

**Research Article****CSOM: Atticoantral Disease- Role of Microbes**Naveen kumar Korivipati<sup>1\*</sup>, Ramagiri Vijay Kumar<sup>2</sup>, N RadhaKrishna<sup>3</sup>, Rama Krishnaiah P<sup>4</sup><sup>1</sup>Assistant Professor, Department of ENT, Bhaskar Medical College, Yenkapally, Moinabad, Telangana, India<sup>2</sup>Associate Professor, Department of ENT, Bhaskar Medical College, Yenkapally, Moinabad, Telangana, India<sup>3</sup>Professor and HOD, Department of ENT, Bhaskar Medical College, Yenkapally, Moinabad, Telangana, India<sup>4</sup>Senior Resident, Department of ENT, Bhaskar Medical College, Yenkapally, Moinabad, Telangana, India**\*Corresponding author**

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**Abstract:** Chronic Suppurative Otitis Media (CSOM) is one of the common otological problems in our community with many intracranial and extracranial complications. In view of probable role of microorganisms we have carried out this study on 50 patients at tertiary care hospital Hyderabad, India to find out if there is any relation between the preoperative ear swab and microbiological study of the intraoperative specimen. A few samples not included in the regular study were sent for human papilloma virus evaluation which was found in some of the recent studies.**Keywords:** Atticoantral disease, Microbes, CSOM, Intraoperative specimen

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**INTRODUCTION**

Chronic suppurative otitis media (CSOM) is one of the common otological problems with many intracranial and extracranial complications [1, 2]. CSOM is a stage of ear disease in which there is a chronic infection of the middle ear cleft (eustachian tube, middle ear & Mastoid), and in which a non-intact tympanic membrane [3, 4]. It is an inflammatory condition of the ear causing recurrent ear discharge (otorrhea) through a perforation of the tympanic membrane [5].

Chronic suppuration may occur with or without cholesteatoma; clinical history of both conditions may be very similar [5]. It is a three dimensional sac, consisting of an accumulation of desquamated Keratin epithelium in the middle ear cleft or in any other pneumatized portion of the temporal bone [6].

Depending on pathology CSOM may be of two types: Tubotympanic/safe type: associated with tympanic membrane perforation and recurrent or persistent ear discharge, without cholesteatoma and Atticoantral/unsafe type: often associated with the presence of cholesteatoma or granulations [4].

The pathology of CSOM is an ongoing cycle of inflammation, ulceration, infection and granulation [7].

Obi CL *et al.* [8] screened for the presence of bacterial agents of chronic otitis media. Results of the study revealed the presence of 19 different species indicating polymicrobial infections.

To determine the probable role of microorganisms this study was carried out on 50 patients at tertiary care hospital Hyderabad, India to find out if there is any relation between the preoperative ear swab and microbiological study of the intraoperative specimen

**MATERIALS AND METHOD**

“CSOM: Atticoantral disease – role of microbes” is a study consisting of 58 patients of CSOM who underwent surgical treatment as inpatients at Government ENT Hospital, Koti, Hyderabad. A clinical proforma was filled up for each patient incorporating details of the patient, case history, clinical examination and investigations. All patients were examined preoperatively, under operating microscope. The discharge was sent for culture as per protocol.

Hearing status was assessed by pure tone audiometry & play audiometry according to age and compliance of patient. Radiological investigations included both conventional radiography & HRCT of mastoids were taken for all patients. All patients underwent surgery and the type of surgery was determined by the examination findings and operative findings. The type and extent of disease including the ossicular status was studied during surgery. The specimen obtained during surgery was sent for culture to microbiology department as per protocol.

In view of latest studies showing association between Human papilloma virus and cholesteatoma 8 samples were sent exclusively for human papilloma virus

estimation and these cases were not included in the study.

All patients were followed up in minor operation theatre to determine the state of mastoid cavity.

**RESULTS**

**Table 1: Age wise distribution (n = 50)**

Age group	No. of cases	Percentage
Group 1 (< 20 years)	22	44%
Group 2 (21 – 40 years)	25	50%
Group 3 (>41 years)	3	6%
TOTAL	50	100%

