ossicles erosion, deafness, radical mastoidectomy.

Introduction

Chronic Suppurative Otitis Media is the important cause of middle ear disease since pre-historic times.¹ Suppurative disease of middle ear is the prime cause of middle ear and mastoid pathologies in our region.² CHRONIC SUPPURATIVE OTITIS MEDIA is the inflammation of the lining epithelium of the middle ear cleft.³ This disease is more common in developing countries and certain high risk population in developed countries despite the advances in medical care.⁴

Chronic Suppurative Otitis Media is main usually divided into two main groups (a) Tubotympanic and (b) Atico Antral. Chronic Suppurative Otitis Media is subdivided into two groups, Otitis Media with cholesteatoma and Otitis Media without cholesteatoma.^{1,5,6} Cholesteatoma is a destructive lesion with an abnormal collection of viable and desquamated epithelium in the middle ear or mastoid region.⁷

Cholesteatoma has the capacity for independent and progressive growth at the expense of underlying bone and has the tendency to recur after surgical removal. Cholesteatoma results in complication of

middle ear and temporal region.⁸ Bone destruction is a very prominent feature of cholesteatoma.^{9 10} Clinically cholesteatoma presents with foul smelling ear discharge, progressive hearing loss and keratin accumulation within attic or pars tensa defect usually marginal.^{11,12} A long standing cholesteatoma results in hearing loss due to involvement of ossicles of middle ear. There are 4 major ossicular defects that may result from erosion. The most common is involvement of long process of incus. The second common defect is the involvement of stapes super structure and incus. In the third defect, malleus may get involve. Finally there may be loss of ossiles except the foot plate of stapes.

Materials and Methods

Study Design:

Cross-sectional descriptive study.

Place And Duration Of Study:

This two years study was done in ENT Department Unit II, Mayo Hospital, Lahore from June 2010 to June 2012.

Sample Size:

100 patients

Sample Technique

Inclusion Criteria: Diagnosis of chronic suppurative otitis media confirmed on Complete ENT Examination Systemic examination Aural Microscopic Examination X-Ray Mastoid, X-Ray Paranasal Sinuses and Computed Tomography (CT Scan) of petrous portion of temporal region. Pure Tone Audiometry Complete B load Examination, Urine Examination, Blood Urea and Creatinine, Serum Electrolytes, Blood sugar and viral markers.

Exclusion Criteria:

All patients who were unfit for general anaesthesia.

All patients with tubo tympanic type of chronic suppurative otitis media.

Data Collection Procedure

100 patients were admitted through via outpatient and emergency at the Department of ENT, Mayo Hospital, Lahore. Patients were selected after fulfilling the inclusion criteria. All the information was collected on a Performa having patient's name, age, sex, address and registration number. After taking the informed consent surgery was performed. During surgery the operative findings were noted in order to observe the ossicular erosion of the middle ear.

Statistical Analysis

All the data was analysed by SPSS version 18.

Results

A total number of 100 patients with chronic suppurative otitis media with middle ear cholesteatoma were included. Out of these 70 (70%) were males and 30 (30%) were females. Male to female ratio was 2.3:1 (**Table-1**).

The patients shown in table 2 were divided into six age groups. In the first age group, patients aged 1-10 years (n = 10) 10%, in second age group, patients aged 11-20 years (n = 55) 55%, in third age group, patients aged 21-30 years (n = 15) 15%, in fourth age group, patients aged 31-40 years (n = 5) 5%, in fifth age group, patients aged 41-50 years (n = 10) 10% and in the sixth age group, patients aged >50 years (n = 5) 5% were observed. Mean \pm standard deviation of age group was 21.62 ± 12.9 years (**Table-2**). Radical mastoidectomy was done in 90 patients (90%) and modified radical mastoidectomy was performed in 10 (10%) patients. (**Table-3**).

Ossicles erosion in chronic suppurative otitis media with cholesteatoma was found in 82 patients (82%) and 18 patients (18%) had no ossicles erosion (**Table-4**).

Table-1: Gender distribution of cases (n = 100).

Sex	Frequency	(%)
Male	70	70
Female	30	30

Table-2: Age distribution of cases (n = 100) .

Age (years)	Frequency	(%)
1 - 10	10	10
11 - 20	55	55
21 - 30	15	15
31 - 40	05	05
41 - 50	10	10
>50	05	05

Mean \pm SD 21.62 ± 12.9 Key: SD = Standard deviation

Table-3: Surgeries performed (n = 100).

Surgeries	Frequency	(%)
Radical mastoidectomy	90	90
Modified radial mastoidectomy	10	10

Table-4: Ossicles erosion in all cases (n = 100).

Ossicles Erosion	Frequency	(%)
Present	82	82
Absent	18	18

Discussion

Chronic suppurative otitis media (atticoantral type) is a chronic disease and can cause dangerous life threatening complications if left untreated or treated inadequately. All the 100 cases of chronic suppurative otitis media presented with the common complaints of foul smelling ear discharge, conductive hearing loss and keratin accumulating within attic region or pars tensa defect. The frequency and rate of complications have decreased after the introduction of anti-microbial agents. Early clinical detection is important to avoid the complications. During surgery, cholesteatoma alone and cholesteatoma with granulations appear to be the commonest finding. Cholesteatoma was more common in males (70%) than in females (30%) (**Table-1**). The finding regarding the male female ratio being 2.3:1 correlates with that of another study showing that the chronic suppurative otitis media with cholesteatoma occurs more frequently in males.¹³

