Contemporary Clinical Features of Cholesteatoma

T L MALIK A U KHAN M AMJAD
Department of ENT, Services Hospital, Lahore
Correspondence to Dr. Taimoor Latif Malik, Assistant Professor

Chronic Otitis media with Cholesteatoma is a destructive lesion of middle ear and mastoid region. In a series of 122 patients with established diagnosis of atticoantral disease, clinical characteristics of consecutive 74 patients with cholesteatoma otitis media were compared with 48 patients with chronic otitis media without cholesteatoma (Controls).The patients answered a questionnaire, preoperative and perioperative clinical observations were recorded. There were no specific presenting symptoms or clinical signs that could distinguished the cholesteatoma patients. However, these patients had a significantly higher incidence (32%) of previous middle ear surgery than the control patients (18%). Aural bleeding was reported in higher number in controlled cases (8.5%) as compare to cholesteatoma cases (1.3%). Pars flaccida perforation was noted in 94 % (80% isolated) in cholesteatoma patients. Extracranial complications e.g. mastoid abscess, postaural fistula, mastoiditis and otitis externa was note in 6.7% and 4% respectively in cholesteatoma and control group. The percentage of labyrinthitis and facial nerve affection was 11% and 4.1% in cholesteatoma cases respectively against 6% and 2% in control group. The cholesteatoma was not evident until the time of surgical exploration in as many as 28% of cases. Therefore surgical exploration appears to be the reliable and safest way to identify cholesteatoma.

Key words: Chronic Otitis media, Cholesteatoma

Chronic suppurative otitis media is an 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 defined as chronic inflammation of the mucoperiosteal lining of the middle ear cleft lasting longer than three months[3].

Despite advances in public health and medical care chronic suppurative otitis media is still prevalent around the world, and is more common in developing countries and certain high risk population in developed nations[2, 4].

Chronic suppurative otitis media is usually classified into two main groups (a) tubotympanic and (b) attico-antral types. Atticoantral CSOM is an active and potentially progressive process, subdivided into two categories, otitis medial with cholesteatoma and otitis media without cholesteatoma[1,5,6]. Cholesteatoma is a variety of chronic otitis media[7]. Cholesteatoma is supposed to be more destructive and resulting in complications of middle ear and temporal region[8]. Bone destruction is a very prominent feature of unsafe otitis media and cholesteatoma (CSOM)[9,10].

A long standing cholesteatoma results in hearing loss due to ossicular chain involvement. And if untreated may result in complications like labyrinthine involvement resulting in vertigo and sensory neural hearing loss[11,12,13]. Facial nerve involvement and intracranial extension although rare now but are serious complications[10].

Symptoms and signs of cholesteatoma included chronic otorrhoea, recurrent attacks of otitis media and conductive hearing loss[14,15]. The scenario of a patient with a foul discharging ear, progressive conductive hearing loss and keratin accumulating within an attic or pars tensa defect is all very frequently seen. Occasionally a patient may present with a complication resulting from chronic otitis media (CSOM) due to the disease extending, either intracranially or extracranially[16]. Endaural polyp is sometimes associated with cholesteatoma[17].

Clinically cholesteatoma (CSOM) presents with offensive ear discharge, progressive conductive hearing loss and keratine accumulation within attic or pars tensa defect, usually marginal [12,14]. Majority of CSOM patients present in out-door ENT department, while few patients present through emergency department with extra cranial or intracranial complications[18,19]. Bilateral cholesteatomas is a rare presentation[20].

This study was under taken to identify the clinical signs and symptoms that could facilitate early diagnosis of the condition. Special attention was paid to distinguish between cholesteatoma and non cholesteatoma otitis media.

Material and methods

This prospective study included only patients who underwent exploratory surgery for chronic otitis media in ENT Unit-I of Services Hospital Lahore between June 2001 and December 2005. All the patients were investigated though a standard protocol. The final status of the disease was established on operative findings.

The patient's population was divided into two groups based on the presence of cholesteatoma and patients having no cholesteatoma (control group)

The investigation protocol consisted of three parts. A questionnaire was filled for every patient to elucidate the socioeconomic, family and hereditary particulars, symptoms and pre-operative clinical signs. The next was the audiological and radiological evaluation of the patient. The third part comprised perioperative findings. The clinical evaluation of the perioperative established cholesteatoma patients was thus performed and

comparison was done with both the preoperative assessment and the clinical findings of the controlled (non cholesteatoma) patients.

Results

A total of 122 patients operated for middle ear and mastoid disease were studied and results obtained were analyzed for differentiating clinical characteristics of consecutive 74 patients proved to be having cholesteatoma otitis media and compared with 48 controls patients having chronic otitis media with out cholesteatoma.

