

## THE CROSS-SECTIONAL STUDY OF PAEDIATRIC CHOLESTEATOMA

Satish S. Raju<sup>1</sup>, Satish B. Bagewadi<sup>2</sup>

<sup>1</sup>Associate Professor, Department of ENT, Mysore Medical College and Research Institute, Mysore.

<sup>2</sup>Associate Professor, Department of ENT, Belgaum Institute of Medical Sciences, Belgaum.

### ABSTRACT

Chronic suppurative otitis media is a very common problem in our country, particularly in rural population. Cholesteatoma is seen in atticointral type of chronic suppurative otitis media. In children cholesteatoma can be very aggressive leading to complications. Hearing loss secondary to disease in children leads to language disabilities. Early recognition of children with cholesteatoma and appropriate treatment would prevent complications.

### OBJECTIVES

1. To study the proportion of paediatric cholesteatoma in a tertiary care setting.
2. To study the clinical presentation of paediatric cholesteatoma.

### SETTING AND DESIGN

Cross-sectional study at tertiary referral centre.

### MATERIALS AND METHODS

Children clinically diagnosed with cholesteatoma aged below 12 years were evaluated. A detailed history was taken. Clinical examinations and examination under microscope was done. X-ray mastoid (Schuller's view) and pure tone audiogram were used to evaluate these patients.

### RESULTS

Total of 50 patients in age group of 6-12 years was enrolled for this study. Proportion of paediatric cholesteatoma was 0.34%; 38 children (76%) were in low socioeconomic group and 12 children (24%) were in middle socioeconomic group. Most common symptoms at presentation were ear discharge, hearing loss and ear ache. Pars tensa cholesteatoma was seen in 57%. Sclerosed mastoid was seen in 82.14% with evidence of cholesteatoma in only 37.5%; 55% showed mild conductive hearing loss.

### CONCLUSION

Triad of otorrhoea, hearing loss and abnormal otoscopic findings should raise the possibility of cholesteatoma. Low and middle socioeconomic group children were exclusively affected. Pars tensa cholesteatoma predominates in children. All paediatric cholesteatoma cases presented before intracranial complication could set in.

### KEYWORDS

Paediatric Cholesteatoma, Otomicroscopy, Pure Tone Audiometry.

**HOW TO CITE THIS ARTICLE:** Raju SS, Bagewadi SB. The cross-sectional study of paediatric cholesteatoma. J. Evolution Med. Dent Sci. 2016;5(23):1235-1237, DOI: 10.14260/jemds/2016/288

### INTRODUCTION

Otitis media is a very common problem in our country, particularly in rural population and lower socioeconomic strata. Due to lack of early detection and timely treatment, it becomes chronic. Cholesteatoma is associated with atticointral type of chronic suppurative otitis media. It has bone eroding properties, can lead to wide range of complications like facial paralysis, labyrinthine fistula, meningitis and brain abscess. Bilateral disease with consequent hearing impairment may retard development of speech and acquisition of linguistic skills in children. In this study, our effort is to study the proportion and the clinical presentation of paediatric cholesteatoma. Early detection of disease process can avoid future complications in these children.

*Financial or Other, Competing Interest: None.*

*Submission 28-01-2016, Peer Review 01-03-2016,*

*Acceptance 07-03-2016, Published 19-03-2016.*

*Corresponding Author:*

*Dr. Satish S. Raju,*

*1707, 6<sup>th</sup> Main,*

*Vijayanagar, 2<sup>nd</sup> Stage,*

*Mysore-570017.*

*E-mail: entssr@yahoo.com*

*DOI: 10.14260/jemds/2016/288*

### OBJECTIVES OF STUDY

1. To study the proportion of paediatric cholesteatoma in a tertiary care setting.
2. To study the clinical presentation of paediatric cholesteatoma.

### MATERIALS AND METHODS

Cross-sectional study done in the Departments of Otorhinolaryngology of District Hospital, Belgaum attached to Belgaum Institute of Medical Sciences, Belgaum and KLES Hospital and MRC, Belgaum attached to KLES Hospital and MRC, Belgaum, which are teaching hospitals between July 2011 to July 2012 on 50 patients aged below 12 years who presented to outpatient department with ear complaints and clinically diagnosed with cholesteatoma. SPSS-16 Version with Descriptive Statistical Tests like Mean and Standard Deviation was used.

### Inclusion Criteria

Children aged below 12 years with evidence of cholesteatoma.

### Exclusion Criteria

None.

**METHODOLOGY**

After a thorough history, a detailed general physical examination was done which included recording of vital signs. Initial ear examination was done using head mirror and otoscope. Nature, type and odour of ear discharge were noted. Any debris obstructing the view of tympanic membrane was cleaned by aural toilet or suction clearance. Otomicroscopy was carried out to assess the status of tympanic membrane, retraction pocket, cholesteatoma, granulations, etc. Nose, throat and systemic examination were done.

X-ray mastoid (Schuller’s view) and pure tone audiometry were done for all patients. The type of hearing loss was defined as conductive, sensorineural or mixed. The degree of hearing loss was defined as normal (<25 dB), mild (26-40 dB), moderate (41-70 dB), severe (71-90 dB) and profound (>90 dB). The average hearing threshold was calculated by averaging the thresholds at 500 Hz, 1 kHz and 2 kHz.