Majority of patients i.e. 55% were in the age group of 11-20 years, next 15% in the age group of 21-30 years, 10% in the age group of 1-10 years, 10% in the age group of 41-50 years, while only 5% patients were 31-40 years of age (**Table 2**). In this study old patients were found less indisposed than young adults of age 11-20 years. The finding regarding the age of the patients correlates with another study which showed almost same incidence of age relation. That study stated that the peak incidence of the disease was in the age group between 21 to 30 years.¹⁴

In this study 82% cases showed ossicle erosion while 18% cases showed intact ossicles. The long process of incus was the most common portion involved. This finding correlates with another study.¹⁵ The damage of incus as the most common ossicular defect signifies its tenuous blood supply. The second reason may be that erosion of the ossicles depends upon the site of the main focus of the disease process. The pathology was found to be mainly in the posterosuperior quadrant.

It is revealed that majority of patients belonged to poor class and lower socio-economic group where disease process was common due to poor hygiene and less affordability.

The management of middle ear cholesteatoma was early removal of the disease to prevent the intracranial and extra-cranial complications and to make the ear dry and safe for better hearing.

Both techniques i.e. radical mastoidectomy and modified radical mastoidectomy were used. Radical mastoidectomy was performed in 90 cases (90%)

and modified radical mastoidectomy was performed in 10 cases (10%).

Regarding the surgery, canal wall down technique was preferred. It gives wide exposure and access to remove the cholesteatoma and exteriorizing the cavity in contrast to a closed technique i.e. canal wall up technique, where the chance of residual disease persist. This study, therefore, suggests that the canal wall down procedures are better and give good post-op results in otitis media with middle ear cholesteatoma.

Conclusion

Cholesteatoma is the commonest finding in operated cases of chronic suppurative otitis media (Atticoantral type). Symptoms and signs of cholesteatoma include foul smelling ear discharge, recurrent attacks of otitis media and conductive hearing loss. Most of the cases showed ossicles erosion especially the incus. Early diagnosis and treatment can prevent intracranial and extra cranial complications. Treatment of cholesteatoma is surgery with the primary goal to eradicate disease and provide a safe and dry ear with hearing improvement. It was also observed that cholesteatoma is more common in people of low socio-economic groups due to malnutrition and poor hygiene.

*Department of ENT
KEMU/ Mayo Hospital, Lahore
www.esculapio.pk*

References

1. Mills RP; Management of chronic suppurative otitis media. In : Booth JB (ed). Scott Brown's Otolaryngology 6th ed. Great Britain: Butterworth Heinemann, 1997;13:10-11.
2. khemani A, Akhund AA, Shaikh RB; Bacteriology and its effects on clinical presentation and treatment results of chronic suppurative otitis media. Med Channel Mar 1999;5(1):35-8.
3. Nissen AJ, Louisville S, Bui HK, Brea D; Complications of chronic otitis media. ENTJ 1996;284-92.
4. Bluestone CD; Epidemiology and pathogenesis of chronic suppurative otitis media: Implications for prevention and treatment. Int J Paediatr/ Otorhinolaryngol 1998; 3:207-223.
5. Gray RF, Hawthorne M; Otitis media in disease of the middle ear in Synopsis of Otolaryngology 5th Ed Butterworth, Heineman London. 1992 pp 108-125.
6. Merchant SN, Wang PC, Jaang CH, GlynnRJ, Rauch SD, McKenna MJ, Nadol JB. Efficacy of tympanomastoid surgery for control of infection in active chronic otitis media. Laryngoscope 1997;107:872-77.
7. Anthony W. Anatomy and ultrastructure of the human ear. In : Kerr AG, ed. Scott-Brown's otolaryngology. 8th ed. Philadelphia: Butterworth and Co. 1997.
8. Youngs R. Chronic suppurative otitis media cholesteatoma. In : Ludman H. diseases of ear. 5th ed. Philadelphia : Elsevier, 2004; 386-415.
9. Pal MB, Khan N; Incidence of complications in temporal bone due to cholesteatoma. Pak Post Grad Med Jr. 1998; 10 (4): 109- 111.
10. Aberg B, Bagger-Sjoberg D, Hynes G, Westin T, Tjellstrom A; Bone destruction in experimental cholesteatoma, a histological and histochemical study on mongolian gerbil, in Tos M, Thomsen J; Cholesteatoma and mastoid surgery. Amsterdam The Netherland, Kglers and Ghidini 1989, 49-51.
11. Paparella MM, Monzono T, Le CT.

- Cholesteatoma and mastoid surgery. Amsterdam The Netherland, Kglers and Ghidini 1989, 49-51.
11. Paparella MM, Monzono T, Le CT. Sensorineural hearing loss in otitis media. *Ann Otolaryngol* 1984;93:623-629.
 12. Aberg B, Westin T, Tjellstrom A, Edstrom S : Clinical characteristics of cholesteatoma; *Am J Otolaryngol* 1991; 12 :254-258.
 13. Amjad M, Abbas N. Incidence of cholesteatoma in various age, sex and socioeconomic groups in children. *Ear Nose-Throat J* 1990;69:530-5.
 14. Memon MA, Matiullah S, Ahmed Z, Marfani MS. Frequency of unsafe chronic suppurative otitis media in patients with discharging ear. *Liaqat Uni Med Health Sci* 2008;7;102-5.
 15. Rupa V, Raman R. chronic suppurative otitis media: complicated versus uncomplicated disease. *Acta Otolaryngol* 1991;111:430-5.