This study included patients from both sexes and all age groups. The age in cholesteatoma cases ranged between 8-64 years (mean 38 years) while age of controlled group was between 6-53 years (mean 34 years). No significant association of systemic, personal or hereditary conditions was elucidated as having any difference between the two groups. 3 patients of each group had diabetes mellitus, allergy was noted in 19% and 24% while smoking was recorded in 12% and 14% respectively in the cholesteatoma and non-cholesteatoma groups (Table 1).

Table 1: Patients hereditary, personal profile.

	Cholesteatoma	Control
Age	8-64 (mean38) years	6-53 (mean34)years
Sex M:F (65:57)	40:34	25:23
Rural/Urban	35; 39	27;21
Duration of Disease	8M-21Y (mean 6.4Y)	6M-14 (mean 5.8 Y)
Systemic problem		
*Diabetes/immune def.	3(4.5%)/14	3(6%)/10
*Allergies	14 (19%)	12 (24%)
*Smokers	9 (12%)	7 (14%)
Previous surgery (Recurrence)	23 (32%)	9(18%)

Ear discharge was recorded in 88% and 92% (65 and 44) patients of similar nature in cholesteatoma and the controlled cases respectively. Duration of ear discharge ranged from 8 months to 21 years (mean 6.4y) and 5months to 14 years (Mean 5.8y) in cholesteatoma and control groups. Aural bleeding was noted in higher numbers in control group (8.5%) as compared to cholesteatoma patients (1.3%).

History of pain/ear ach was reported by 33% (25) and 31% (15) patients in cholesteatoma and controlled group, mostly preceding a fresh episode of the discharge.

Hearing loss was next common symptom reported by 86% and 89% (64 and 43) patients in cholesteatoma and controlled groups.

Perforation of the tympanic membrane involving pars flaccida was seen in 80% cholesteatoma and 47% controlled patients, involving pars tensa in 6% cholesteatoma and 21% in controlled cases, whereas involving pars flacida and tensa was noted in 14% and 32% in cholesteatoma and control patients. Granulation tissue was seen in 30(40%) patients in cholesteatoma and 26(50%) patients of control group. Polyp was seen in 8(11%) and 3(6%) patients of cholesteatoma and non cholesteatoma patients respectively (Table 2)

Table 2: Results of clinical assessment

Symptoms/signs	No. of patients (%)	
	Cholesteatoma	Control.
Discharge	65(88%)	44 (92%)
Aural Bleeding	1(1.35%)	4(8.5%)
Hearing Loss	64(86%)	43 (89%)
Tinnitus	60(81%)	38 (79%)
Ear pain/Headach	25(33%)	15 (31%)
Site of perforation		
i- Pars Flaccida only	60 (80%)	23 (47%)
ii- Pars-Tensa only	4 (6%)	10 (21%)
iii- Pars Flaccida + Tensa	10(14%)	15 (32%)
Aural polyp	8 (11%)	3 (6%)
Granulations	30 (40%)	24 (50%)

Audiological tests involving pure tone audiometery (PTA) revealed a mean bone conduction threshold elevation of 20 (5-55) and 25 (10-50) dB and a mean air conduction loss of 45(15-95) and 35(5-75) dB respectively for cholesteatoma and controlled patients. This explains the degree of damage to the middle ear conduction mechanism and cochlea with the disease process.

X-ray of the mastoid showed sclerotic mastoid in 74% and 66% cases in cholesteatoma and control patients. Bone destruction was confirmed in 4/5 and 2/3 cases respectively in cholesteatoma and non cholesteatoma cases by CT-Scan. Peroperative finding noted were almost the same with a couple of variation. (Table 3)

Table 3: Radiological and audio-logical results

	Cholesteatoma Pat	No. Control Pat & %age
Radiology of mastoid		
Large (Pneumatized)	26%	34%
Small (Sclerosed)	74%	66%
C-T scan (Bone destruction)	4/5	2/3
Audiological (PTA)		
Bone conduction	5-55dB (mean20dB)	10-50 dB (mean25dB)
Air conduction	15-95 dB (mean45dB)	5-70 dB (mean35dB)

In cholesteatoma patients labyrinthine (vertigo/dizziness) and facial nerve affection was noted in11% and 4.1% (8 and 3 patients) respectively against 4% and 2% (2 and 1 patients) of controlled cases.

Extracranial complications were seen in 5(6.7%) patients (2 developed mastoid abscess, 1 postaural fistula and 2 patients with mastoiditis) of cholesteatoma group and 2 (4%) patients (1mastoiditis and 1 otitis externa) in control group.