**RESULTS**

During the study from July 2011 to July 2012, there were 14,450 children below 12 years who attended outpatient department with complaints related to ear; cholesteatoma was detected in 50 cases. The proportion of paediatric cholesteatoma was 0.34%. In our study of 50 cases, children were in age group of 6 to 12 years with mean age of 9.7 years +/-1.8 years.

Income Group	Number of Patients	Percent
Low	38	76
Middle	12	24
High	0	0
<b>Total</b>	<b>50</b>	<b>100</b>

**Table 1: Distribution according to Socioeconomic Status (N=50)**

In our study of 50 cases, 38 children (76%) were in low socioeconomic group and 12 children (24%) were in middle socioeconomic group. B G Prasad classification was used.

Gender	Number of Patients	Percent
Male	28	56
Female	22	44
<b>Total</b>	<b>50</b>	<b>100</b>

**Table 2: Distribution according to Gender (N=50)**

Among the 50 cases, 28 (56%) were males and 22 (44%) were females.

Side	Number of Patients	Percent
Right ear	26	52
Left ear	18	36
Bilateral	6	12
<b>Total</b>	<b>50</b>	<b>100</b>

**Table 3: Distribution according to Ear Involved (N=50)**

In our study of 50 children with cholesteatoma, 26 cases (52%) had involvement of only right ear, 18 cases (36%) had involvement of only left ear, 6 (12%) had bilateral involvement making a total of 56 ears affected.

Symptoms	Total	Percent
Otorrhoea	50	100
Hearing loss	24	48
Ear ache	18	36
Swelling and pain behind ear	2	4
Discharge behind the ear	2	4
Fever	3	6
Tinnitus	2	4

**Table 4: Distribution according to Symptomatology in 50 patients (N=50)**

Out of 50 patients in our study who presented with ear complaints, all 50 patients (100%) had ear discharge as their main complaint, 24 (48%) presented with hearing loss, 18 (36%) presented with ear ache, 2 (4%) patients presented with swelling and pain behind ear, 2 (4%) patients presented with discharge behind ear, 3 (6%) patients presented with fever and 2 (4%) patients presented with tinnitus. None of the patients presented with vertigo or facial palsy.

Otomicroscopic Findings	Total	Percent
Cholesteatoma	56	100
Granulations	18	32.14
Polyp	8	14.28
Erosion of scutum	11	19.64
Perforation of pars tensa	8	14.2
Perforation of pars flaccida	4	7.14

**Table 5: Distribution according to Otomicroscopic findings in 50 patients (N=56 ears)**

44 cases had unilateral involvement and 6 cases had bilateral involvement making a total of 56 ears being examined.

All 56 ears (100%) had evidence of cholesteatoma with whitish flakes; 24 ears had pars flaccida cholesteatoma, 26 ears had pars tensa marginal cholesteatoma and 6 ears had pars tensa central cholesteatoma.

Granulations were observed in 18 ears (32.14%). Polyps were observed in 8 ears (14.28%), 11 ears (19.64%) had erosion of scutum. In 8 ears (14.2%) perforation of pars tensa was seen and in 4 ears (7.14%) perforation of pars flaccida was seen.

Radio-logical Find-ings	Sclerotic No. of Ears 46 (82.14%)	Diploic No. of Ears 4 (7.14%)	Pneumatiz ed No. of Ears 6 (10.71%)	Total No. of Ears 56 (100%)
	Cholesteato ma Yes No	Cholestea toma Yes No	Cholesteato ma Yes No	Cholestea toma Yes No
	18 28	3 1	0 6	21 35

**Table 6: Distribution according to Radiological Findings on X-ray Mastoid (Schuller’s View) (N=56 ears)**

Of 56 symptomatic ears with clinical evidence of cholesteatoma, 46 ears (82.14%) showed sclerotic pattern, 4 ears (7.14%) showed diploic pattern and 6 (10.71%) showed pneumatized pattern. Radiological evidence of cholesteatoma was seen in 21 ears (37.5%).

Type of Hearing Loss	Number of Ears	Percent
Normal	7	12.5
Mild conductive hearing loss	31	55.35
Moderate conductive hearing loss	12	21.42
Mixed hearing loss	4	7.14
Not cooperative	2	3.57
<b>Total</b>	<b>56</b>	<b>100</b>

**Table 7: Distribution according to Pure Tone Audiometry Result (N=56 ears)**

In our study of 56 ears, 7 ears (12.5%) had hearing within normal limits, 31 ears (55.35%) had mild conductive hearing loss, 12 ears (21.42%) had moderate conductive hearing loss, 4 ears (7.14%) had mixed hearing loss and 2 (3.57%) were not cooperative for test.

### DISCUSSION

In our study of 50 cases, children were in age group of 6 to 12 years. In study by Varshney, Pramod Kumar.<sup>1</sup> majority of them were of 12 years of age.