**Table 2: Sex wise distribution (n = 50)**

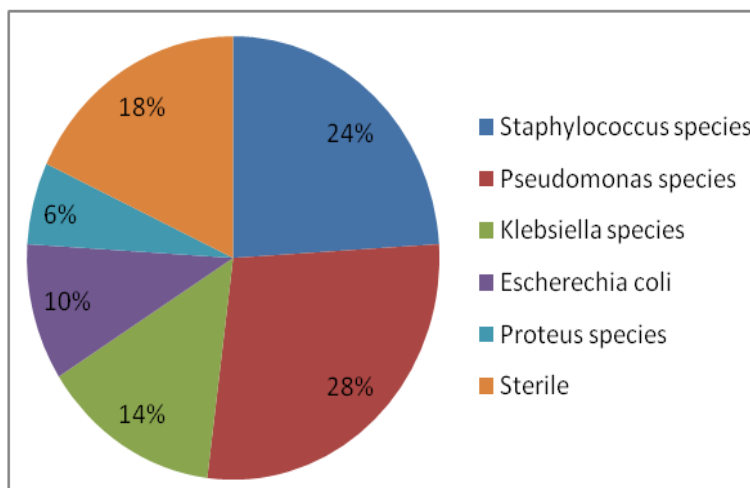
Sex	No. of cases	percentage
Male	34	68%
Female	16	32%
Total	50	100%

**Table 3: Symptoms Distribution (n=50)**

Symptoms	No. of patients	Percentage
Ear discharge	50	100%
Hearing loss	40	80%
Earache	27	54%
Vertigo	2	4%
Tinnitus	6	12%

**Table 4: Organism isolated in Culture from preoperative ear swab (n = 50)**

Organism isolated	No. of cases	Percentage
Staphylococcus species	12	24%
Pseudomonas species	14	28%
Klebsiella species	7	14%
Escherechia coli	5	10%
Proteus species	3	6%
Sterile	9	18%
Total	50	100%



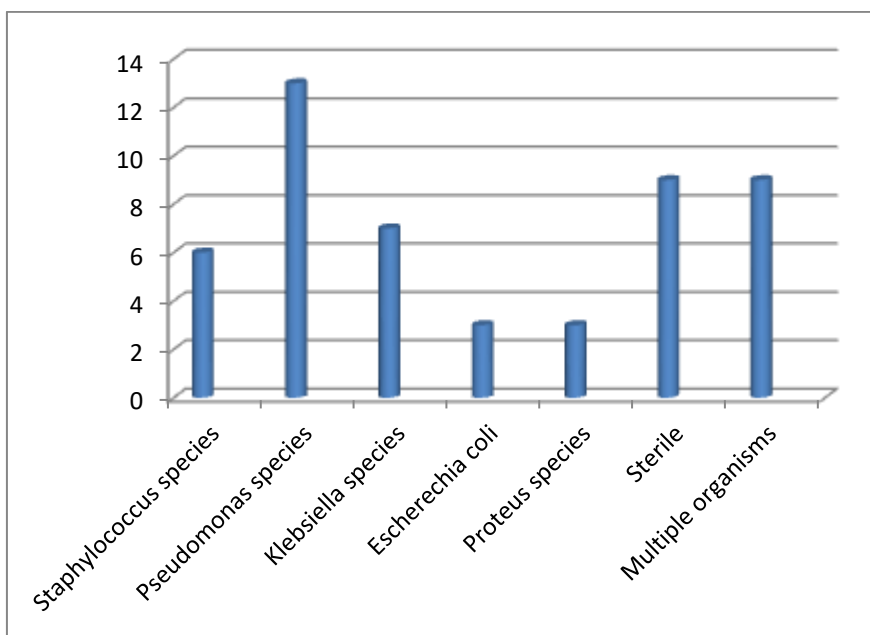
**Fig. 1: Pie chart showing various microorganisms found in preoperative ear swab sample**

It is observed. Staphylococcus was found in 12 patients while Pseudomonas species were found in 14 patients. This was followed by Klebsiella in 7 patients, Escherechia coli in 5 patients, proteus in 3 patients.

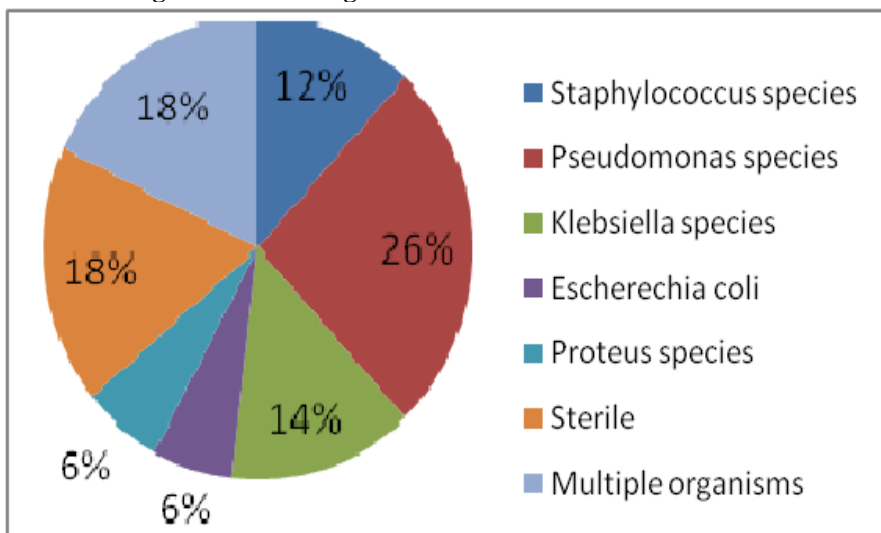
Samples from 9 patients were found sterile on culture, as no growth was visualized after 48 hours of incubation.