Regarding Intracranial involvement 1 patient came with meningitis and 1 with lateral sinus thrombosis, admitted through emergency,were from the cholesteatoma group and 1 patient of zygomatic abscess was from the controlled group.

Table 4: Complications recoded

Complication	No. cholesteatoma Pat & %age	No. Control Pat & %age
Mastoiditis/mastoid abscess	5(6.75%)	2(4%)
Mastoid fistula/otitis externa	(2/2/1/0)	(1/0/0/1)
Dizziness/+ve Fistula sign	8(11%)	2 (4%)
Facial nerve symptoms	3 (4.1%)	1 (2%)
Intracranial involvement	2 (3%)	1 (2%)

Discussion

Cholesteatoma of the middle ear is a destructive condition, the frequency and rate of complications have decreased after the introduction of antimicrobial agents[21]. Early clinical detection is important to avoid its complication[14]. This study was conducted to distinguish cholesteatoma otitis media from otitis media with out cholesteatoma on clinical grounds.

Otitis media is common among people of poor class and rural population[2,4]. Chronic otitis media is recorded in all age groups, no hereditary or social factor can be strongly related to cholesteaoma[1,14,18]. Analysis of the hereditary, personal and social indexes showed no significant factor which can lead to diagnose of cholesteatoma.

The per-operative occurrence of cholesteatoma was 60 % in agreement with other studies[14, 22]. The commonest presenting symptom was ear discharge in both groups. History of aural bleeding was present in more patients of control group than cholesteatoma group. Incidence of discharge was frequent than some studies in both groups [13, 15] but corresponding to others[23,24].

Intermittent or episodic pain in ear (ear ache) is a common symptom in choronic ear infection but may signify complication[13,14,19]. Episodes of ear ache was reported by 33%(25) and 31%(15) patients in cholesteatoma and controlled group. No difference in the character or pattern of pain was classical for any of the two groups.

Site of perforation has been considered important in the diagnosis of atticoantral otitis media[1,5] but never related particularly to cholesteatoma or non cholesteatoma otitis media. We found that the attic and parse flacida perforation was higher in cholesteatoma group.

Chronic suppurative otitis media is the commonest cause of hearing impairment in developing nations[4,25]. Conductive hearing loss in otitis media is due to involvement of the ossicular chain and other structure by the disease process [9, 11]. The sensorineural hearing loss is suppose to be due to toxic products of inflammation and drug toxicity[12]. Hearing loss and PTA finding in our study are consistent with other studies as there is no significant difference of results among the two groups[12,14].

X-ray mastoid region is a routine investigation but is helpful only in 1/3rd of cases to diagnosis cholesteatoma and bone destruction. The same result was obtained in our study. Diagnosis was much accurate in patient who had preoperative CT scan.

Complications of otitis media have decreased with introduction of antibiotic and modern surgical modalities. But still chronic suppurative otitis media is a commonest cause of threatening intracranial and extra cranial complication[21,25,26]. Vestibular problem is common in all types of active otitis media, due to inflammation in round window area or erosion of lateral semi circular canal in cholesteatoma otitis media[13]. In this study patients labyrinthine (vertigo/dizziness) and facial nerve affection was higher in cholesteatoma group than the non-cholesteatoma patients[19].

The frequency of complications like mastoiditis and mastoid fistula etc. in our study was 6.7% and 4% in cholesteatoma and non-cholesteatoma cases coinciding with others studies. This also explain the destructive nature of cholesteatoma eroding the bony confines of middle ear cleft structure[14,19 27].

The diagnosis of intracranial abscess and other complication with otitis is difficult but very important[28]. The incidence of intracranial complication has fallen from 2.3-5% to 0.24% in recent times[25]. In developing set ups still incidence of intracranial complication is higher (2.8-12%)[19,26]. One patient with cholesteatoma developed signs of meningitis and one was diagnosed as a case of lateral sinus thrombosis while in the group of controlled patient one patient, a known diabetic, had extension of the disease to posterior cranial fossa and skull base. Therefore almost equal prevalence in both groups was seen.

It is evident from this discussion that there is no single clinical character which could be taken as the distinguishing point between cholesteatoma and non-cholesteatoma otitis media. A comprehensive preoperative assessment supported by surgical exploration is still the surest and safest method for cholesteatoma confirmation, in agreement with many authentic reports[14,15, 18, 23].

Conclusion

Cholesteatoma disease can not be distinguished from non-cholesteatoma otitis media on basis of clinical symptoms and signs. A careful clinical, radiological and ear examination under microscope helps in detection of cholesteatoma in most of the cases. But still around 1/3 of cases need surgical exploration as a reliable and safest way to identify middle ear cholesteatoma.

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