In present study, 38 children (76%) were in low socioeconomic group and 12 children (24%) were in middle socioeconomic group. In study by Varshney, Pramod Kumar.<sup>1</sup> of 60 children, 75% were in low socioeconomic group and 15% belonged to middle socioeconomic group.

Among the 50 cases, 28 (56%) were males and 22 (44%) were females. In a study by Scott J. Stern et al.<sup>2</sup> of 54 children, 30 were males and 24 were females, which correlates with the literature of male predominance of paediatric cholesteatoma.

In our study of 50 children with cholesteatoma, 26 cases (52%) had involvement of only right ear, 18 cases (36%) had involvement of only left ear, 6 (12%) had bilateral involvement making a total of 56 ears affected, that is 44 (88%) had unilateral and 6 (12%) had bilateral involvement. In Edelstein DR et al.<sup>3</sup> study of 125 cases, 63 cases had involvement of only right ear, 57 cases had involvement of only left ear, 5 had bilateral involvement, that is 120 (96%) had unilateral and 5 (4%) had bilateral involvement.

Out of 50 patients in our study that presented with ear complaints, all 50 patients (100%) had ear discharge as their main complaint; 24 (48%) presented with hearing loss; 18 (36%) presented with ear ache; 2 (4%) patients presented with swelling and pain behind ear; 2 (4%) patients presented with discharge behind ear; 3 (6%) patients presented with fever and 2 (4%) patients presented with tinnitus. None of the patients presented with vertigo or intracranial complications. In Elderstein DR et al.<sup>3</sup> study, most common presenting complaint was otorrhoea in 73%, 85% presented with hearing loss, 32% presented with ear ache, tinnitus 8% and vertigo 8%. Only 0.8% presented with intracranial complications.

Otoscope classification of cholesteatoma as given in "Management of chronic suppurative otitis media," Scott-Brown's Otolaryngology, R. P. Mills, Sixth edition, Butterworth Heinemann, 1997, pp 3/10/2 is followed in our study.

All 56 ears (100%) had evidence of cholesteatoma with whitish flakes in our study; 24 ears (42.8%) had pars flaccida cholesteatoma; 26 ears (46.2%) had pars tensa marginal cholesteatoma and 6 ears (10.7%) had pars tensa central cholesteatoma. None of cases had intracranial complications. Ashok M. Shenoy.<sup>4</sup> in their study of 51 Indian children noted a predominance of mesotympanic cholesteatoma 28 cases (54.9%). Posterosuperior retraction pocket cholesteatoma was seen in 19 cases (37.2%) and only 4 cases (7.8%) of attic cholesteatoma were seen.

Of 56 symptomatic ears with clinical evidence of cholesteatoma, 46 ears (82.14%) showed sclerotic pattern, 4 ears (7.14%) showed diploic pattern and 6 (10.71%) showed pneumatized pattern. Radiological evidence of cholesteatoma was seen in 21 ears (37.5%). Tiwari R.<sup>5</sup> reported in their study of 60 cases that 50 cases (92.58%) showed sclerotic pattern and 4 (7.4%) showed pneumatized pattern. Radiological evidence of cholesteatoma was seen in 40 cases (70.08%).

In our study of 56 ears, 7 ears (12.5%) had hearing within normal limits, 31 ears (55.35%) had mild conductive hearing loss, 12 ears (21.42%) had moderate conductive hearing loss, 4 ears (7.14%) had mixed hearing loss and 2 (3.57%) were not cooperative for test. Marco-Algarra J.<sup>6</sup> in their study of 52 patients (55 ears), reported that 4 ears (7%) had hearing within normal limits, 37 ears (69%) had mild conductive hearing loss, 12 ears (21%) had moderate conductive hearing loss, 1 ear (1.81%) had mixed hearing loss and 1 (1.81%) had dead ear.

### CONCLUSIONS

1. Triad of otorrhoea, hearing loss and abnormal otoscopic findings should raise possibility of cholesteatoma.
2. Low and middle socioeconomic group children were exclusively affected.
3. Pars tensa cholesteatoma predominates in children.
4. All the paediatric cholesteatomas were detected before intracranial complication could set in.

### REFERENCES

1. Varshney, Pramod Kumar. Cholesteatoma in paediatric population. Indian Journal of Otolaryngology 1998;4(1):45-49.
2. Scott J Stern, Mary Fazekas-May. Cholesteatoma in paediatric population: prognostic indicators for surgical decision making. Laryngoscope 1992;102:1349-52.
3. Edelstein DR, Parisier SC, Ahuja GS, et al. Cholesteatoma in paediatric age group. Ann Otol Rhinol Laryngol 1988;97:23-29.
4. Ashok M Shenoy, Prem K Kakar. Middle ear cholesteatoma in children-an Indian perspective. The Journal of Laryngology and Otolaryngology 1987;101:1125-1130.
5. Tiwari RA. Middle ear cholesteatoma in children-an Indian perspective. The Journal of Laryngology and Otolaryngology 1987;43(3):130-135.
6. Marco-Algarra J. Cholesteatoma in children: results in open versus closed techniques. The Journal of Laryngology and Otolaryngology 1991;105:820-824.