**Table 5: Organism isolated in Culture from operative specimen (n = 50)**

Organism isolated	No. of cases	Percentage
Staphylococcus species	6	12%
Pseudomonas species	13	26%
Klebsiella species	7	14%
Escherechia coli	3	6%
Proteus species	3	6%
Sterile	9	18%
Multiple organisms	9	18%
Total	50	100%



**Fig. 2: Different organisms isolated with number of cases**



**Fig. 3: Pie chart showing various microorganisms found in operative sample**

Sample obtained during the surgery for culture showed single organism in 41 cases while in 9 cases more than one microbe were cultured. Samples showed Pseudomonas species in 13 samples (26%). This was followed by Staphylococcus 6 samples (12%), Klebsiella 7 samples (14%). Escherechia coli and Proteus species were found in 3 patients (6%) each. 9

samples (18%) were found sterile after 48 hours of incubation. While 9 samples (18%) showed more than one organism on culture. The details of samples having more than one micro organism on culture are given below.

Multiple microbes in a single sample: Total of 9 cases

Staphylococcus species and Proteus species: 2

Staphylococcus species and Escherechia coli: 2

Pseudomonas species and Proteus species: 2

Staphylococcus species and acinetobacter species: 1

Staphylococcus species and Klebsiella species: 1

Pseudomonas species and Escherechia coli: 1

## DISCUSSION

The study was conducted to analyse the clinical and microbiological pattern of chronic suppurative otitis media with attico antral disease and to correlate with that of surgical findings, and also to evaluate if use of topical antibiotics is justified.

The study included 50 patients with the clinical diagnosis of chronic suppurative otitis media with attico antral disease. 94% of the patients were below 40 years while only 6% were more than 41 years of age. The values are slightly less than that of study done at Mayo Hospital, Lahore which showed 85% in younger age group [9]. The gender distribution in this study had 34 males (68%) and 16 females (32%) coincide with the study done by Department of ENT, Unit-II Mayo Hospital Lahore which showed a male incidence of 62.5% [9].

Commonest complaints were otorrhoea (100%) followed by hearing loss (80%), earache (54%), tinnitus (12%) and vertigo (4%). These results are comparable to the studies done by Palva *et al.* [10], Glasscock *et al.* [11], Eldestein *et al.* [12] and Triglia JM *et al.* [13]. In addition, 7 (14%) of our patients presented with post-aural abscess.

Staphylococcus and Pseudomonas species together constitute more than 50 % of the samples. Pseudomonas species were found in 28% while Staphylococcol species were found in 24% of patients. This was followed by Klebsiella in 14%, Escherechia coili in 10%, proteus in 6% of samples. 18% of the samples were found sterile on culture, as no growth was visualized after 48 hours of incubation.

These are much similar to study by King Abdulaziz University Hospital, which states that a single isolate was obtained in (48%) cases, no growth was isolated in (12.5%) cases. Most common bacteria isolated were, Pseudomonas aeruginosa in 51%, Staphylococcus aureus in 31%, and Proteus species in 17%” [14].

47 patients (94%) had conductive hearing loss while 3 patients (6%), had a mixed hearing loss around 30 dB AB gap. The common range of hearing loss was of moderate degree with 31-40 dB AB gap in 60% of patients.

None of the samples sent for HPV analysis showed presence of Papilloma virus in the samples, this was in

contrast to studies done by P. Franz *et al.* [15], Bai Y *et al.* [16] and Krister Bergmann *et al.* [17].

## CONCLUSIONS

The study was conducted in 58 patients treated at otolaryngological services of Govt ENT Hospital, Koti, Hyderabad. We had the following findings

- Majority of the patients (94%) were of less than 40 years of age.
- Males were affected more (68%) as compared to females (32%).
- Most of the patients presented with the chief complaints of otorrhea (100%) and hearing loss (80%)
- Posterosuperior Granulation (48%) was the commonest ear finding followed by polyp in 18% of patients.
- Majority (60%) of the patients had moderate degree of conductive hearing loss
- Pseudomonas species, Staphylococcus are found to be the common microorganisms in Preoperative ear swabs and operative specimens.
- The samples collected preoperatively by ear swab and during the surgery are found to be similar in more than 80% of the cases.
- Males appear to have a 1.53 higher risk of infection in atticoantral disease than female patients, but the relation was not found to be statistically significant.
- There was found to be no relation between Human Papilloma virus and Cholesteatoma.

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