Atticoantral disease – revisited

S. B. Jothiramalingam · Dinesh Kumar · Prasanna Kumar · Vivek Sasindran · Nandha Kumar

Abstract

Atticoantral disease is very common in this part of the world. The clinical presentation and the otomicroscopic examination of the ear may just reveal the tip of the iceberg as to the extent of disease. Often we have found that minimal disease with good hearing have extensive mastoid involvement.

Keywords Chronic suppurative otitis media · Atticoantral disease · Cholesteatoma

Introduction

Cholesteatoma is a destructive disease of the middle ear, its course, extent of the disease, ossicular involvement, hearing loss, complication in regard to age, sex, duration of the disease has been since long studied. In our audit we have analysed these variables in our clinical set up. This type of internal audit is mandatory to know the course also for effective management of any disease.

Materials and Methods

Our study of chronic suppurative otitis media, atticoantral type is a prospective study done over a period of 6 months, and 25 patients were selected from the outpatient department of our institution (Table 1).

Inclusion criteria:

All age groups
Only CSOM-atticoantral
Complications of CSOM

Exclusion criteria:

CSOM – tubotympanic type
Type Systemic illness
Previous ear surgeries
Congenital ear malformations

S. B. Jothiramalingam¹ (✉) · D. Kumar² · P. Kumar³ · V. Sasindran⁴ · N. Kumar⁴

¹Professor and Unit Chief

²Assistant Professor

³Assistant Professor

⁴Post Graduate

Dept of ENT, Head and Neck Surgery.

Sri Ramachandra Medical College and Research Institute

(Deemed University),

Porur,

Chennai - 600 116.

India.

S. B. Jothiramalingam (✉)

E-mail: entsrnc@yahoo.co.in

Phone: 9840042172

The otomicroscopic findings and the intraoperative findings have been analyzed to assess the various routes of spread of cholesteatoma. Twenty five patients with atticoantral ear disease were selected after thorough history taking and examination (Fig. 1). The history included major complaints and their onset, duration and progress, and associated factors. The clinical examination included a general examination of the ear, nose and throat. Examination of the ear included otomicroscopy and pneumatic otoscopy. Ear swab was sent for culture and sensitivity prior to starting any topical or oral medications. Pure tone averages were calculated for all the patients. Investigations included complete blood counts and X-ray mastoids Law's view (lateral oblique view). HRCT of temporal bone was done only for a few patients. All these patients have been operated upon in our institution by the

Table 1 Age Distribution of cases

Age Dist.(Yrs.)	5–15	16–25	26–35	36–45	46–55	56–65
No. of Cases	4	10	4	3	2	2
No. of Cases (in %)	16	40	16	12	8	8

Fig. 1 Duration of ear discharge **Fig. 2** Otomicroscopic findings

same team of surgeons. Post aural, William Wilde's incision was used for all the patients. Inside out technique was opted for all the patients and then depending on the extent of the disease atticostomy or modified radical mastoidectomy with tympanoplasty with or without ossiculoplasty was performed (Table 3). Extent of the sac, ossicular involvement, facial canal erosion, posterior canal wall erosion, fistulas, integrity of the tegmen plate and the sinus plate were noted preoperatively (Table 2). Temporalis fascia, conchal cartilage and ossicles were used for reconstruction of hearing. Depending on the size of the cavity obliteration was performed using temporalis muscle flap.

Results

Various aspects of chronic suppurative otitis media attico-antral disease like the age, sex distribution, clinical features, otomicroscopic findings and intraoperative findings to assess the route of spread of cholesteatoma were studied (Fig. 2).

In our study 52% of the patients were males. The youngest patient was a 7-year-old girl while the oldest one was 58 years of age. Maximum patients were seen in the age group 16–25 yrs (40%) followed by 16% each in the age groups 5–15 years and 26–35 yrs.

Eleven patients (44%) presented with complaints of ear discharge alone. 32% (8 patients) presented with complaints of both ear discharge and hard of hearing, 5 patients (20%) with ear discharge and ear pain and 1 patient with ear discharge and giddiness (4%). 3 patients (12%) presented with complications of chronic suppurative otitis media i.e. one with labyrinthitis and two with mastoid abscess.

About 44% of the patients presented to us within 1 to 5 yrs of onset of the complaint. Only 28% of the patients presented within a year of onset ear discharge and the rest 28% presented after more than 6 years. Nearly 48% of the patients had posterosuperior retraction pockets with cholesteatoma which was followed by 20% with anterosuperior retraction pocket with cholesteatoma. Culture reports of the ear swab showed growth of *Pseudomonas* species in 80%, *Staphylococcus aureus* in 12%, *Proteus mirabilis* in 4% and combination of *Staph. Aureus* and *pseudomonas* in 4%.

Around 40% (10) had pure tone averages between 25–40 dBHL and 24% had averages between 55–70 dBHL. Only 16% had pure tone averages below 25 dBHL (Fig. 3).

