

**OTITIS MEDIA: A PROSPECTIVE STUDY IN CENTRAL INDIA****DR. TEKLAL PATEL<sup>1</sup> AND DR. HARI SHANKAR SHARMA<sup>2</sup>**<sup>1</sup>Associate Professor, Department of ENT, Government Medical College, Jagdalpur, Chattisgarh, India<sup>2</sup>Associate Professor, Department of ENT, Index Medical College, Indore, Madhya Pradesh, India**ABSTRACT**

Otitis media are challenging disease in developing countries like India. Rural population is more commonly affected. The microbiology of otitis media is different in various regions that affect the use of proper antibiotics. This study was conducted on 128 patients of otitis media irrespective of age and sex. A complete physical and otological examination was performed. A questionnaire was prepared. A swab was prepared from ear discharge, if any, and sends for microbiological examination. Male female ratio was found to be 1.33: 1. Maximum numbers of cases were reported between 1-10 yrs. Commonest symptom was otalgia and otorrhea together. 5.88% cases showed both bacteria and fungi, 15.29 were negative for both bacteria and fungi. Pseudomonas aeruginosa was the commonly found bacteria and Candida albicans was the commonly occurring fungus.

**KEYWORDS:** bacteriology, otitis media, microbiological, hyphae, morphological.**DR. TEKLAL PATEL**Associate Professor, Department of ENT, Government Medical College,  
Jagdalpur, Chhattisgarh, India

\*Corresponding author

## INTRODUCTION

Otitis media is generally considered as an inflammation of the middle ear cleft, with or without intact tympanic membrane<sup>1</sup>. Otitis media (OM) is a major health problem that occurs with high incidence and prevalence in both developed and developing countries<sup>2,3,4</sup>. Otitis media was first described by Hippocrates in 450 BC<sup>1</sup>. The urban: rural ratio of OM is 1:2 causative factors are poor nutrition, improper hygiene and lack of health education<sup>5</sup>. The various factors are involved in the aetiology and pathophysiology of otitis media like genetic, environment, infections, allergy, social & racial factors and Eustachian tube dysfunction etc<sup>1</sup>. Three main types of OM are acute, chronic and recurrent depending on its duration. OM can be suppurative or non-suppurative type. Chronic suppurative OM is of two types; tubotympanic and attico-antral, depending on the part of tympanic membrane affected, pars tensa or pars flaccida respectively. The infection of the middle ear can spread to other important surrounding structures like mastoid process, facial nerve, labyrinth, sigmoid sinus, meninges and brain that may cause mastoid abscess, facial nerve palsy, thrombosis of the venous sinuses, meningitis, intracranial or brain abscess<sup>6,7</sup>. OM causes conductive hearing loss and can delay the development of speech and adversely affects mental ability and self confidence<sup>1</sup>. The introduction of antibiotics has definitely changed the prognosis of OM but inadvertent use of antibiotics can cause increase incidence of resistant bacterial flora. The indiscriminate, haphazard and half-hearted use of antibiotics and the poor follow up of the patients resulted in the persistence of low grade infections<sup>5</sup>. Maharjan et al<sup>1</sup> reported about 90% of people have at least one episode of otitis media by their 2<sup>nd</sup> birthday. For children less than 15 years old, the most frequent diagnosis made in clinical practice is otitis media<sup>8</sup>. Considering all this background it aroused the great need to study the otitis media in a greater perspective especially in Indian setting where most the patient load comes from rural areas.

## MATERIALS AND METHODS

The present study was carried out prospectively over the period of two years from January 2012 to December 2014 in a teaching tertiary care hospital in central India. The patients presenting to the ENT outpatient department, diagnosis of otitis media was made by senior ENT surgeon. Patients who received antibiotics therapy either topical or systemic and patients having associated congenital deformities like cleft palate were excluded. Total 140 patients were included in the study initially, but after a follow up period of 6 months, only 128 responded back. So the response rate was 91.43%. Data was collected from the patients or their parents in the form of a questionnaire regarding the symptoms. The investigations done, treatment given and complication if any were also noted down in the questionnaire. The discharge from the ears was collected in sterilized vial using long lumbar puncture needle or with sterile culture swabs under all aseptic precautions. The samples were immediately sent to the microbiology lab for bacterial or fungal studies. Collected discharge is also examined microscopically, in 10% KOH for presence of epithelial cells, pus cells, yeast cells, fungal hyphae, spores, etc. For the isolation of bacteria, discharge was inoculated on MacConkey's agar, blood agar, chocolate agar for 24 hours incubation at 37<sup>0</sup>C. For fungus study gross and microscopic morphology was done and culturing of discharge on Sabouraud's Dextrose Agar with 0.05% Chloramphenicol. The organisms were identified using standard procedures by Collee et al<sup>9</sup>. The collected data was analyzed using the statistical software SPSS version 11.0. The results were prepared in the form of tables and figures.

## RESULTS

Out of the 128 patients studied, 68 were males and 60 were females, the male to female ratio in this study was found to be 1.33: 1. Thus, males outnumbered females slightly. The age wise distribution was also studied. It is shown in table no.1.