Fig. 3 Hearing status

Table 2 Facial Nerve

Intact	Facial Nerve		
	Dehiscence		
	Horizontal	2 nd Genu	Vertical
17	4	2	2

Table 3 Surgical procedure

Disease Clearance		Tympanoplasty			
		Type I	Type II	Type III	Type IV
MRM	Count		2	14	7
	% of Total		8	56	28
Atticoantrostomy	Count	2			
	% of Total	8			
Total		2	2	14	7
		8	8	56	28

Intraoperative findings showed cholesteatoma involving the epitympanum and the mastoid cavity in 84% of the patients. 32% (8 patients) of the patients were found to have a dehiscence of the facial canal, the commonest site being the horizontal segment 50% (4 / 8). 1 patient had a fistula over the dome of the lateral semi circular canal and one patient who presented with a mastoid abscess had mastoid cortex which was found to be eroded. 2 patients (8%) had automastoidectomy cavities.

Malleus and the incus were either eroded or absent and the stapes was intact in 40% of the patients. 28% of the patients had absence of malleus, incus and stapes suprastructure with an intact foot plate. 16% had intact malleus with eroded incus and absent suprastructure of stapes, footplate of stapes was intact in all the cases.

Posterior spread of cholesteatoma was the most common route of spread i.e 60% (15) followed by the anterior route 24%.

Discussion

The term cholesteatoma was coined by the German physiologist Johannes Mueller in 1838 [1]. It was only in 1889 that radical mastoid operation such as endomeatal surgical fistulization of a mastoid cholesteatoma was performed for eradication of the disease by Kuster [2]. Atticoantral disease can affect any age group. In the current study the most common age group being 16–25 years.

The moist keratin material is a good culture medium for bacterial growth, predisposes the patient to develop a superimposed secondary acute ear infection that is usually characterized by the presence of granulation tissue, a foul smelling discharge and occasionally ear pain. Frequently pseudomonas or a fungus will be cultured from the ear

canal. The majority of cholesteatoma assume fairly typical patterns of growth that are dictated by their site of origin and its related anatomic structures. The most common locations from which cholesteatoma arise are the posterior epitympanum, posterior mesotympanum and the anterior epitympanum. Enlarging cholesteatomas are channelled along characteristic pathways by surrounding mucosal folds,

ossicular suspensory ligaments, and the ossicles themselves [3,4,5]. Epitympanic cholesteatomas originate in a shallow nearly closed pocket that lies between the pars flaccida of the tympanic membrane and the neck of the malleus. This pouch is known as the Prussack's space. Epitympanic cholesteatomas may break the confines of Prussack's space via three possible routes. The most common is the posterior route where the cholesteatoma penetrates the superior incudal space lateral to the body of the incus. From there it penetrates the aditus ad antrum and gains access to the mastoid [6]. 84% of the patients in the current study has posterior route of spread. The second most common departure from Prussack's space is the inferior route, through the pouch of Von Troeltsh. This allows the cholesteatoma to descend into the posterior mesotympanum in the region of the stapes, round window, sinus tympani and facial recess. Anterior extension from Prussack's space is less common [6]. The second common route of spread found in our study was the anterior route 24%. Cholesteatoma most commonly involves the facial nerve in its horizontal portion or at the second genu. The horizontal segment of the facial nerve lies medial to the neck of the malleus and the incus and superior to the oval window niche and stapes [7,8]. The fallopian canal in this region is frequently dehiscence especially on its inferior aspect. 16% of the patients were found to have a dehiscence fallopian canal in the horizontal segment. Even in this era of antibiotics we did have 3 patients with complications of CSOM. 2 patients who presented with mastoid abscess were found to automastoidectomy cavities intra op. One patient who presented with giddiness was found to have a labyrinthine fistula peroperatively.

In a study done by David R. Edelstein, Simon C. Parisier and Jin Cheng Han et al the ossicles were most vulnerable in paediatric age group – erosion of incus being most frequent, followed by the involvement of the malleus and

the stapes. Hearing loss due to ossicular erosion is usually suspected for PTA s above 60 dBHL. In our study patients having hearing loss above 40 dBHL were also found to have ossicular erosion. It is evident from our study that it is difficult to suspect ossicular erosion based on the pure tone averages as 4 patients in this study had pure tone averages less than 25 dBHL of which two had ossicular erosion.

The primary objective in surgery of aural cholesteatoma is to eliminate the disease to obtain a dry ear. The second choice is restoring the functional capacity of the ear. In this study 92% of the patients underwent a canal wall down mastoidectomy as the spread of cholesteatoma was found to be extensive.

Conclusion

It is seen that most of our patients reported to the hospital only when there was a complication or when the disease has hampered their day to day working. 28% of the people presented themselves only after 6 years of onset of the complaint. This probably is due to the poor socioeconomic status, or due to inadequate health education.

In our analysis we have found that the disease affects all the age groups without predilection for any sex. Posterior spread is more common, horizontal part of the facial nerve

is more commonly found to be dehiscent and at the time of presentation most of our patients had moderate to moderately severe hearing loss.

It is emphasized that patient education and early intervention is mandatory to avoid complications.

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