**Table 1**  
**showing age wise distribution of patients**

Age group	Number of cases	Percentage
< 1	1	0.78%
1-10	38	29.69%
11-20	29	22.66%
21-30	21	16.41%
31-40	18	14.06%
41-50	12	9.38%
51-60	09	7.03%

From table 1 we observe that otitis media is very common in the age group 1-10 years, followed by 11-20 yrs. Thus we can say it affects first two decades of life more commonly. As the age advances the percentage go on decreasing. The male to female ratio is also not much significant. Our study scattered 69 male and 59 female

patients of otitis media, thus the male to female ratio seems to be 1.17: 1. Table 2 shows the symptomatology and commonest presenting symptoms were otalgia, followed by diminished hearing and otorrhea. Some patients presented with single symptom while others presented with more than one symptom.

**Table 2**  
**Symptoms of the patients**

Symptom	Number of patients	Percentage
Otalgia	99	77.34%
Otorrhea	85	66.41%
Diminished hearing	56	43.75%
Otalgia + Otorrhea	104	81.25%
Otalgia+ Diminished hearing	96	75%
Otorrhea + Diminished hearing	67	52.34%

**Table 3**  
**Culture results of bacterial and fungal cultures**

Test	No. of cases	Percentage
Bacterial & Fungal positive	05	5.88%
Bacterial positive & Fungal negative	59	69.41%
Fungal positive & bacterial negative	08	9.41%
Bacterial & Fungal negative	13	15.29%
Total cases	85	100%

Table 3 shows bacteriological study findings in 85 cases. 5.88% cases were positive for both bacteria & Fungi, while 15.29% were negative for both. 69.41% were positive for bacteria only and 9.41% were positive for fungi only. Table 4 shows bacterial isolates. We observed *Pseudomonas aeruginosa* commonest

bacteria cultured (35.94%) followed by *Klebsiella* (21.88%) *staphylococcus* and *streptococcus*. Table 5 shows fungal culture result. *Candida albicans* (61.54%) and *Aspergillus niger* (23.08%) were common fungal isolates.

**Table 4**  
**Pattern of bacterial isolates from the discharge**

Bacterial isolates	No. of cases	Percentage
<i>Pseudomonas Aeruginosa</i>	23	35.94%
<i>Klebsiella</i>	14	21.88%
<i>Staphylococcus</i>	11	17.19%
<i>Streptococcus</i>	9	14.06%
<i>Escherichia coli</i>	7	10.94%
Total cases	64	100%

**Table 5**  
**Pattern of fungal isolates from the discharge**

Fungal isolates	No. of cases	Percentage
Candida albicans	8	61.54%
Aspergillus niger	3	23.08%
Aspergillus fumigates	1	7.69%
Aspergillus flavus	1	7.69%
Total cases	13	100%

## DISCUSSION

Otitis media is a major health problem, especially in developing countries like India where attention is needed<sup>10</sup>. Poor living conditions, overcrowding, poor hygiene and nutrition have been suggested as a basis for the widespread prevalence of otitis media in developing countries<sup>4</sup>. It is a major concern, particularly in children, because it may have long-term effects on early communication, language development, auditory processing, educational process, and physiological and cognitive development<sup>11</sup>. All these complications can be avoided by early microbiological investigations in otitis media. In our study, we tried to correlate the incidence, epidemiology and microbiology of otitis media in central Indian population. We found that the maximum incidence of otitis media is present in the first decade of life followed by the second decade of life. Kumar and Seth<sup>5</sup> found maximum patients in the second decade. Study by Afolabi et al<sup>4</sup> reported more than 50% cases in pediatric age group with mean age of 17 yrs. Rajat Prakash et al<sup>11</sup> also found maximum patients in the age group of 11-20 years with mean age of presentation 25.6 yrs. High prevalence of otitis media in pediatric group may be due to the high occurrence of upper respiratory tract infections (URTI) in this group. Cold atmosphere also predisposes to URTI. Poor hygiene and use of unconventional ear drops and materials like putting oil in ears are also important factors. The male to female ratio was found to be 1.17:1 in our study showing a slightly higher male preponderance. Afolabi et al<sup>4</sup> found M: F ratio as 1.2:1. Kumar and Seth<sup>5</sup> found the ratio of 3:2. This suggests that the males are affected more commonly than

females in most of Indian literature and our values also correlate well with other Indian authors. Rajat Prakash et al<sup>11</sup> reported females outnumbering the males with M:F ratio of 1.2:1. The most common symptoms in our study were otalgia and otorrhea in combination (81.25%). The symptoms may vary according to the age of the patients as pain threshold sensitivity of elders is more than that of young ones. In the present study, 15.29% cases of ear discharge were negative for both bacteria and fungi. 5.88% were positive for both. Kumar and Seth<sup>5</sup> found 16% cases negative for both and 6% cases positive for both bacteria and fungi. Afolabi et al<sup>4</sup> noticed a 71.6% Gram negative while 27.6% were Gram positive. Sengupta et al<sup>12</sup> noted negative culture in 8.6% cases and positive fungal culture in 24.8% cases. Only 2.1% fungi were observed by Aslam et al<sup>13</sup>.

## CONCLUSION

Otitis media is a challenging disease in many developing countries including India. It is generally a disease of childhood but a person of any age can be a victim. Male are affected slightly more than females. Most of the time bacteria are common isolates on culture, pseudomonas aeruginosa is commonest one. The fungi are less commonly seen in OM but still make an important contribution predominantly by Candida albicans fungus. Antibiotics should be appropriately selected depending on their susceptibility and sensitivity.

**Conflict of interest:** declared none.

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